

AUGUST 1995

Macworld

THE MACINTOSH® AUTHORITY
\$4.95 Canada \$5.95

Tower of Power

MOST EXPANDABLE
MAC YET RUNS PC HARDWARE,
PAGE 92

Multimedia Essentials

EXPERT PRODUCTION TIPS FOR
AV MACS, PAGE 106

Mac Clone or Power Mac?

MACWORLD RATES
FIRST CHALLENGER, PAGE 60

PowerPC



Power Macintosh
9500/132

T
A
K
E

C
O
N
T
R
O
L

In here

You

Your Power Mac™

And Microsoft® Office

Become one.

Y
O
U

A
R
E

A
N

I
D
E
A

F
A
C
T
O
R
Y

You assemble your thoughts

Effortlessly.

You drag

Words tables

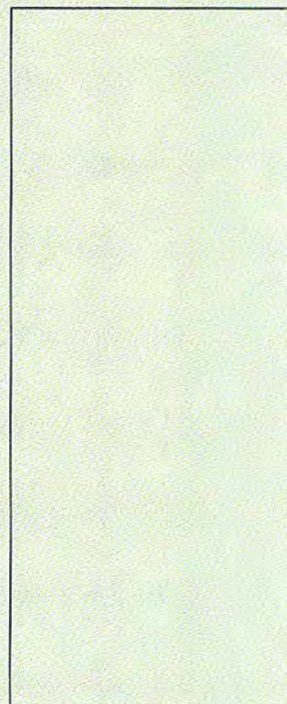
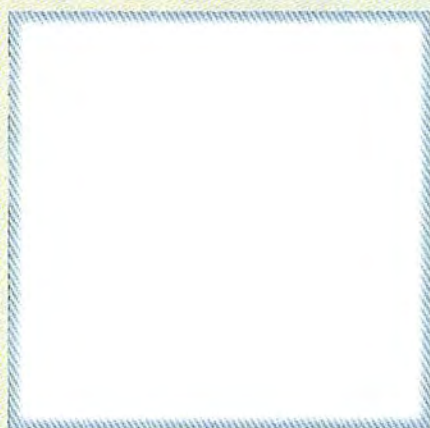
Charts graphics


From one program

And drop them

Into another

Instantly.



in
here
you

work
miracles



I
D
E
A
S

B
E
G
I
N

T
O

F
O
R
M

You run

Microsoft Excel calculations

In your Word document.

You turn your Word document

Into a PowerPoint® presentation.

You see everything

Come together.

Seamlessly.

G
O

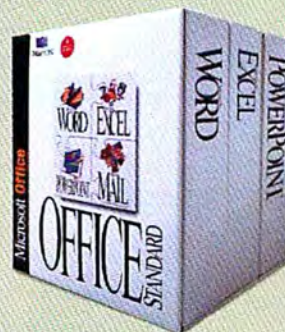
A
H
E
A
D

Make something.

Make anything.

This is you.

Working.



Microsoft

WHERE DO YOU WANT TO GO TODAY?™

PC users have always made excuses for sticking with a lame OS.

A composite image of four men in business attire (white shirts and ties) against a blue background. The men are arranged in a cluster, each with a speech bubble containing an excuse for not switching to Linux. The man on the left has a speech bubble, the man in the top center has one, the man on the right has one, and the man in the bottom center has one.

"But PCs are more powerful. I swear."

"But I can buy one direct."

"But I get better service and support."

"But I need to run Windows apps."

"But PCs are cheaper."

The best OS just got better.

You've never had to make excuses. You knew the Mac OS was the better platform all along. And now, for the very first time, there's a computer that looks, runs and feels just like a Mac[®], but goes beyond it in everything from its features and expandability to its service and support. Even more important, they're priced 10-30% less than Apple's, **PowerPC[™]** complete with extended keyboard.

We're Power Computing. Thanks to our world-class team of experienced Macintosh[®] engineers, we're unveiling the very first

drive, are more affordable than ever. Not to mention performance which prompted *Macworld* to claim, "They might as well be Macs," thanks to the revolutionary PowerPC 601[™] microprocessor built into all our machines.

Over \$900 in free software.

We've bundled each Power Computing model with popular software like Quicken[®], ClarisWorks[™] and Now Up-to-Date[™] to save you even more money. Over \$900, in fact. To top it off, you'll get a 90-day trial of Insignia SoftWindows[™] (To run all those software applications written for the klunky old PC.)

More features. More flexibility.

We sell all Power Computing models direct to customers like you. Which means you can get just the machine with just the features you want, just by talking to the manufacturer—us.

Our engineers then maximized this custom-tailored approach with more built-in NuBus[™] slots, more RAM choices and a more versatile motherboard. This enables you to choose the

"...designed to warm the heart of any Mac fanatic."
—Walter S. Mossberg
The Wall Street Journal

"The Power 100 passed our performance and compatibility tests with flying colors. An impressive value."
—MacWEEK ♦♦♦♦

"I'm bullish on Power Computing."
—John C. Dvorak
PC Magazine

"They might as well have come from Apple—the performance and compatibility are that good."
—Macworld

No more excuses.

Mac-compatible computers in history. Our innovations, like an available 4GB hard drive, beefed-up VRAM and optional 4x CD-ROM

World-class service & support.

We'll throw in one more thing at no charge: peace of mind. All Power Computing machines carry a 100% guarantee of compatibility, on-line help and documentation, toll-free lifetime tech support—even a 30-day money-back guarantee. For the ultimate in support, ask about our on-site service.

configuration that fits you best. As well as one that's easily expandable down the road.

Buy direct & save. Call 1-800-410-7693.

While the PC crowd makes excuses, you could be making the move to Mac compatibles from Power Computing. Best of all, you'll be saving 10-30% over Apple's price. To find out exactly how much innovation and affordability we bring to the Mac OS, call toll-free and order today. After all, there's no excuse not to.

**Introducing Mac compatibles from Power Computing.
The Mac OS, PowerPC performance and more. For less.**



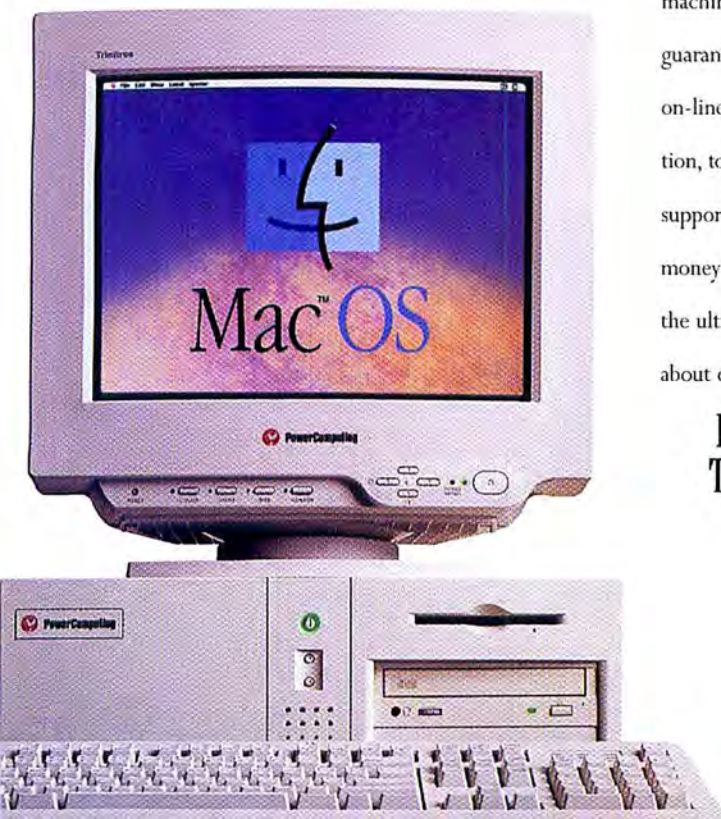
PowerComputing

1-800-410-7693

12337 Technology Blvd., Austin, TX 78727-6104 • 512-258-4350 • Fax: 512-250-3390
Web site: <http://www.powercc.com> • Internet: info@powercc.com

Apple, Macintosh and Mac are registered trademarks, and Mac and the Mac OS logo are trademarks of Apple Computer, Inc. All other brand or product names are the property of their respective holders.

Circle 161 on reader service card



Contents

MACWORLD THE MACINTOSH® AUTHORITY AUGUST 1995

Features

92 First of a New Breed



BY JIM HEID Macworld Lab takes an in-depth look at Apple's first PCI machine, the Power Mac 9500. With the new CPU, it's the speediest Mac yet.



98 Is Apple Serious about Clones?

BY CHARLES PILLER Why have no major PC manufacturers announced a Mac clone? Is Apple thwarting its decision to license the Mac OS? A special *Macworld* investigation.

106 Multimedia Secrets



BY JIM HEID Squeeze the most performance out of your AV Mac with these tips on video digitizing, sound tracks, and printing to video.

112 Advanced AV Options



BY DEKE MCCLELLAND Macworld Lab details how to choose the best video-capture board—under \$5000—to enhance your AV Mac's multimedia capabilities.

118 The Year's Best CDs

BY JAMES A. MARTIN *Macworld's* pick of the ten choicest CD-ROMs of the year.

Advice on connections, settings, and hardware enhancements to get the most out of your AV system, page 106.



Consistent, reliable, fast—the Global Village TelePort Platinum 28.8 fax modem, in Reviews, page 81.

News

33 MacBulletin

34 News Explosive PCI Power Macs • Doom finally comes to the Mac • Feature films on CD-ROM, and more

41 Power Mac News Speed demons: the Power Mac 9500 versus the top PCs

43 Macworld Online Online security: encryption, passwords, and more

45 New Products

Opinion

19 State of the Mac

BY ADRIAN MELLO The importance of Mac clones.

25 Letters

157 The Desktop Critic

BY DAVID POGUE Computing by voice alone.

163 Conspicuous Consumer

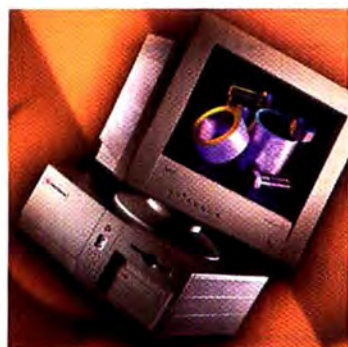
BY DEBORAH BRANSCUM Conspicuous pet peeves.

260 Wise Guy

BY GUY KAWASAKI Gonna wash that Mac right outta my hair.

ON THE COVER

Photo by Kevin Candland



*It's a Mac, but it's not from Apple.
Power Computing's Power 100 clone reviewed,
page 60.*

Graphics

- 126 News** Get ready for XPress 4.0
• Low(er)-cost drum scanners •
Digitizer-and-sketch-pad-in-one,
and more

- 130 Expert Graphics**
BY CATHY ABES Graphics pro-
fessionals share their secrets.

At Work

- 134 News** A more business-friendly
Apple? • ClarisWorks 4.0 •
NOW's PIM improvement, and
more

- 139 Working Smart**
BY JIM HEID Making the most
of DOS disks.

- 143 Quick Tips**
BY LON POOLE Tips, tricks,
and shortcuts.



Networks

- 150 News** Network software shuf-
fle • Apple's NSI 1.5 snubs third-
party cards • Internet via ARA,
and more

- 153 PowerBook Notes**
BY CARY LU Surviving in a
Windows world.

Buyers' Tools

- 167 Editors' Choice**
Top picks from our comparative
articles.

- 169 Star Ratings**
Hardware and software reviews at
a glance.

- 183 Streetwise Shopper**
Hardware and software bargains:
discounts, bundles, upgrades.

- 14 How to Contact Macworld**



August 1995, Volume 12, Number 8 Macworld (ISSN 0741-8647) is pub-
lished monthly by Macworld Communications, Inc. Editorial and business
offices: 501 Second St., San Francisco, CA 94107, 415/263-0905. Subscrip-
tion orders and inquiries should be directed to 800/288-6848 or 303/604-
1466. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for
36 issues. Foreign orders must be prepaid in U.S. funds with additional
postage. Add \$18 per year for postage for Canada and Mexico subscribers.
Add \$69 per year for postage to all other countries. Second-class postage paid
at San Francisco, California, and at additional mailing offices. Postmaster:
Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80323-
4529. Printed in the U.S.A.

Reviews

- 60 Power 100**
Macintosh clone
- 62 Envoy; Magic Link; Marco;**
MessagePad 120
Personal digital assistants
- 64 EAsycolor 24/1360; PaintBoard**
Prism GT; Thunder IV GX 1360
Three graphics boards
- 69 Aladdin Desktop Tools 1.0**
Productivity-enhancement
utilities
- 71 KPT Convolver 1.0**
Photoshop-compatible filter
- 73 Saber LAN Workstation**
Network-management software
- 75 Color-It 3.0**
Paint program
- 77 Color Compass 1.0**
Color-management utility
- 77 Insta Software**
Relational databases
- 79 FastTrack Schedule 3.0**
Project scheduler
- 81 TelePort Platinum**
Fax modem
- 81 Snatcher 1.0**
Internet-access software
- 83 TransJammer**
Video transition effects
- 83 Master CD Pro**
Recordable CD-ROM drive
- 85 MacPhase 2.0**
Image processing software
- 85 Phyla 1.0.3**
Object-oriented database
- 87 Vivid 3D Pro**
Sound-enhancement system
- 87 Three by Five**
Writing tool
- 89 Math Workshop**
Multimedia math education
- 89 Zonkers 1.0**
Desktop-enhancement package

AN NEC MULTISYNC® MONITOR? AT THIS PRICE? DID SOMETHING FREEZE OVER?

Well, here's something you probably didn't expect. Those premium NEC monitors that always seemed a bit beyond your reach have now eased their way right into your price range. Introducing the NEC MultiSync XV Series. Featuring our new 17" monitor (15.6" viewable image size), the optimum size for today's applications at the incredible price of only \$799*.

MultiSync XV Series monitors are not only designed for your budget, but for the eyes of the people who will use them. Eyes that demand sharp detail, bright colors and crystal-clear images. Which is precisely what these monitors deliver.

The XV Series also delivers the legendary quality and reliability you expect from NEC, and is backed by a 3-year limited warranty — one of the best in the industry.

Plus, the XV Series is ideal for both PC and Macintosh® systems and is one of the only monitor lines in its class to offer Microsoft® Plug and Play compatibility.

In short, the new MultiSync XV17 and the entire XV Series gives you yet another compelling reason why you should consider a separate monitor purchase, and not just settle for the monitor that comes bundled with a system.

The new NEC MultiSync XV Series. Above and beyond your expectations, not your price range. Call 1-800-NEC-INFO for more information. For information sent via fax, call NEC FastFacts™ at 1-800-366-0476 and request catalog #1.

MultiSync XV17™
\$799 ESP
17" Flat Square Technology CRT
(15.6" viewable image size)
Max. Res: 1280 x 1024 NI at 60 Hz
Recommended Res:
1024 x 768 NI at 76 Hz**

— — —

MultiSync XV15™
\$460 ESP
15" Flat Square Technology CRT
(13.8" viewable image size)
Max. Res: 1280 x 1024 NI at 60 Hz
Recommended Res:
1024 x 768 NI at 76 Hz**

— — —

MultiSync XV14™
\$330 ESP
14" Non-Glare CRT
(13.0" viewable image size)
Max. Res: 1024 x 768 NI at 70 Hz

**SEE, HEAR
AND FEEL THE
DIFFERENCE™**

NEC

*Estimated selling price. See, Hear and Feel The Difference, XV17, XV15, XV14 and FastFacts are trademarks and MultiSync is a registered trademark of NEC Technologies, Inc. All other trademarks are the property of their respective owners. NEC GSA#GS00K94AGS5241 ©1993 NEC Technologies, Inc. Key #55822.

Circle 15 on reader service card



NEC

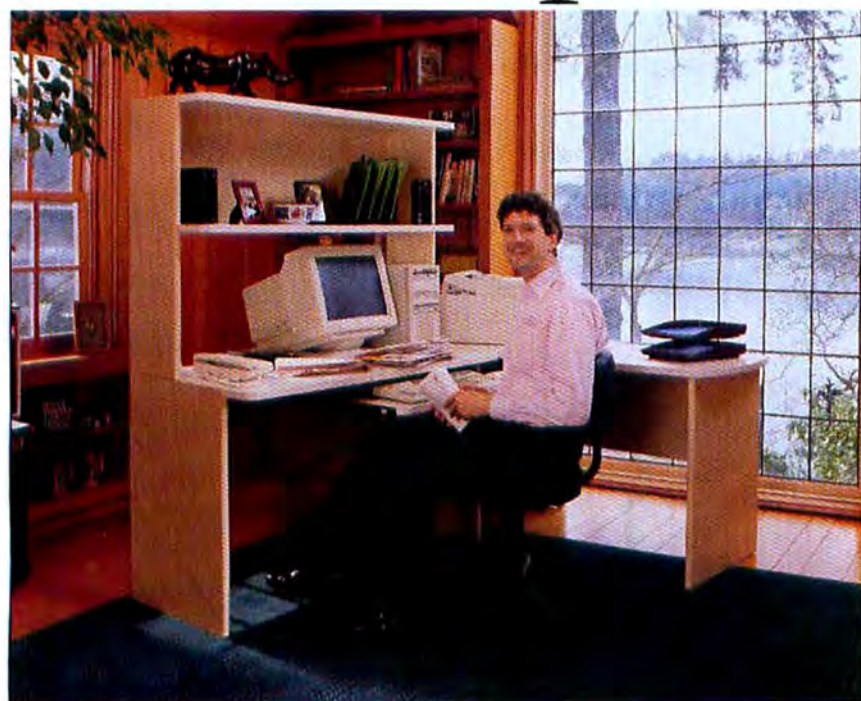
MultiSync XVr



\$799
ESTIMATED
SELLING PRICE

NEW!!

AnthroSpace!®



Imagine your computer on your new AnthroSpace.

The clean, elegant look. And the strength!

It stands up to huge printers, kids, earthquakes.

Plus the quality will delight you—
you'll love the smoothness of the surfaces,
the rounded edges at every turn.

Call for a free catalog, then order direct!



Elegant furniture to accent your workspace!

800-325-3995

6:00 AM to 6:00 PM PST, M-F

Anthro Corporation®
Technology Furniture®

10450 SW Manhasset Dr.

Tualatin, OR 97062

Fax: 800-325-0045

E-mail: sales@anthro.com



Prices from \$349. AnthroSpace, Anthro and Technology Furniture
are registered trademarks of Anthro.

Macworld

PRESIDENT/CHIEF OPERATING OFFICER	Colin Crawford
ASSISTANT TO THE PRESIDENT	Sharon Sanderson
DIRECTOR OF FINANCE	Stephen Daniels
BUSINESS MANAGER	Lisa Buckingham
FINANCE ASSISTANT	Eos de Feminis
DIRECTOR OF HUMAN RESOURCES	Shelly Ginenthal
HUMAN RESOURCE REPRESENTATIVE	Marisa Chow
DIRECTOR OF CORPORATE INFORMATION SYSTEMS	Walter J. Clegg
CORPORATE BUSINESS MANAGER	Christina W. Spence
ACCOUNTING/OPERATIONS MANAGER	Pat Murphy
ACCOUNTING/FACILITIES MANAGER	Michelle Reyes

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 220 computer publications in 64 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 Osterreich, PC Test; **BELGIUM'S** Data News (CW); **BRAZIL'S** Computerworld, Game Power, Super Game, Gamepro, Mundo IBM, Mundo Unix, PC World; **BULGARIA'S** Computerworld Bulgaria, Edworld, 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 Denmark, LOTUS World, Macintosh Produktkatalog, Macworld Denmark, PC World Denmark, PC World Produktguide, Windows World; **ECUADOR'S** PC World; **EGYPT'S** Computerworld Middle East, PC World Middle East; **FINLAND'S** MikroPC, Tietovikko, Tietovikko; **FRANCE'S** Distributive, 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 Management, Macwelt, Netzwerk, PC Welt, PC Woche, Publish, Unit; **GREECE'S** Infoworld, PC Games; **HUNGARY'S** Alaplap, Computerworld SZT, PC World, PC Vilag; **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), Computerl Totaal, LAN Magazine, MacWorld; **NEW ZEALAND'S** Computer Listings, Computerworld New Zealand, New Zealand PC World; **NIGERIA'S** PC World Africa; **NORWAY'S** Computerworld Norge, C/world, Lotusworld Norge, Macworld Norge, Network, PC World Express, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld, IDG Direct Response; **PANAMA'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, Comunicaciones World, Macworld Espana, NextWorld, PC World Espana, Publish, Sunworld, Super Juegos Magazine (GamePro); **SWEDEN'S** Attack, ComputerSweden, Corporate Computing, Lokala Natver/LAN, Lotus World, MAC&PC, Macworld, Mikrodatorn, PC World, Publishing & Design (CAP), Datalingenjoren, Maxi Data, Windows World; **SWITZERLAND'S** Computerworld Schweiz, Macworld Schweiz; **TAIWAN'S** Computerworld Taiwan, 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, InfoWorld Direct, Laser Event, Macworld, Multimedia World, Network World, PC Letter, PC World, Publish, SunWorld, SWATPro, Video Event; **VENEZUELA'S** Computerworld Venezuela, MicroComputerworld Venezuela; **VIETNAM'S** PC World Vietnam.

10 REASONS WHY *now* IS THE BEST TIME TO BUY ADOBE PAGEMaker 5.0.

You'll create everything from award-winning brochures ① and publications ② to promotional materials ③ and company mailers ④. Adobe PageMaker™ 5.0 ⑤ software's unmatched precision and control combined with a naturally intuitive interface have made it the leader in desktop publishing for Power Macs®, Macintosh® and Windows®. It also gets kudos from editors of Windows ⑥ and Mac publications ⑦ alike. And now, for a limited time, you even get Extensis Page Tools ⑧ free, to make Adobe PageMaker work faster, easier and more efficiently. What's more, you also get 220 free Adobe Type 1 fonts on the Type On Call CD-ROM ⑨ which contains more than 2,000 encrypted fonts, just a phone call away. Adobe PageMaker 5.0 is now part of the Adobe ⑩ family of award-winning products. For more information and your nearest Adobe Authorized Reseller, call 1-800-521-1976, Extension G1261.

① Award-winning brochure with a colorful abstract design.

② A publication titled 'THE GARDEN' showing a landscape photo.

③ A promotional material featuring a group photo.

④ A company mailer with a large photo of a person.

⑤ Adobe PageMaker 5.0 software box.

⑥ Windows Magazine Readers' Choice 1994 award.

⑦ Macworld magazine cover.

⑧ Extensis Page Tools software box.

⑨ Type On Call CD-ROM.

⑩ Adobe logo.

If you can *dream* it, you can *do* it.™

Image credits: Art Institute of Boston, Minelli Design, Mincelz/Ross, WYD Design. Adobe, the Adobe logo, Adobe PageMaker, 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. The Adobe PageMaker package is the protected trade dress of Adobe Systems Incorporated. © 1995 Adobe Systems Incorporated. All rights reserved.

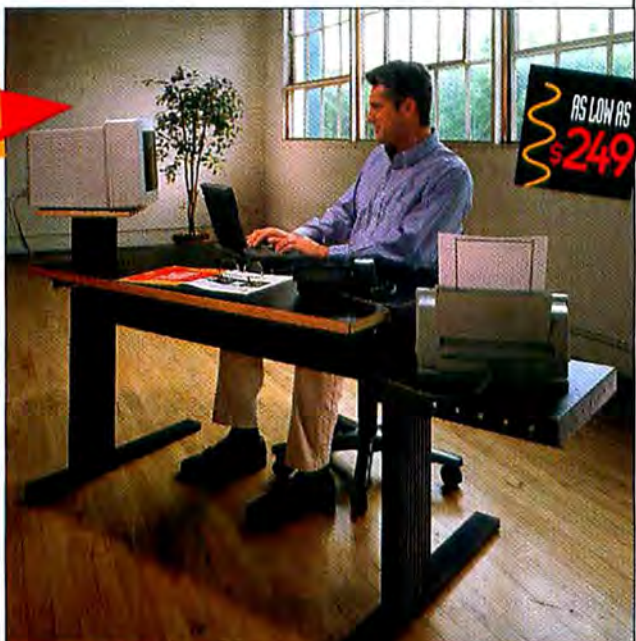
Circle 231 on reader service card

"The Best Mac Desk Ever."

NEW!

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

agio
BEAVERTON, OREGON



Free Catalog! 800.688.2446

Phone 503.690.1400 | FAX 503.690.1423 | Europe 011.41.62.631026 | Japan 011.81.3.3583.0436

Toyota wants to DRAG you CLICKING and SCREENING into the 21st CENTURY.



Imagine live footage of every Toyota Car, Truck, SUV and Van in any COLOR or from any ANGLE, right in front of your EYES. With all the information of every brochure right at your fingertips. All in full STEREO.

That's what you get — and a whole lot MORE — with Toyota's new free CD-ROM. Call 1-800-GO-TOYOTA today.



TOYOTA

I Love What You Do For Me

©1995 Toyota Motor Sales, U.S.A., Inc. Buckle Up! Do it for those who love you.

Macworld

EDITOR-IN-CHIEF

Adrian Mello

EDITORIAL

EXECUTIVE EDITORS

Galen Gruman, Carol Person

DIRECTOR OF EDITORIAL OPERATIONS

Jane Lagas

SENIOR EDITOR/FEATURES

Charles Piller

SENIOR EDITOR

Howard Baldwin

SENIOR ASSOCIATE EDITOR/DEPARTMENTS

Marjorie Baer

SENIOR ASSOCIATE EDITOR

Dan Littman

SENIOR ASSOCIATE EDITOR

Tom Moran

ASSOCIATE EDITOR/REVIEWS

Wendy Sharp

ASSOCIATE EDITOR

Cathy E. Abes

ASSOCIATE EDITOR

Cameron Crotty

ASSOCIATE EDITOR

Elizabeth Dougherty

ASSOCIATE EDITOR

Michael R. Fainter

ASSISTANT EDITOR

Suzanne Courteau

ASSISTANT EDITOR

Jim Feeley

ASSISTANT EDITOR

Joanna Pearlstein

ADMINISTRATIVE ASSISTANTS

Becky Bond,

Lyn Taylor

ASSISTANT TO THE EDITOR-IN-CHIEF

Patricia Carberry-Harris

CONTRIBUTING EDITORS

Deborah Branscum,

Robert C. Eckhardt, Erfert Fenton, Jim Heid,

Guy Kawasaki, Steven Levy, Cary Lu, Deke McClelland,

Tom Negrino, David Pogue, Lon Poole, Steve Roth,

Joseph Schorr, Charles Seiter, Franklin N. Tessler

INTERNATIONAL EDITORS

Osmond 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;

Oscar Kneppers, Netherlands, 011 31 23 354554;

Torvald Ostvang, Norway, 011 47 22 05 3000;

Alvaro Ibariez, Spain, 011 34 1 319 4014;

Nicklas Mattsson, Sweden, 011 46 8667-9180;

Cuno Schneeberger, Switzerland, 011 41 1 387 4429;

Cemal Balci, Turkey, 011 90 1 279 1180;

Peter Worlock, United Kingdom, 011 4471 831-9252

LAB

LAB DIRECTOR

Lauren L. Black

SENIOR TECHNICAL ANALYSTS

Mark Hurlow,

Tim Warner

TECHNICAL ANALYSTS

Matthew R. Clark,

Danny Lee

COPY EDIT AND EDITORIAL PRODUCTION

MANAGING EDITOR

Charles Barrett

ASSISTANT MANAGING EDITOR

Ruth Henrich

EDITORIAL PRODUCTION MANAGER

Jeff Sacilotto

SENIOR COPY EDITOR

Katherine L. Ulrich

COPY EDITORS

Paul Michael King, Gail E. Nelson

PRODUCTION EDITORS

Lisa Brazial, Doreen Engelmann

ART AND DESIGN

DESIGN DIRECTOR

Dennis McLeod

ART DIRECTOR

Joanne Hoffman

SENIOR DESIGNER

Leslie Barton

SENIOR DESIGNER/INFORMATIONAL GRAPHICS

Arne Hurty

ASSOCIATE ART DIRECTORS

Sylvia Benvenuti, Kent Tayenaka

ASSOCIATE DESIGNER

Tim Johnson

SENIOR DESIGN ASSOCIATE

Martha Katt

DESIGN ASSOCIATE

Belinda Chlouber

ONLINE

EDITOR

Suzanne Stefanac

ONLINE ADMINISTRATOR

Steve Costa

CONTENT ENGINEER

Paul Devine

ONLINE PRODUCTION EDITOR

Matthew Hawn

PRODUCTION ASSISTANT

Kristine Moss

OmniPage Pro. Think of it as an accurate 1500 wpm typist who never takes a coffee break.

Accelerated for
Power Macintosh



Try this powerful OCR software just once, and you'll never go back to retyping documents again.

Nobody likes wasting time typing letters, faxes and reports back into a word processor. That's why OmniPage® Pro Optical Character Recognition (OCR) software is so valuable to scanner users. It's faster and more accurate than even the fastest typist. ■ OmniPage Pro reads through each page, recognizing text in any font, from 6-point fine print to 72-point headlines. It intelligently analyzes the document for context and spelling, making smart decisions on

hard-to-read characters. It's the most accurate OCR software yet. ■ Easily edit and format documents within OmniPage Pro, or in your favorite word processor. It's fully customizable, so you can tailor OmniPage Pro to your individual needs. Or train it to recognize special characters and symbols. You'll save lots of time and thousands of keystrokes. ■ Even the most complex layouts are no problem, because OmniPage Pro excels at handling both text and graphics on the same page. And it features Image Assistant®, an integrated 24-bit color image editor. ■ So try OmniPage Pro today and stop retyping.



OmniPage Pro offers great OCR accuracy with high-powered text and graphic capabilities.

TRADE UP

from your scanner's
OCR software! Only
\$149*

from any version of OmniPage, WordScan, or OmniScan SE, including the OCR bundled with your scanner.

Get these powerful new features:

- Increase accuracy with innovative neural network and Language Analyst™ technologies
- Easily edit graphics with fully-integrated, 24-bit color Image Assistant
- Improve recognition of hard-to-read documents with 3D OCR™ and customizable OCR training
- Recognize documents at your convenience with deferred processing
- Works quickly—it's Accelerated for Power Mac

*Suggested price

Call 1-800-535-SCAN ext. 80



OmniPage Pro.
Never retype another document.



Caere, the Caere logo, Image Assistant, OmniScan and OmniPage are registered trademarks of Caere Corporation. 3D OCR and Language Analyst are trademarks of Caere Corporation. All other registered trademarks and trademarks are property of their respective companies. © 1995 Caere Corporation. All rights reserved.

Circle 69 on reader service card

Do You Have \$100,000 To Spend On Document Imaging?

We Didn't Think So.



FINALLY...a cost-effective, full-featured document management solution.
Discover today how scanning, OCR, and full-text search will increase organization and productivity for your workgroup.

I M A X I S

Call 1-800-IMAXIS-0
1-800-462-9470 or 703-204-2114

Circle 105 on reader service card

Reduced version of drawing by Fred Goodman created in PowerDraw

Expert Results

Engineered Software, Generating isometrics with PowerDraw is easy and very quick thanks to the many dedicated isometric tools. The results look sharp—as if created using time-honored technical illustration techniques!

PowerDraw does for CAD what the Mac did for computers.

Sincerely,
Fred Goodman
Fred Goodman

1990
HONORABLE MENTION
MacWorld

MACWORLD
EDITORS' CHOICE
Jan. 1993

ENGINEERED SOFTWARE

CALL 910-299-4843 OR FAX 910-852-2067 • IN CANADA 204-453-8111

Circle 12 on reader service card

Macworld

DISPLAY ADVERTISING SALES

ACTING ASSOCIATE PUBLISHER	Suzanne Saluti (415/975-2624)
NATIONAL ACCOUNTS MANAGER	Lois Brennan (415/978-3262)
ACCOUNT EXECUTIVE	Liz Pabon (415/978-3257)
NATIONAL ACCOUNTS MANAGER	Marsha Bowers (415/978-3155)
ACCOUNT EXECUTIVE	Christine Wong (415/978-3192)
ADMINISTRATIVE ASSISTANT	Eva Bosch (415/974-7310)
NATIONAL ACCOUNTS MANAGER	Lianne Kirkland (714/250-1307)
ACCOUNT EXECUTIVE	Bethany A. Baller (415/978-3276)
ADMINISTRATIVE ASSISTANT	Martina Martin (714/250-1307)
NATIONAL ACCOUNTS MANAGER	Cynthia Ramsey (201/243-1197)
NATIONAL ACCOUNTS MANAGER	Paul Bonarrigo (508/872-8600)
ADMINISTRATIVE ASSISTANT	Alexandra Dileso (508/872-8600)
NATIONAL ACCOUNTS MANAGER	Lisa Ladle (800/779-5622)
ACCOUNT EXECUTIVE	Kathy Poppenhagen (708/827-4477)
ADMINISTRATIVE ASSISTANT	Kim Giovanni (708/827-4477)

MAIL ORDER/CLASSIFIED ADVERTISING SALES

DIRECTOR OF TELESales OPERATIONS	Stephen R. Plevin (415/978-3138)
ACCOUNT MANAGERS/MAIL ORDER	Edward Ramirez (415/974-7413) Lisa Weisberg (415/978-3117)
MACWORLD SHOPPER	800/888-8622 Niki Stranz (415/978-3105), Carol Johnstone (415/978-3152), Shannon Smith (415/974-7414)
ADMINISTRATIVE ASSISTANT	Toni May (415/975-2638)

MACWORLD GLOBAL PRODUCT SUPPORT CENTER

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

MARKET RESEARCH

RESEARCH DIRECTOR	Linda Lawrence
RESEARCH ANALYST	Matt McAlister

MARKETING

MARKETING DIRECTOR	Cynthia Koral
SENIOR MARKETING MANAGER	Jeff Julian
MARKETING MANAGER	Rhona Hamilton
TRADE SHOW/EVENTS COORDINATOR	Anna Noetzel
MARKETING ASSISTANT	Shannon McAdell

CIRCULATION

VICE PRESIDENT/DIRECTOR OF CIRCULATION	Angelina Beitia
SINGLE-COPY SALES DIRECTOR	George Clark
SENIOR CIRCULATION MANAGER	Lori Hitchcock
CIRCULATION MANAGER	Elizabeth Jensen
NEWSSTAND SALES MANAGER	Martin Garehar
PROMOTION MANAGER	Kelvin Gee
NEWSSTAND COORDINATOR	Dalia Schwartz
SUBSCRIPTION COORDINATOR	Deirdre Dugan
CIRCULATION ASSISTANT	Eric Jue
SUBSCRIPTION INQUIRIES	800/288-6848

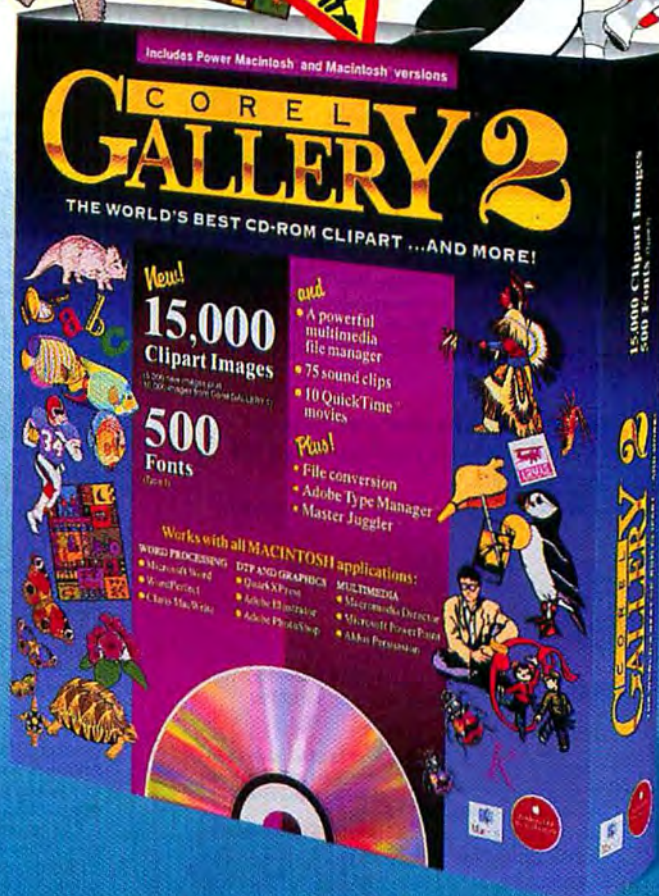
PRODUCTION

VICE PRESIDENT/DIRECTOR OF MANUFACTURING	Anne Foley
PRODUCTION MANAGER	Cynthia Mazzola
BILLING INFORMATION MANAGER	So Fong Yip
AD TRAFFIC COORDINATOR	Shellie Anderson
DTP COORDINATOR	Clayton Haberman
BILLING ASSISTANT	Lily Cheung



New!

- 15,000 Clipart images
- 500 Fonts
- A powerful multimedia file manager
- 75 Sound clips
- 10 QuickTime™ movies



**WORKS WITH ALL
MACINTOSH
APPLICATIONS:**

WORD PROCESSING

- Microsoft Word™
- WordPerfect™
- Claris MacWrite™

DTP AND GRAPHICS

- QuarkXPress™
- Adobe Illustrator™
- Adobe PhotoShop™

MULTIMEDIA

- Macromedia Director™
- Microsoft PowerPoint™
- Aldus Persuasion™

**15,000
Clipart Images**

(5,000 new images plus 10,000 images from GALLERY 1)

**500
Fonts**

(Type 1)



The Mac OS logo is a trademark of Apple Computer Inc.
The Accelerator for Power Macintosh sticker and
Power Macintosh are trademarks of Apple Computer Inc.,
used under license.



**The Mac
Zone™**
Your Catalog SuperStore

1-800-248-0800

\$64.98

Source code 1719

US\$ plus applicable taxes.



Call now for faxed literature!
1-615-728-0826 ext. 3030
(document #1057)

Circle 78 on reader service card

1057-0115

SUBSCRIPTION QUESTIONS

Mainland USA 800/288-6848
fax 415/442-0766
303/604-1465

All other locations
or write Subscription Services

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

MACWORLD ONLINE

Contact Macworld editors directly via the Macworld areas on America Online and eWorld. On these services, readers can search current and past issues, exchange messages with editors and other readers, and attend live online events. Readers can also send electronic mail via CompuServe (70370,702), MCI Mail (294-8078), AppleLink (Macworld1), or the Internet (macworld@macworld.com).

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; \$5 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 Francisco, 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.

FOUNDER David Bunnell
FOUNDING EDITOR 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, Expert Graphics, Quick Tips, Star Ratings, Buyers Tools, Streetwise Shopper, and Conspicuous Consumer are registered trademarks of International Data Group, Inc. Power PC World is a trademark of IDG, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks, and MACLETTER and POWERBOOK are trademarks of Apple Computer, Inc. Printed in the United States of America. Copyright © 1995 Macworld Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information.



SPSS 6.1 for the Macintosh® Real Stats. Real Easy.

All New
Macintosh
interface!

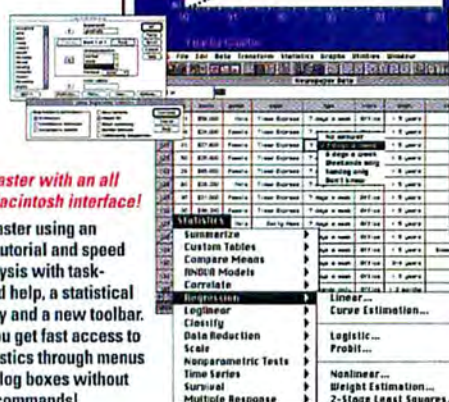
Get answers to tough questions using in-depth statistics!

Use 60+ statistics from basics such as counts and crosstabs to more sophisticated statistics including factor, regression and logistic regression.



Get fast, flexible data management!

The spreadsheet-style Data Editor makes entering, editing and managing your data fast and easy using either values or value labels. And, you can work with even your largest data files!



Work faster with an all new Macintosh interface!

Learn faster using an online tutorial and speed up analysis with task-oriented help, a statistical glossary and a new toolbar. Plus, you get fast access to all statistics through menus and dialog boxes without typing commands!



See your results quickly and clearly!

Choose from 50+ high-resolution business, statistical and SQC charts. All can be fully edited with easy point-and-click tools.

Use SPSS 6.1 for the Macintosh when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row-and-column math by using the right tool for the job. SPSS enables you to answer tough questions like:

- How satisfied are my customers?
- What will my sales be next quarter?
- What are the patterns in my data?

Survey research

- Explore consumer awareness
- Compare perceptions of products
- Discover preferences by group

Marketing and sales analysis

- Analyze your customer database
- Forecast sales by product and region
- Improve mailing responses



Call 1(800)457-8287

Quality improvement

- Assess process capability
- Reduce nonconformance
- Spot unnatural patterns of variation

Research of all types

- Test hypotheses
- Determine group differences
- Track performance over time

Get a great value — order now!

Call 1(800) 457-8287

or Fax 1 (800) 841-0064

or mail to: SPSS Inc., 444 N. Michigan Ave., Chicago, IL 60611

American Express, Discover, MasterCard, VISA and I.M.P.A.C. cards accepted

Name _____
Title _____
Organization _____
Address _____
City _____ State _____
ZIP _____ Email _____
Phone () _____ Fax () _____

Try SPSS 6.1 for the Macintosh with our unconditional, 60-day money-back guarantee.

SPSS
Real Stats. Real Easy.™

Chicago • Washington, D.C. • Bologna • Chertsey • Garmisch • Madrid • Munich • New Delhi • Paris • Singapore • Stockholm • Sydney • Tokyo • And distributors worldwide

Circle 85 on reader service card

Put Our List On Your List

Our list is the *Consumer Information Catalog*. It's free and lists more than 200 helpful government booklets. So send for the free *Catalog*. It's the thing to do. Write:



Consumer Information Center, Dept. LL, Pueblo, CO 81009

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration

FreeHand 4.0, 1994 MacUser Eddy Award



"BEST NEW
DRAWING
TOOL"

Feel The Power For Only \$149.

Feel the flexibility with dozens of new plug-in tools and palettes. Even use existing Illustrator plug-ins right within FreeHand!

Feel the power of page layout with text style sheets, spelling checker, columns, search & replace, copyfitting, linked text blocks, even multi-page support!

Feel the precision of "snap-to" grids, guides, and points—plus magnification of up to 25,600% on a massive 22' x 22' pasteboard!

New FreeHand 5

Feel the possibilities of special effects like Fisheye Lens, 3-D Rotation, Multi-color gradients, Calligraphy Pen, even Drag & Drop color!

Feel the speed of working in the fastest WYSIWYG preview mode—faster than Illustrator and all the others!

The editors of MacUser felt it. And now you can feel it too. The ultimate power and unlimited freedom in design and illustration, in new Power Macintosh native FreeHand 5. All for only \$149. We'll prove it.

On our free Showcase CD, you'll see what the power of FreeHand can do for artists, designers, illustrators, desktop publishers and multimedia mavens just like you.

So call for the FREE CD. Or upgrade for only \$149. And feel the power of FreeHand 5 for yourself.

FREE SHOWCASE CD-ROM*
1-800-326-2128

ASK FOR OPERATOR #714



MACROMEDIA®

Only
\$149

Quark XPress Offer!

**Move to the power of FreeHand 5.0 for the Mac for \$149. Available to current FreeHand users and users of Quark XPress, Canvas, MacDraw, Adobe Illustrator and PageMaker. Offer expires September 30, 1995.

Circle 244 on reader service card

*Hardy quantities limited. One CD per caller. **Based on ownership request call 1-800-985-3762. Upgrade offer expires on Sept. 30, 1995. Offer valid in the U.S. and Canada only. Outside the U.S. or Canada call 1-415-332-2000 or FAX 1-415-332-2000 or FAX 1-415-332-2000. Macromedia and the Macromedia logo are registered trademarks of Macromedia, Inc. FreeHand is a trademark of Macromedia, Inc. Other names are trademarks of their respective holders. © 1995 Macromedia, Inc.



It's About Time You Expected More From Your Storage System...

**Expect Portability, Security and A Cordless Path To
Future Growth... But Don't Expect To Pay More.**

Joule's
SmartDock gives
you the power of
portability.

Thanks to Joule's SmartDock™ technology, we've freed all Joule Drives from power supply and cable connections to make them smaller and more portable. That means with Joule you're free to share, to send, to store or to secure your data and your drives with convenience unavailable in "box" type hard drives – or any other storage system.

universal power supply, surge protection, active SCSI termination, auxiliary outlets, and more.

Unlike other "stackable" systems, Joule's unique system of cordless plug and play modules features an ingenious vertebrae-like support structure that lets you add, remove or switch modules instantly without cable or SCSI hassles.

With Joule you can combine up to six storage devices without the clutter of external cords or connecting hardware. Joule is even available in award winning RAID systems!

Joule Drives give you more reasons to feel confident in your purchase, too. Reasons like solid Quantum drives with warranties up to five years, and toll-free support. Plus our exclusive DataSafe™ repair program that promises 24-hour power supply replacement without returning your drive.

MORE WAYS TO GO AND GROW

Joule Drives are available in a wide choice of hard disk or removable media options. Each can plug into the SmartDock for stand alone use, or when you're ready to expand, can plug into a stack. With Joule, even as you grow there's always a place for every drive.

If you've got a stack in your future, begin with a Joule Base Drive. Available in hard disk, optical or SyQuest drives, your base will support an entire stack with

**More
Compact**



**1 GB
\$329**



**Transfer gigabytes
of data the fastest
way possible.**



"La Cie's new stackable design... offers several benefits over other standard external case designs."

MacWeek - 10/94



Joule redefines plug and play simplicity.



Joule Bases support a future of possibilities.

Discover Joule Drives.

Every Joule drive includes a SmartDock with external cables, Silverlining™ hard disk management software and La Cie's own La Cie Term™ digital active SCSI termination.



Unplug and lock away data for safe keeping in seconds.



Take a Joule home, on the road or to your service bureau.

Now that you can have a storage system that offers so much more yet costs no more, why would you settle for less?

Joule Serves You Better.

Joule Hard Drives

INTERNAL¹ PORTABLE w/ DOCK

3.5" Hard Drives

Quantum - 2 or 5 year warranties

540MB	\$199	\$299*
730MB	\$229	\$329*
1080MB	\$329	\$429*
2150MB	\$799	\$899*

* These drives are also available in Joule Base configurations for an additional \$60.

† Brackets available for \$10 with HD purchase

2.5" Hard Drives

Quantum - 2 year warranty

256MB	\$239	\$339
341MB	\$289	\$389
514MB	\$389	\$489

Joule Removable Drives

INTERNAL w/ BRACKET PORTABLE w/ DOCK

230MB Fujitsu Optical Drive

\$549 \$649*

With Free 3.5" Cartridge - 1 Yr Warranty

SyQuest Drives

With 1 Free Cartridge - 1 Year Warranty

270MB	\$419	\$489*
200MB†	\$439	

* These drives are also available in Joule Base configurations for an additional \$60.

† 200MB SyQuest Drives are also available in Joule Base configurations for an additional \$60.



Joule RAID

Bundled with Trillium Research Software configurable to levels 0, 1, 4 & 5.

2.0GB	\$1299	8.4GB	\$3999
4.2GB	\$2499	16.8GB	\$7999



Joule Portable 1080MB Hard Drive

\$429



Joule Portable SyQuest 270MB

\$489 With FREE Cartridge

INTERNAL w/ BRACKET PORTABLE w/ DOCK

600MB Tape Drive

\$579 \$649

Includes 1 Free Tape Cartridge & Retrospect™ - 1 Year Warranty

8.0GB DAT Tape Drive

\$929 \$999

Includes 1 Free Tape Cartridge & Retrospect™ - 1 Year Warranty

Removable Cartridges

SyQuest: 44MB	\$49	88MB	\$49
200MB	\$79	105MB	\$59
270MB	\$69		
Optical: 230MB	\$39		



LACIE LIMITED
A QUANTUM COMPANY

1-800-999-0182

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

* Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Joule, Joule Portable, La Cie Term, DataSafe, 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 listed are subject to change without notice or without return. © Copyright 1995 La Cie, Ltd. All rights reserved.

Circle 52 on reader service card

Are you ready for a whole new age of Apples?



We are.

With code names like *Tsunami*, *Catalyst*, *Nitro* and *TNT* there's no doubt the new PCI-Based Power Macs are fast and powerful. *Tsunami's* 604 processor cooks at 120 or 132MHz with plenty of room for RAM—up to 12 DIMM slots upgradeable to 1.5GB! While you're adding RAM, you're going to want Cache and VRAM for these new Power Macs, too. Can you get it? YES. Who has it ready so fast? VIKING COMPONENTS. How do you find them? CALL 1-800-338-2361 FOR THE DEALER NEAREST YOU. Now, aren't you glad we're a Certified Apple Developer.



**VIKING
COMPONENTS**

Certified Apple Developer

Manufacturing tomorrow's products... Today!

For the dealer nearest you, please call:

1-800-338-2361

Circle 233 on reader service card



Clones—Full Speed Ahead

Apple's hesitancy may shut the Mac's second window of opportunity

FANS OF THE MACINTOSH sighed in relief late last fall when Apple announced its commitment to licensing the Macintosh Operating System. Developers and industry observers had hammered on Apple for years to license the OS, but Apple stubbornly refused. When Apple finally said it would share its crown jewels, those of us who have championed the Mac over the years looked at each other and smiled, but these were smiles laced with tension. It was as if we were watching a prize thoroughbred shed a leaden saddle halfway through the race—you know that on substance that horse should win, but the inferior horses are already half a lap up. Apple was finally learning its lessons, but was it too late?

After Apple delivered the one-two punch of PowerPC and licensing, the debate around the Mac's ultimate survivability changed. We no longer ask whether the Mac has the right ingredients for success, but whether its chance has passed. Well, *has* the Mac missed its window of opportunity? Some argue that since Windows machines now dominate the market, there is little to distinguish the Mac. Whether you buy that or not, Apple could have made major gains, perhaps even preempting Windows, had it only licensed the Mac OS years ago, before Windows was established. That was the Mac's first window of opportunity and one that Apple declined to take advantage of.

Personally, I don't believe the Mac has hit its high-water mark and will now fade away. Apple has artfully laid the groundwork for a second, albeit a smaller, window of opportunity. By properly exploiting this opportunity, Apple could move the Mac out of niche status and into the mainstream. Mac advocates everywhere are pinning their hopes on a resurgence of the Mac that started with PowerPC and promises to pick up steam with a successful licensing campaign. Apple's espoused objective is significant market-share growth, but attaining this goal depends on other system vendors ship-

ping large numbers of Mac clones. And there's the rub.

Tentatively Tenacious

Apple appears to be taking an excessively cautious approach to licensing the Mac OS—an approach it can ill afford. In this issue Charles Piller evaluates Apple's progress on licensing clones and describes how potential clone makers are responding to Apple's licensing efforts (see "Is Apple Serious about Clones?"). Potential clone makers, he says, feel that despite their demonstrated interest in licensing the Mac, Apple is not supporting them enough to justify their plunging into an entirely new business. At the same time, Apple officials seem to indicate a growing reticence about licensing, both in their words and in their actions, throttling

In fairness, licensing the OS is an immense undertaking with many pitfalls. It is not as simple as putting a for-sale sign in a window. Licensing requires a tremendous commitment of engineering time to create a portable OS that can run on other vendors' hardware. The proposition is even more daunting for Mac clones than it was for the early IBM clones, because from its inception the Macintosh OS and hardware were tightly integrated. Licensing also requires extensive corporate resources, to fashion agreements and provide technical assistance to clone makers. Finally, Apple management has to worry about adapting its own corporate culture—and margins—to a market that includes cost-cutting competitors selling Macs. It's all new to Apple, and the company is trying to do a good job as it learns the ropes.



Damn the Torpedoes

Recent shifts in Apple's top brass reveal the company's mixed emotions about the whole issue. The company appears to want the benefits of licensing the Mac without accepting the risks. Apple has taken a few cautious first steps toward licensing, but long-term success demands faster and bolder action. Historically, Apple has far too often insisted on elegant solutions while its competitors successfully gouge out market share with hastily introduced products. And

while it's true that sometime around the end of 1996, the converged hardware reference platform (CHRP) should create a more elegant basis for future licensing efforts, Apple cannot afford to tarry. Growing the Mac market share is not just a good idea, it's critical, and it needs to happen *now*. Apple must damn the torpedoes and go full steam ahead—and for that it needs a crew of many large clone makers on board. One lesson of market-share warfare is that you must be first to

back the anticipated pace and scope of the company's licensing efforts.

At best, Apple's signals are mixed, but where clone makers are concerned, Apple has yet to prove its commitment. We have yet to see Apple license the OS to even one company big enough to make a dent in market share. And a single company—even a big one—wouldn't be enough to expand the market share quickly enough to keep software companies developing for the Mac—the single most crucial factor for the Mac's survival.

continues

battle and carry the most firepower. Apple must enter the CHRP era with as much momentum as possible.

With that in mind, here's a four-point program that Apple should adopt to beef up its licensing strategy and get serious about moving clone licensing back to the top of the agenda where it belongs.

1. License away. If Apple can find partners willing to build clones, it must hammer out agreements with them. Avoid endless negotiating and view these

companies as indispensable allies. Put aside fears about being undercut on price. Opening up the clone market will increase Apple's software business. And Apple's high-quality products, leadership in design and technological innovation, and brand recognition will keep its hardware competitive. Ultimately, for a successful hardware strategy, the company must believe in its own ability to compete.

2. Secure two big clone makers. Sign up clone makers who can make a big

difference relatively soon. Identify the five or six best prospects and focus on them. Right now Apple should do whatever is necessary to sign up IBM and one other player—perhaps a company from the Taipei New PC Consortium, since its members seem to be willing and could generate good numbers for Apple. This should be Apple's single highest priority over the next few months. This would not only help build market share, it would also generate a lot more developer interest in the Mac platform—interest that will be crucial as Microsoft begins to field Windows 95 at the end of summer. Increased developer interest would also boost the momentum toward Copland (System "8") and CHRP.

3. Commit resources. Apple must commit resources to licensing as quickly as possible so that big clone makers know that Apple is truly serious about immediate licensing. Hire enough qualified staff to work out the agreements and provide the technical support to clone makers who sign up. If forced to choose between supporting licensing and supporting other ancillary products and services, choose licensing. The success of the Mac platform is at the very core of Apple's business. It's more important to spend money on this and OS development in general than it is on secondary businesses such as eWorld and Newton, no matter how interesting they are.

4. Permit innovation. Give clone makers full reason to invest—do what's necessary to support clone makers who want to innovate. This again comes down to resources. Apple won't be able to support everything these companies may want to do, but it should do all that it can to encourage support for the Mac platform. At the same time Apple can help keep vendors from going too far afield by laying out clear guidelines on future OS development and by providing information on the direction the company is taking with CHRP.

Carpe Diem

There is a saying "Fool me once, shame on you. Fool me twice, shame on me." Apple may have erred by not licensing the Mac OS earlier, but it must not make the same mistake again. It cannot afford to make a halfhearted licensing effort as Windows 95 crashes the gates. Apple must take a leap of faith. There may be risks in an aggressive approach to licensing, but there are even bigger risks in not being aggressive enough. Not so long ago Apple leadership displayed tremendous courage in pulling out all the stops to make the shift to PowerPC. This is the kind of courage it must show again. **m**

REMEMBER
WHY *You* LIKE

DESIGN
FOR A *free*
IMAGE CLUB
SOFTWARE
CATALOG

CALL TODAY
800 387 9193

IMAGE CLUB GRAPHICS INC.
729 TWENTY FOURTH AVENUE SOUTHEAST CALGARY ALBERTA CANADA T2G 5K8
phone 403 262 8098 orders 800 661 9410 free catalogs 800 387 9193 fax 403 261 7013
applelink cda0573 compuserve 72560.2323 america online imageclub
eworld imageclub internet imageclub@aol.com
WORD copyright 1995 image club graphics

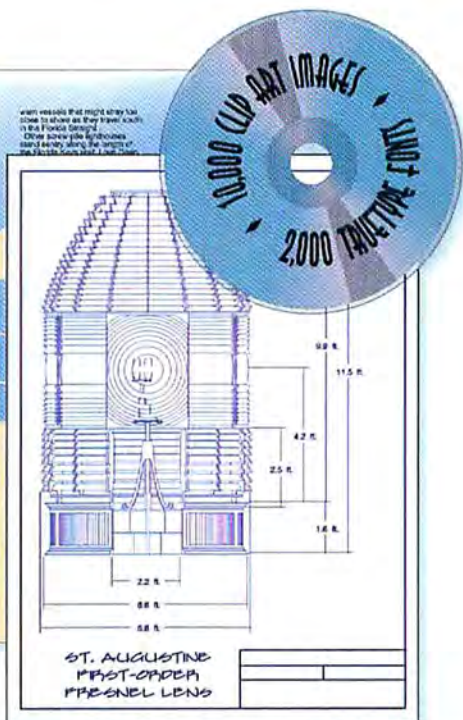


Circle 50 on reader service card

YOUR ONE-STOP GRAPHICS SHOP

CANVAS Does it All!

- Newsletters and Flyers
- Logos and Advertising Design
- Free-form Drawing and Painting
- Business Graphics, Flow Charts & Diagrams
- Floor Plans, Architectural & Technical Drawings
- On-Screen Presentations and Slides
- Retouch, Color or Trace Scanned Images
- Color Separations
- Spectacular Special Effects



"... the single graphics program to fit most illustration needs."
- MacUser

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

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

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

SO WHAT ARE YOU WAITING FOR?

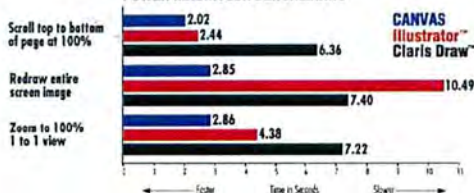
Run today to your favorite software retailer or call us and get your hands on the best graphics software buy around.

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

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

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

POWER MACINTOSH BENCHMARKS



EXCLUSIVE NEW CD-ROM JUMP STARTS YOUR CREATIVITY

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

\$269
Estimated Street Price

\$149.95
Competitive Upgrade Price

CANVAS INCLUDES

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

COMPETITIVE UPGRADE

- Simply show us proof of ownership of any Macintosh graphics program and chop nearly \$250 off Canvas' already low \$399 price! Call today...

1-800-733-6322



Deneba Software



Laura J. Kirk

Reisterstown, Maryland

TECHNICAL WRITER

WORDPERFECT FOR MACINTOSH USER

Used to wear a mood ring.

Used to drive a Comet.

Used to use Microsoft Word.

Talk about embarrassing. "I can't believe I used to use it," says Laura Kirk about her past with Microsoft Word. Now she uses WordPerfect® for the Macintosh. "I use complex formats ... lots of graphics, color, indexing, etc. Not your basic interoffice memo level of work. So I need the native PowerMac speed and System 7.5 drag-and-drop support in WordPerfect. Besides, when I finally saw how bloated and Windows-like MS Word 6.0 is ... let's just say I'm glad I switched."

**\$99 upgrade
offer.* Visit your
reseller or call
(800) 526-7820.**



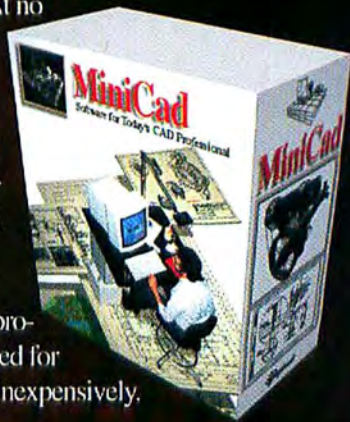
WordPerfect®
NOVELL

Should Graphsoft's MiniCad 5 be your CAD Program?



Take the Quiz.

- I want a full-featured, proven market leader which can handle any job: 2D, 3D, cost estimation and client presentations.
- I want a program that runs on both the 68K-based Macintosh and the Power Macintosh. At no extra charge!
- I want a CAD program that is tailored to my needs, with specialized tools for architecture, mechanical engineering and design.
- I want an expandable CAD program which can be customized for specific solutions easily and inexpensively.
- I don't want to spend a lot for training or experience an enormous learning curve.
- I want an established company with constant R&D funding, so that my investment stays safe.



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

MiniCad 5 also includes: speed increases up to 100% even on 68K-based Macintoshes, a Claris CAD conversion program (including a \$495 competitive 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, a powerful QuickTime key frame animation tool for creating and exporting stunning walkthrough and flyover presentations and a no-hassles 45-day money-back guarantee through participating dealers. Contact Graphsoft today for detailed literature. To order immediately, call MacWarehouse, MacConnection, or your local dealer.

Mechanical, Architectural, & Advanced Design Modules Included.



Also from....

Graphsoft Inc.



Azimuth

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

Blueprint

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

10270 Old Columbia Road, Columbia, Maryland 21046

Ph: 800-413-0935 or 410-290-5114 Fax: 410-290-8050 In Canada Call Paxar At: 604-474-8975

Power Macintosh and QuickTime are trademarks of Apple Computer Inc. MiniCad, Blueprint, and Azimuth are trademarks of Graphsoft, Inc. Claris CAD is a trademark of Claris.

Letters

PaperPort(less)

ALWAYS LIKE REVIEWERS THAT AGREE with me, but Mel Beckman's review of the PaperPort scanner (*Reviews*, May 1995) was incomplete. It is a great product. The hardware works well, the software is really slick, and all at a reasonable price. Unfortunately, it is a serial-port device, and if you have a modem and a printer you are out of serial ports. I sprang the \$200 for a NuBus serial-port expansion card and don't regret it. But readers that bought a PaperPort on the basis of a five-star review might have been a little ticked to find there was no place to plug this little gem when they pulled it out of the box.

I also would like to note that this is the first time I bought anything where the Windows version listed for more than the Macintosh version. Maybe a new era has truly arrived.

David Werner
via America Online

Off-Center Review

AGREE WITH MARK HURLOW IN HIS recent review of Epson's Stylus Color printer (*Reviews*, May 1995). It does produce excellent-quality output, it is slow, and a color-management scheme would be helpful. But . . .

If you use software that does not allow user control of print margins (Kid Pix, The Playroom, and so on), the output will be off center. While this does not sound fatal, it can be for software such as Print Shop Deluxe. When the Stylus's off-center output is placed over a fold area, it renders Print Shop Deluxe's greeting cards virtually useless.

Epson acknowledges the problems and says it hopes to address this issue through future driver revisions. So when the company recently released the version 1.2e driver, I was hopeful. While Epson appeared to solve the speed issue by mak-



ing the driver Power Mac-native, its efforts exacerbated the alignment issue (the Read Me file warns that large graphics will be printed on two pages).

As someone "who needs excellent output on a small budget," I felt the review was directed at me, but I was disappointed when only one of my "small-budget" software packages (Microsoft Works) worked without problems.

Greg Krieser
Omaha, Nebraska

Bright's All Right

THANK YOU FOR THE EVALUATION OF "Portable Presenters" (January 1995). As a user of the Chisholm Rainbow LCD, I would like to comment on the sidebar, "Why Brighter May Not Mean Better."

First of all, it appears that for your evaluation, you chose not to adjust color settings from the way the panels were received from the factory, but any user would seek to find the best color adjustment. When you have the brightest projection capability, as the Chisholm does, the user has the choice of using full

brightness in a room that cannot be darkened or full color in a room that has been darkened. The default settings must have varied from vendor to vendor, as there is no standard for projection-room light.

Second, you observe that the brighter the image, the duller the picture. This is true. If you decrease the color saturation, you will increase the brightness, and the reverse. Color saturation in a dark room hurts. Brighter *does* mean better in many cases—ask any teacher.

Lynell Burmark
San Jose, California

Lifetime Subscription

THANK YOU, *MACWORLD*! THE INFORMATION from just one sidebar ("Some Repair Shops," *PowerBook Notes*, April 1995) saved me approximately \$1100—enough to pay for my *Macworld* subscription well into the next century.

My PowerBook 180's backlight went out ten months out of warranty. Apple said the only cure was a new screen, at a cost of around \$1200. I crippled along for months using lamps and sometimes *flashlights* to view the screen.

When I read in your sidebar that these nonauthorized shops "do more types of repairs than an authorized service center," I checked it out. The tech at Westwind Computing spent several days hunting down a replacement for the backlight on my 180, and when he couldn't locate one, he stayed up half the night modifying one from a different model to make it work for me. He also resoldered my loose printer-port connection, saving me the price of a new board. Total bill: less than \$200.

Thank you, *Macworld*, and thank you Westwind Computing. By the way, renew my subscription for the next century.

Ron Shaw
Mukilteo, Washington

continues

CORRECTIONS

The power to do what
they
never imagined you could do.

The power to do what
you
never imagined you could do.

The power to make others
see beyond the surface.

The power to make a lifelong
dream come true.

The power to shine.

The power to be accepted for
who you really are.

The power to not always
have to ask for help.

It's the power of freedom.

It's the power of independence.

It's the power of Macintosh.

The power to be your best.



For more information on Apple® products, contact us at 800-600-7808, 800-755-0601 (TTY), or on the Internet at applewds@world.com.



© 1995 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. All Apple products are designed to be accessible to individuals with disabilities.

■ *We mistakenly reported an increase in the price of Reply's 66MHz 486DX2-based DOS-on-Mac card (News, June 1995). The card's price remains unchanged at \$599; a new product, a 486DX2-based card for the Power Mac 7100/66, is \$699. Reply, 408/942-4804, 800/955-5295.*

■ *A number of errors were made in "Successful Workgroup Backup" (May 1995). Only Dantz Development's Retrospect (rather than all backup programs, as implied) uses a 1.5 multiplier to account for extra data sent over the network when backup software verifies backed-up data. A competing product, Cbeyond's Arcserve, uses a 2.0 multiplier. Unlike Arcserve, Retrospect does not redundantly back up identical files—and this leads to improvements in speed, as well as lower network traffic and media requirements on most networks. Also, contrary to a statement in the article, only Retrospect supports incremental backups to rotating sets. Finally, we incorrectly stated the cost for upgrading the single-user version of Retrospect to the ten-user version, Retrospect Remote. The actual list price is \$249.*

Bottom Line Distribution (512/892-4070, 800/990-5792) was inadvertently left out of the table. Bottom Line sells three drives, all equipped with Dantz software: DAT (Sony mechanism, one-year warranty), QIC (Exabyte mechanism, two-year warranty), and 8mm (Exabyte mechanism, one-year warranty).

More on E-Zines

■ IN "MEGA 'ZINES" DAVID POGUE REFERRED to a number of E-zines that he recommended (*The Desktop Critic*, May 1995). He states, "All of the 'zines . . . are available from . . . the usual Internet sites."

Well, excuse me, but I checked all of my usual Internet sites, and have not been able to find DT&G. It seems to me that it makes more sense to indicate addresses where each 'zine can be found.

*Tim Hommel
Windsor, Ontario, Canada*

We'd hate to publish an address, then find the files no longer available at that site. If you can't find DT&G on the Net, try the Macworld forums on America Online and eWorld (keyword/shortcut **Macworld**), where we've posted samples of each 'zine.—Ed.

■ NOT ONLY DO YOU FOLKS PROVIDE in-depth information about the world of the Macintosh every month, but

now you also reunite old friends at no additional charge!

"Mega 'Zines" featured photographs of pages from the E-zines in question. Your photograph of TidBits happens to show the byline of an article written by one Geoff Duncan, who was a great friend of mine in college four years ago. Plus, the byline gave Geoff's E-mail address, which I've been trying to find for months now (I knew he had to have one). I have written him and confirmed that he's the same Geoff I knew and befriended years ago.

Maybe you can turn this into a regular feature.

*Tarl Roger Kudrick
via the Internet*

Netscape News

■ ACCORDING TO THE MAY 1995 *Macworld Online*, Netscape 1.0N is "still free." Actually, it costs \$39 plus shipping and handling.

*Cynthia M. Bale
via the Internet*

We're both right—Netscape 1.0N is \$39 from Netscape Communications (800/638-7483), or free to educators and nonprofit groups.—Ed.

Flaming Blazing Modems

■ 'M BURNING UP AFTER READING "BLAZING Modems" (May 1995). The article was lacking in one huge area, which has been constantly underreported in all of the Mac literature so far. Yep, you guessed it: Apple's Express Modem/GeoPort technology. There was not the slightest mention of this type of communications option, which is something Apple has produced for over a year now. I am flaming you right now using it at 14.4 Kbps, but I would love to know how to smoke you in the future at 28.8 Kbps or even faster speeds. I would also like to fire up a telephony package using these tools, but have yet to hear much on the issue other than occasional alarms of soon-to-be-released software options. Shouldn't a Mac magazine cover Mac products? I hope you catch a significant backdraft on this article from Apple and your readers.

*Keith L. Ligon
via the Internet*

Apple has no 28.8-Kbps version of its Express modem and no immediate plans for one, so there was nothing to cover. As for GeoPort, no one, not even Apple, is taking advantage of it for serial communications outside of some PBX (private branch continues

See The Future Of Storage.

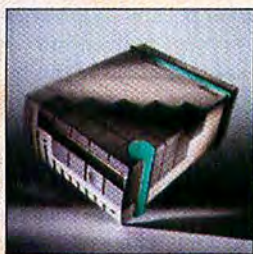
Pinnacle Micro. The optical storage leader.

TAHOE 230



The Tahoe 230 MB is the world's first portable optical drive, weighing only 1.8 lbs. It offers quick access time and fast data throughput, with each rewritable 3.5" disk storing 230 MB of data. With its optional travel case and battery pack, the Tahoe is the perfect solution for users on the go. **\$795**

SIERRA 1.3 GB



The Sierra 1.3 GB is the industry's fastest optical drive. It can be used as both a hard disk replacement and an on-line archiving system. Each 5.25" cartridge holds 1.3 Gigabytes of data, and boasts a 30-year shelf life. It is ideal for data-intensive applications such as graphics, CAD/CAM, multimedia or data archiving. **\$2,495**

RECORDABLE CD



It's recordable. It's affordable. It's the #1 selling CD recorder system. As a 2X CD recorder, it creates custom audio, video and data CDs up to 650 MB. As a 2X CD-ROM player, it reads thousands of educational, multimedia and audio CDs. With its unique backup utility, it offers fast, reliable archiving of your valuable data. **\$1,695**

ORRAY 5.2 GB



The Orray is the first optical drive to utilize multiple heads and disks, similar to hard disk technology. Designed for quick throughput, 4 MB/sec sustained, the Orray is ideal for digital audio/video and file server applications. Each removable, reliable, inexpensive optical media set holds up to 5.2 GB of important data. **\$9,995**

OPTICAL JUKEBOXES



Ranging from 20 Gigabytes to over 1 Terabyte, Pinnacle's optical library systems provide a centralized storage system to all users on a network. Designed for data management applications such as backup and archiving, HSM (Hierarchical Storage Management), document or graphics imaging. **From \$5,995**

OPTICAL MEDIA



Pinnacle Micro offers a variety of removable, inexpensive, high-performance optical media. By offering the highest quality in the industry, your data is protected (30 years for MO disks, up to 100 years for CDs). Expanding your data is as easy as purchasing more media.

RCD-74 • \$19, 3.5" 230 MB • \$39
5.25" 1.3 GB • \$169

To order or for a dealer near you call:

800.553.7070

Tel. 714-789-3000 Fax 714-789-3150

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY

Circle 115 on reader service card

If you're tie-dye and they're black-tie—



**Let the DOS on Mac card
from Reply tie your Mac
in with their PCs**

Now as a Mac user in a corporation with mixed DOS and Mac environments, you don't have to feel like you're left out in the cold.

Reply's DOS on Mac card is designed with a real 486 or Pentium OverDrive processor to deliver performance equal to a dedicated PC. Plugging directly into the PDS slot of your Mac the DOS on Mac card provides direct access to all your Mac peripherals. Open, run and print DOS/Windows applications, use DOS/Windows CD-ROMs, even copy and paste between Macintosh and Windows applications.

The DOS on Mac card is the fast, affordable way to run DOS and Windows on Macintosh Quadra and Centris and Power Macintosh 7100 systems.

**Call us today and
swim with the
rest of the gang.**

1-800-801-6898



Reply Corporation

The System Enhancement Company

Telephone: 408-942-4804 Fax: 408-956-2793
Reply Corporation, DOS on Mac and the Reply logo are trademarks of Reply Corporation. All other products referenced are trademarks of their respective companies.

exchange)—not modem—uses. Apple has yet to deliver the OS building blocks needed to implement the telephony features it has repeatedly promised, as we've noted elsewhere.—Ed.

Picking Nits

I AM A LONGTIME MACWORLD reader and subscriber (long before I started using a Macintosh). *Macworld* magazine sets itself apart because of its layout design and writing.

The word *codesigned* appeared in the May 1995 issue (*Power Mac News*). As we all understand, English is constantly evolving; words and phrases change over time. For example, *world-wide* has become *worldwide*. I may not necessarily agree, but I have come to accept the dropping of all hyphens in many hyphenated words. Some words may not be confusing without the hyphen. For instance, the word *co-operation* became *cooperation* and the word *co-worker* evolved into *coworker*. I have to say that *coworker* can be phonetically hyphenated, albeit incorrectly, into *cow-orker*. However, the hyphen should not be removed if doing so causes confusion. The word *co-design* should not be written as *codesign*. I hope that I have illustrated my point with the above examples.

Paul Huang
via the Internet

Hey, if *codesign* is good enough for Webster's Tenth, it's good enough for us.—Ed.

Billy-Goat Guff

THIS LETTER REVOLVES AROUND what is probably an insignificant issue for most readers of *Macworld*, which is probably why I have taken almost a year to write it. But goat breeders are a sensitive lot, and when our caprine friends are maligned, our hackles rise and we demand that the truth be known.

I am referring to "The Road to Power Macintosh" (*The Iconoclast*, May 1994). Steven Levy writes, "In their thinking, the first thing you would do upon switching from the Mac to a new RISC machine was to feed all your software to a neighborhood goat—who would munch on it happily, since it was garbage."

As for the myth that goats will eat anything, nothing could be further from the truth. In fact, they are very fussy about the condition of their food, and more finicky about the cleanliness of it than any other farm animal. Unlike their bovine, porcine, and ovine cousins, goats will not eat hay that has fallen to the dirty ground or been trampled by others in the

herd. The concept that goats eat garbage comes from their innate curiosity, which prompts them to nibble at nonfood items as a means of investigation—similar to the actions of human infants who put things in their mouths to explore them. I'm sure *Macworld* readers who are also parents would not want it known that their children happily eat garbage!

I am an avid reader of *Macworld* and look forward to its arrival as much as I do the various capriculture publications I receive. In future, please refrain from bad-mouthing, even in the most trivial way, a farm animal that does not get the recognition it deserves as a productive and *clean* contributor to agriculture.

Jackie Riley
President,
Alberta Goat Breeders Association
Kingman, Alberta, Canada

FWIW . . .

OK, SO YOU HAVE A VERY USEFUL, well-written, concise magazine, to reach Macintosh users of every level. My problem is your incessant use of acronyms. As an example, I read "Newton Branches Out" (*News*, May 1995). But I couldn't finish the article, because I didn't know what *PDA panacea*, *OEM*, *PCMCIA Type II slot*, or *wireless LAN* referred to. To me, you might as well be speaking ancient Egyptian.


C'mon, guys, give us neobytes a break. What's it all mean?

Dave Pierce
via America Online

We generally explain new terms and acronyms in *Macworld*, but due to space limitations we don't define terms at every use.

A dictionary of computer terms can help you out if you find yourself lost amid the technical jargon. I flipped through several books, looking for *PDA*, *PCMCIA*, *OEM*, and *LAN* in either a glossary or index. *The Computer Glossary: The Complete Illustrated Dictionary*, seventh edition (Amacom, 1995), was the only one I found lying around that defined all four terms. Interested readers can order it at 800/262-9699.—Ed. **m**

Letters should be sent to *Letters*, *Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically to CompuServe (70370,702), MCI Mail (294-8078), America Online (*Macworld*), eWorld (*Macworld*), AppleLink (*Macworld1*), or via the Internet (letters@macworld.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

in
here
you

decide
the
future

**Y
O
U
A
R
E
R
U
N
N
I
N
G**

New Microsoft® Project 4.0
On your Power Mac™.

You have to sort organize manage
People costs resources tasks
You have to line
Your problems up
Before you
Knock them down.



**Y
O
U**

You start with a list.
The Planning Wizard guides you.

**M
A
K
E
A
P
L
A
N**

It offers suggestions.
You make connections.
Balance workloads.
Skirt bottlenecks.
And everything will happen
Exactly when it should.

**T
H
I
N
G
S**

You compare
Your new plan
To the original.

**C
H
A
N
G
E**

You ask What if?
You get answers.
You make progress.

**S
P
R
E
A
D
T
H
E**

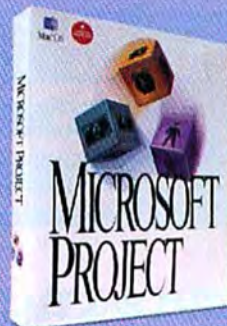
Show your plan
Show who
What
When
Where

**W
O
R
D**

How
Things will get done.

**G
E
T
G
O
I
N
G**

Show how much
Progress has been made
Show everyone
That nothing stands in their way.



Microsoft®

WHERE DO YOU WANT TO GO TODAY?™

Professional Graphics

Built for the new PCI Power Macintosh computers and the powerful 9500, ATI's XCLAIM GA meets the demands of design



and publishing professionals. It provides fast graphics, true color and high resolution detail and clarity, without breaking the bank

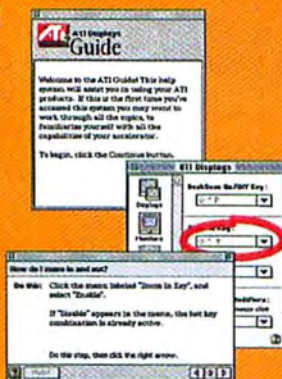
You want fast graphics.

You wish it were inexpensive.

You need XCLAIM™ GA.

100% Macintosh

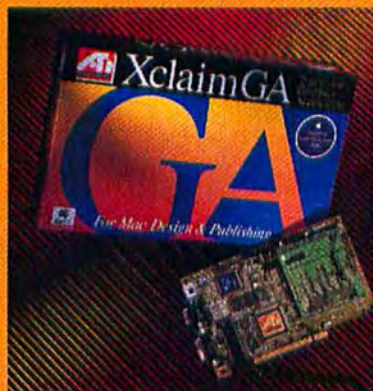
ATI's XCLAIM GA is designed exclusively for the Mac. Our powerful control panel allows you to easily access advanced features such as pan, zoom, and resolution and color switching. Walk through all these amazing features with AppleGuide. Easily connect any monitor without complicated adapter cables.



Blazing Performance and Features

Be more productive in your favorite applications. XCLAIM GA performs up to eight times faster¹ than unaccelerated graphics. Display twice the information on-screen with 1600x1200 resolution. And you don't have to compromise speed to get photo-realistic colors.

Application	Scrolling Time / Seconds with Acceleration ON and OFF
Quark Xpress 3.31 40 pages	26 / 136
Framemaker 50 pages	37 / 177
Adobe Photoshop 24 bit image*	20 / 169



Amazing Bottom Line

And we saved the best for last. The XCLAIM GA is affordably priced at \$449* for 2MB and \$649* for 4MB versions.

To find out more about this blazing and amazing product contact us at:
Fax Info Line to receive literature (905) 882-2600 Press 2 or
contact ATI at GO ATITECH 76004,3656 on CompuServe or on the Internet: <http://www.atitech.ca>

Copyright ATI Technologies Inc. ATI, mach64, XCLAIM are trademarks and/or registered trademarks of ATI Technologies Inc. All other product names are trademarks and/or registered trademarks of their respective manufacturers. Features, prices and specifications are subject to change without notice. *All prices are suggested U.S. retail prices, dealer may sell for less. ¹Performance tests completed on a Power Mac9500/120 with a resolution of 1152x870 at 16.7 million colors.

Circle 257 on reader service card



ATI TECHNOLOGIES INC.
33 Commerce Valley Drive East
Thornhill, Ontario Canada L3T 7N6
Telephone: (905) 882-2600
Facsimile: (905) 882-2620

MacBulletin

Two More Mac OS Licensees Apple senior vice president David Nagel recently told *Macworld* that Apple has licensed the Mac OS to "at least two other companies" that haven't yet announced products. Nagel declined to elaborate but said they were "significant names in the computer world." (For details on Mac OS licensing, see "Is Apple Serious about Clones?" in this issue.)

Radius Plans More Clones Radius (408/541-6100) will build new systems aimed at customers "whose demands may not be as specific" as those of buyers of Radius 100 publishing systems. The company has announced an exclusive distribution agreement with Ingram Micro, the giant distributor to more than 75,000 locations. The clones will provide specialized solutions for "a variety of market segments." Radius declined to comment on the systems' availability or their specs.

Microsoft-Intuit Merger Axed Over seven months after announcing their \$2 billion planned merger, Microsoft and Intuit will go their separate ways rather than face a prolonged court battle with the U.S. Department of Justice. The Justice Department filed suit to halt the merger, claiming it would be anticompetitive.

MS Office 4.2.1 Installer Troubles You're not alone if you've been unable to install the Microsoft Office 4.2.1 update on your 680X0 Mac. The installer on the CD-ROM version hangs when trying to write over the Office Manager preference file—meaning users must quit from the Installer back to the Finder. Microsoft (206/882-8080) says the first 16,000 CDs had this problem. Users with an affected CD can remove the preference file before running the installer. A new CD should be shipping by the time you read this.

Apple Cuts Cost of Multimedia Firing another shot in the battle with Microsoft for domination

of the multimedia market, Apple made steep cuts in the costs of its development kits and royalties for its hot QuickTime VR (for virtual reality). Royalties for software titles that use QuickTime VR now range from nothing to about 8 cents per unit, depending on volume. The previous range was from about 40 cents to 80 cents per unit, a huge difference for developers. In a related move, Apple also no longer charges developers royalties when they ship run-time versions of products made with the Apple Media Kit.

WordPerfect 3.5 to Run Faster Novell (801/225-5000) has announced that with the next version of WordPerfect, due later this year, users will be able to create HTML documents without typing text tags. WordPerfect 3.5 will also be faster, support Apple's text-to-speech technology, and ship with Netscape's Navigator web browser.

AOL Acquires More Internet America Online has expanded its Internet presence by acquiring Global Network Navigator. GNN provides 180,000 members and more pieces required for a separate AOL Internet service, scheduled to launch in August. Recently, AOL has acquired Advanced Network & Services' nationwide high-bandwidth network; WAIS, Inc. (Wide Area Information Servers), with tools for publishing information on the Internet; and BookLink and NaviSoft, which were both primarily Internet tool providers.

Saber Software Sold At press time, Saber Software, which entered the Macintosh network-management market by buying TechWorks' GraceLAN software line, was itself acquired by McAfee (408/988-3832), a PC network-management and antivirus software company, for \$40.6 million. For more about network tools like GraceLAN changing hands, see *Networks* news, in this issue. [m](#)

News

EDITED BY TOM MORAN

IN THIS ISSUE

- p. 35 Mac Games on the Rise p. 36 IDE Drives: A Caution p. 36 Gig Drives Get Cheap
p. 37 Higher-Capacity CD-ROMs p. 41 Apple's Power Mac 9500 versus PCs
p. 126 QuarkXPress 4.0 p. 134 Apple's Business Model p. 150 Network Tools in Transit

Expanding the PCI Mac Line



While Apple struts its new Power Mac 9500 on the main stage (see the feature article "First of a New Breed," in this issue), at least two other Power Macs are waiting in the wings. According to internal Apple documents obtained by *Macworld*, new systems code-named TNT and Nitro will share the 9500's PCI (Peripheral Component Interconnect) bus and new RAM architecture, and the Nitro will also carry a PowerPC 604 processor. Apple has declined to comment on the TNT or Nitro, although the company did confirm that it will unveil new PCI-based Power Macs later this year. Because the internal Apple documents were preliminary, the capabilities and configurations reported here could change in the shipping versions. However, the details here are more complete than those *Macworld* first reported nine months ago (see "PCI Power Mac Preview," *News*, December 1994).

Brains and Brawn The Nitro's 604 is expected to run at 100MHz, while the TNT will carry an 80MHz PowerPC



601. As in the 9500, the CPU and oscillator (clock chip) will be mounted on a processor subsystem card that can be easily removed and replaced with an upgrade. The Nitro and TNT will both have a fast RAM cache of up to 4MB.

Apple's change in memory standard will carry over to these two PCI Power Macs—the TNT and Nitro will each have 8 DIMM slots, topping

out at 1GB of RAM when the slots are fully populated with 128MB DIMMs. As on the 9500, DIMMs can be added one at a time instead of in pairs, and 4MB, 8MB, 16MB, 32MB, 64MB, and 128MB DIMMs rated at 60ns are supported. The TNT will require a minimum 8MB of RAM, while the Nitro will require 16MB—base memory that must be supplied with

DIMMS, as none of the PCI machines will come with RAM soldered on the motherboard.

Expansion Options The TNT and Nitro will each have three PCI expansion slots. The TNT is the smallest of the PCI Power Macs and will ship in a case similar to a 7100's, with a single internal hard drive. The Nitro will occupy a tower-style box resembling an 8100's, with bays for addition-

al internal hard drives—both the TNT and Nitro will feature dual SCSI buses, with the internal SCSI-2 Fast bus supporting data-transfer rates up to 10 MBps. Internal CD-ROM drives will be available as options for both systems. Both machines are expected to have stereo sound-in and -out jacks, two GeoPort serial ports, and a single ADB port. Like the 9500, these second-generation Power Macs will include autosensing 10BaseT (RJ-45) and AUI Ethernet ports.

Display Systems Unlike the 9500, the TNT and Nitro will both have video circuitry on the motherboard running Mac-standard DB-15 connectors—the TNT will ship with 2MB of VRAM (expandable to 4MB), while the Nitro will come fully loaded with 4MB. In another memory shift, the TNT and Nitro's VRAM will be 32-bit DIMMs. With 2MB of VRAM, users will see 16-bit color on monitors at up to 1152-by-870-pixel resolution (the standard resolution of a 21-inch monitor); adding another 2MB (for a total of 4MB) buys users 24-bit color at that pixel resolution.

According to the internal Apple documents, the two machines add a different display twist: a Video PCI (VCI) slot that supports a subset of the PCI calls (see "Why PCI," June 1995). The tweaked bus will run at one-half the system speed (up to a maximum 50MHz) and is expected to provide even greater performance than the standard PCI bus. The slot is intended for graphics acceleration and processing cards; standard PCI cards will not work in it.

On-Board Digital Video Apple will continue bringing its AV technologies into the Mac mainstream with this generation of Power Macs; plans call for both the TNT and the Nitro to have a digital-video subsystem integrated into the motherboard. Both machines will accept composite-video and S-Video input (640 by 480 pixels at 30 frames per second, NTSC, PAL, and SECAM) through a 7-pin video-input

port. The Nitro will also have a 7-pin video-out port that outputs a second, separate video stream as interlaced composite-video or S-Video suitable for an NTSC or PAL television monitor. With 4MB of VRAM, the Nitro won't blank out the main screen while it plays video, and it will support genlock, for laying computer graphics over video playback. Both the TNT and Nitro will sport a DAV slot, although it will not work with cards built for the DAV slots on previous models.

New System Software Like the 9500, the TNT and Nitro will ship with a revised version of System 7.5, code-named Marconi, that incorporates new features, hardware support, and performance enhancements. The TNT and Nitro are expected to ship this summer.

Sources also indicate that Apple has yet another PCI Power Mac, code-named Catalyst, in the offing. This machine is expected to ship in a 6100-style flat box and have a single PCI slot.

—CAMERON CROTTY

You Can Play That on a Mac?

MAC GAMES
GAINING MOMENTUM

Traditionally, Apple has treated game developers like telephone solicitors: if one gets on the line, hang up quick. But these days the company is chasing Macintosh sales wherever it can find them, the home market is growing like gangbusters (over 31 percent of PCs purchased in the United States in 1994 went into the home, according to a recent Dataquest survey), and there are few surer ways to a consumer's heart than through the trigger finger. And so, Apple is pleased to see the Macintosh

games market blooming.

Bungie Software (312/563-6200) led off in December 1994 with *Marathon*, a smooth, first-person search-and-destroy mission in the mold of *Wolfenstein 3D* and *Doom*. By the time you read this, one of the most popular PC games ever, *Doom II* from id Software (214/613-3589), will be available for the Macintosh. Origin (512/335-5200) has ported its epic space-opera/dogfighting game, *Super Wing*



Commander; LucasArts' (415/721-3394) *Doom*-style game, *Dark Forces*, is expected to ship for the Mac by June. After many years of relative drought, it looks like green times ahead for Mac games.

Doing the Numbers There are two major reasons for the expanding Macintosh game scene: market share and horsepower. In contrast with its uphill battle in the corporate market, Apple has had great success in selling Macs, particularly Performas, to home consumers. According to the recent Dataquest study, Apple captured 22.9 percent of the world sales of multimedia computers in 1994, which translates to 2.4 million such machines shipping in a single year. These are respectable numbers, especially when you consider that most PC game companies would consider a game that sells 200,000 copies a rousing success.

Apple's move to the PowerPC CPU has also broken down barriers to action games on the Macintosh. For years, the Mac's graphical

CompuServe Adds Free Internet

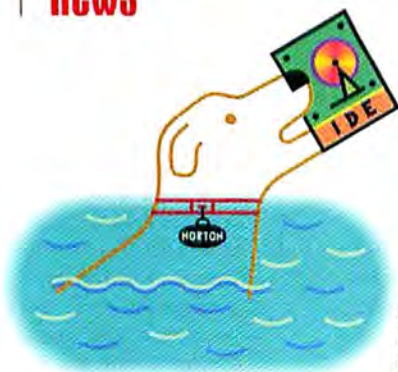
Upping the competition among online service providers, CompuServe (614/457-8600) is giving its subscribers three hours of free Internet access per month. Additional hours are billed at \$2.50 each. CompuServe has also announced the Internet Club, which gives users 20 hours of Internet access for \$15 a month in addition to the standard \$9.95 basic CompuServe membership fee.

Microsoft Fixes Up Office

Microsoft has begun shipping Microsoft Office 4.3.1 for the Macintosh and Power Mac, a version that was necessary because of problems with Word 6 and Excel 5.0, two components of the software suite. Office 4.3.1 comes with Word 6.0.1, which Microsoft says launches 10 to 15 percent faster, has fewer INIT conflicts, does Word Count faster, keeps up with fast typists, and includes other fixes. The latest Office also includes Excel 5.0a, which loads and saves files faster and has had a bug fixed in its linking feature. Registered owners of Office 4.2 are being notified of the release and can get it for no charge by calling 800/315-5081.

Apple Upgrades At Ease for Workgroups

Apple has upgraded its At Ease for Workgroups access-control software by adding a new Finder interface and allowing more control by administrators. Administrators can now select one of two environments for different users: one with large buttons and folders (for kids and novices), and the usual Finder for the more experienced user. The administrator can give control over passwords and other functions to instructors in a school, for instance, and can limit access to CD-ROM and floppy disk drives. Slated to ship in mid-May, At Ease for Workgroups 3.0 will list for \$295.



IDE Drives: A Caution

THIRD-PARTY DRIVE UTILITIES ON THE WAY

If you've recently purchased a Macintosh with one of the less-expensive IDE drives Apple has begun using, such as those in the Quadra 630 and PowerBook 150, you need to know about a few possible problems. While IDE drives are a standard on PCs, their minority position on the Mac platform has led some 630 and 150 owners to worry about what they'll do when their IDE drive needs to be reformatted, or worse, when it crashes. In most cases the old standby method of hooking up an external SCSI hard drive with SCSI utilities on it will not work anymore.

Apple includes basic IDE software with the 150 and 630, but third-party developers have begun offering IDE formatting and recovery utilities that claim more features and more power than Apple's offerings.

Symantec (503/334-6054) says Norton Utilities for Macintosh has supported IDE drives since version 2.0. Symantec points out that even previous versions of Norton Utilities and subsidiary Central Point Software's MacTools can recover files lost on IDE drives through some common problems.

Vendors of hard drive-formatting utilities are adding support for IDE to their existing SCSI formatters. In Disk Manager Mac 4.0, for example, Ontrack Computer Systems (612/937-1107) includes support for multiple IDE parti-

tions and passwords, two features Apple's software doesn't provide. Anubis's developer, CharisMac (916/885-4420), notes that Apple's IDE software doesn't take advantage of the cache present on most IDE drives. Anubis does, and CharisMac says this yields improved disk performance. FWB plans to support IDE drives in Hard Disk ToolKit by early 1996.

Since the total IDE cable length is limited to 18 inches, and since the IDE spec supports a maximum of two devices, aftermarket sales of IDE drives may be small. APS (816/483-6100) points out that the 630 includes an external SCSI port, so common external SCSI drives can be used with the machine. Even so, the company plans to offer two or three internal and external IDE drives.

Before they increase their commitment to IDE, some vendors say that they want to see Apple demonstrate its own commitment to the interface. Since only one desktop Mac uses IDE (so far), and since Apple doesn't yet support more than one IDE device per Mac, vendors wonder how many Macintosh owners will want their products.—JIM FEELEY

Gig Drives Break \$500 Barrier

A MEGABYTE NOW COSTS AS MUCH AS A CANDY BAR

In 1990, \$500 bought you a 60MB hard drive. Now Quantum, Seagate, and others plan to offer 3½-inch drives with over 12 times the capacity and at a lower cost—just pennies per megabyte. While the price of an entry-level drive hasn't dropped, the cost per megabyte has—from over \$8 per megabyte to under 50 cents.

Quantum, for example, recently introduced the single-platter Fireball 540 SCSI-2 and two-platter Fireball 1080 SCSI-3 hard drives, which store 540MB and 1080MB, respectively. Both drives are expected to sell for well under \$450 list price.

Manufacturers say improved manufacturing and quality control are partly responsible for the drop in the

cost per megabyte of entry-level storage. More interesting, high-end hard drive technology is now migrating to entry-level drives.

For example, the use of PRML (partial-response, maximum-likelihood) read-channel technology in entry-level drives allows each square inch of a drive's platter to hold about 400Mbits of data compared with about 310Mbits for drives using analog peak-detect read channels.

Since each inch of data



The Quantum Fireball 1080 is an example of the recent generation of low-cost 1GB hard drives.

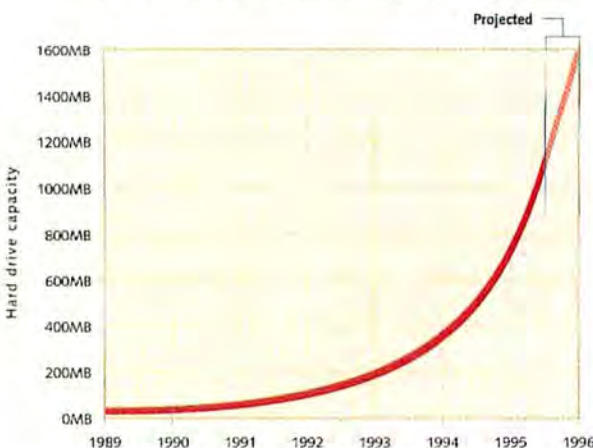
track holds more data, PRML drives can spin more slowly than non-PRML drives while achieving the same data throughput. Lower spin speeds for a drive negate the need for more-expensive motors and bearings.

According to drive-industry representatives, the areal densities of sub-\$500 drives will continue to increase with the incorporation of impressive new technologies such as magneto-resistive (MR) read-write heads. But MR heads are currently more expensive than the widely used inductive thin-film heads.

To make sure they can use more-expensive moving parts such as MR heads and still make their price points, drive makers want to reduce the cost of stationary hard drive parts. Quantum's 420MB and 850MB Trailblazer drives, for example, use a stamped-metal base, rather than the cast-metal base used by most modern drives. Quantum says using a stamped base sharply

Hard Drive Value: What \$500 Buys

In the past few years, the hard drive capacity that \$500 buys has risen exponentially. Competition, new technologies, and end-user demand are all contributing to this phenomenon.



reduces costs without reducing reliability. The company said it is considering using stamped-metal bases in other models of its drives.

These technologies and economies will lead to single-platter gigabyte drives by the second half of this year, many manufacturers say. With any luck, Microsoft won't ship Word 7 before then.

—JIM FEELEY

The CD-ROM Squeeze

NEW DEVICES WILL HOLD 3.7GB TO 10GB

CD-ROMs just don't seem as big as they once did. In these days of digital video, graphics databases, and complete text libraries, 580MB doesn't go very far. At least, that's the view of companies developing a new generation of high-density CDs. These companies want to put all of the movie *Doctor Zhivago* on a single 5-inch CD.

Two upcoming 5-inch CD formats are battling to become the digital replacement for home VCRs. Both new formats aim to deliver over 135 minutes of full-screen MPEG-2 video on one side (or layer) of a 5-inch CD. And just as the consumer audio CD led to CD-ROM technology, developers plan to adapt their high-density video CDs for computer use.

For home video, a Toshiba-led consortium appears to have more support from content providers in Hollywood than does the competing Sony/Philips alliance. But for computer data uses, the race hasn't started.

Sony and Philips' HDCD format stores 3.7GB of data in a single-sided, single-layer 5-inch CD and 7.4GB in a single-sided, dual-layer CD. The HDCD drive reads the dual-layer CD by adjusting the focus point of the reading laser. Since the drive uses a 635-nanometer red laser (a

shorter wavelength than in existing drives), both the distance between tracks and the sizes of the data pits can be smaller, allowing for increased data density. Sony claims that HDCD drives will offer data-transfer rates of over 1.2 MBps. Sony says HDCD drives and CDs will be available in the second half of 1996 for less than \$1000. Sony's future plans include using blue diode lasers that will read CDs holding up to 11GB of data.

The Toshiba-led consortium also uses a shorter-wavelength laser to increase data density. Its SD-ROM, based on Toshiba's consumer-oriented Digital Video Disc (DVD), holds 5GB on one side of a 5-inch CD. This capacity doubles to 10GB when data is written to both sides of the CD. Toshiba

reading both sides of the CD will require either flipping over the SD-ROM or using a drive with optical pickups on each side of the CD. On the upside, Toshiba plans to offer rewritable DVDs.

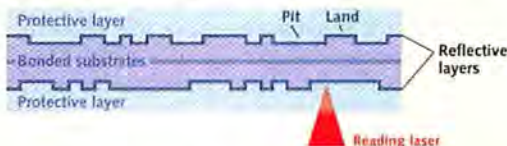
Both systems use an ISO 9660-compliant file structure that can read existing CD-ROMs. But since each system uses a slightly different method of encoding data, neither drive can read CDs created for the other system.

Apple, while impressed by the storage capacities of these devices, isn't ready to endorse either format. Apple, Microsoft, Compaq, IBM, and Hewlett-Packard together urged the Sony and Toshiba groups to develop a unified standard for the high-density CDs. The companies want to avoid a costly battle like that between VHS and Betamax

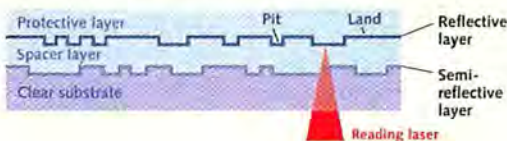
Two Double-Decker CD-ROMs

New technologies enable CD-ROMs to hold more data. Toshiba and Sony have upped their CDs' capacities by increasing data density: making the pits and lands—the structures that represent data on the disc—smaller. To double those increased capacities, both companies are putting two separate data layers on each CD, but they're doing so in different ways.

Toshiba's Super Density format holds 5GB of data on each side of its disc (Toshiba hopes to increase this capacity in the future). The disc must be flipped over to read the other side.



Sony's HDCD format holds 3.7GB on each of its two layers. Both layers are read from the same side of the disc; there is no need to flip the disc to access data. Sony says the drive seamlessly changes laser focus, from one layer to the other, when it needs to.



claims an average random-access time of 150ms and a sustained data-transfer rate of 1.2 MBps, with SCSI-2 bursts up to 4.2 MBps. Drives aimed at the computer market should be available by the end of 1995 for about \$500.

One potential drawback to Toshiba's format is that

VCRs. Apple, for one, feels that such a battle will delay the adoption of high-density CDs by computer manufacturers, software developers, and customers. At press time, the Toshiba and Sony groups had not announced plans to work together on a single standard.—JIM FEELEY

PowerPrint for QuickDraw GX

GDT Softworks (604/291-9121), maker of the PowerPrint series of Mac drivers that work with a wide variety of printers, has brought out a QuickDraw GX-compatible version of the product. Called PowerPrint GX, the compilation of drivers will list for \$199, or \$249 on CD-ROM. The company is offering upgrades from its existing product line.

QuickTime to Add Music Software

To make it easier to manipulate and send music on a Macintosh to MIDI instruments, Apple will add Opcode Systems' Open Music System computer-aided composition software to the QuickTime multimedia architecture. Designed to help multimedia authors and professional musicians, the addition should be complete by the end of 1995.

QuickTime 2.0 for Sale on Internet

As part of its strategy to make QuickTime a cross-platform standard, Apple has begun selling its Macintosh and Windows versions of QuickTime for \$9.95 over the Internet using an innovative service from First Virtual Holdings (619/234-1300). First Virtual's Internet Payment System also offers a forum for other commercial services over the Net. The customer sets up an account over the phone by voice, and never sends a credit card number over the Internet.

HyperCard 2.3

Apple (408/996-1010) has revved HyperCard to version 2.3 and for the first time will ship the authoring software in native versions for both 680X0-based Macintoshes and Power Macs. The Power Mac version runs about four times as fast as its predecessor. HyperCard 2.3 also has new color painting tools, automated button tasks, and the ability to speak text using Apple's PlainTalk text-to-speech software.

"YOU CAN PLAY"^{continued} sophistication was its own undoing when it came to games. Even today, most PC games are DOS-based, and written to a low, 320-by-200-pixel resolution available only in DOS. Ever since 13-inch monitors came out, standard Mac resolution has been 640 by 480 pixels, leaving PC developers with a dilemma: if developers bring games over at their original resolution, Mac gamers will be left squinting at a postage-stamp-size image.



Macintosh users can now enter the *Star Wars* universe in *Dark Forces*, a *Doom*-style game from LucasArts.

There are ways to increase the image size—a developer can insert a pixel-doubling routine, which writes two or more pixels to the screen for every image pixel. Or the developer can re-create all the game artwork at the higher resolution, a costly, labor-intensive process. In either case, the Mac CPU running

the game must handle five times as many pixels as its PC counterpart. On 680X0 machines, this means that frame rates slow to a crawl unless a developer is willing to do some low-level tweaking.

Such tweaking efforts would have been worthwhile had Apple blessed the game market early and often, but when confronted with Apple's legendary antigames stance and lack of support for games developers, most game makers simply threw up their hands and turned to the large, profitable PC market. These days, Apple is welcoming game developers with open arms, and Power Macs are providing the zip to keep those screens full of pixels hopping along.

Welcome to the Party The improved conditions are leading more PC game companies to commit to the Mac. One such company is LucasArts. Bolstered by the success of last year's *Rebel Assault*, the company is bringing *X-Wing* to the Mac, complete with redrawn, high-resolution artwork; the combat sequences will use the improved flight engine developed for *Tie Fighter*. *X-Wing* should ship

THE AMCoEX INDEX OF USED MACINTOSH PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
PowerBook 140/4MB/40MB	\$650	+\$25
PowerBook 165/4MB/80MB	\$1025	\$0
PowerBook 180/4MB/80MB	\$1350	-\$50
PowerBook Duo 230/4MB/80MB	\$725	\$0
Mac Classic II/4MB/40MB	\$450	\$0
Mac LC II/4MB/40MB	\$325	-\$75
Mac IIx/3MB/40MB	\$400	\$0
Mac IIcx/4MB/80MB	\$675	+\$25
Mac IIfx/4MB/80MB	\$650	-\$50
Centris 650/8MB/230MB	\$1200	-\$75
Quadra 900/8MB/160MB	\$1775	-\$75
Power Mac 7100/66/8MB/350MB	\$2200	\$0

Index provided by the American Computer Exchange of Atlanta (800/786-0717). It reflects sales during week of May 29. Configurations include keyboard and exclude monitor and display board for noncompact models.

this fall on CD-ROM and include the *Tour of Duty* adventures previously sold separately for the PC.

Even more exciting is LucasArts' commitment to bring future releases out roughly simultaneously for Macs and PCs. Mac gamers will see how serious the company is when the Mac version of *Dark Forces* hits the streets only two months after its PC counterpart, which shipped in March. *Full Throttle*, a tongue-in-cheek adventure game starring you as the leader of a biker gang, will follow the same pattern, with the Mac version expected to ship in midsummer.

If your game tastes require more thought and less twitch, several companies plan to capitalize on all those Macs equipped with CD-ROM drives. This spring, Sony Imagesoft (310/449-2999) will ship *Johnny Mnemonic*, based on the movie of the same name. Virgin Interactive's (714/833-8710) horror-adventure *11th Hour* (the sequel to the critically acclaimed *7th Guest*) is due out in June, and Japanese game giant Capcom (408/774-0500) has announced that in October it will ship *Fox Hunt*, an interactive movie adventure.

Not to be outdone, Mac developers have their own plans for 1995. *MacPlay* (714/553-6678) will be shipping a Mac version of *Descent*—a

space shoot-'em-up. Velocity (developer of *Spectre VR*; 415/776-8000) has a 3-D action game called *JetSki Rage* slated for later this year. Reality Bytes (the folks who wrote *Sensory Overload*; 617/621-1555) has another game planned for the holidays. And Bungie Software is looking at new releases with an eye toward this fall.

Some developers remain cautious. Origin, which recently shipped *Super Wing Commander* for the Macintosh, is one of those companies. According to media relations manager David Swofford, the company is not ready to jump full bore into the Mac market, and it will be watching the sales of *Super Wing Commander* closely to determine whether to port future titles. Spectrum HoloByte is another company waiting for early sales numbers on PC games before it goes ahead with Mac versions, creating at least a six-month gap between releases for the different platforms. And a company spokesperson told *Macworld* that Spectrum HoloByte had no plans to update the Mac version of *Falcon*, its premier flight simulator.

The buildup of Mac game titles may be slow, but it's accelerating—the market is there, the horsepower is there, and Apple is finally returning game developers' phone calls. —CAMERON CROTTY

BUGS & TURKEYS



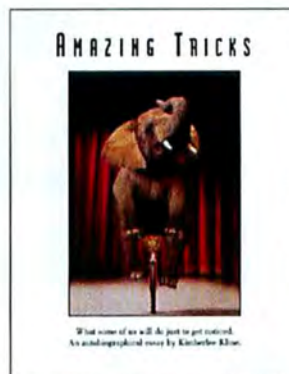
Power Macintosh users may encounter "out of memory" errors using version 5.0 of *Intermission*, a screen-saver engine from Delrina (416/441-3676). The company is working on the problem and expects to fix it in a future release, which will be mailed free to users who request it.



The Epson Stylus Color prints at 720 by 720 dpi—sort of. Epson admits that the printer rasterizes images at 360 dpi, but halftones them at 720 dpi. Photos printed at 720 dpi look fine—but line art looks as if it's been printed at 360 dpi. Epson says it is considering making changes to the next version of the driver.

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*.

Tiny had the hard part.
Scanning it was easy.



Introducing HP ScanJet Scanners

They're simple to set up. Even simpler to operate. And with software that makes scanning more automatic, using HP ScanJet scanners has never been easier. The new HP ScanJet 3c now offers internal 30-bit color at 2400-dpi enhanced resolution (600-dpi optical), and also includes free Corel PHOTO-PAINT for PCs. The HP ScanJet 3p delivers 1200-dpi enhanced resolution (300-dpi optical). Both come with OCR software. For more information, call 1-800-SCANJET, Ext. 9232.*



Grayscale
Now only \$399



Color - \$1,179

The easiest thing
you'll do all day.

*For Macs, free Adobe Photoshop LE.™ Suggested U.S. list prices. †In Canada, call 1-800-387-3867, Ext. 9335. ©1995 Hewlett-Packard Company PE12526

 **HEWLETT®
PACKARD**

There's the one

where you're suddenly standing onstage
at the senior prom wearing only really
big underwear and a fez.

And everyone is laughing hysterically,

including Mr. Dimnitz,
your guidance counselor.

Then there's the one

where your computer's
hard drive fries 30 minutes before the big
presentation, and you've

lost everything.



HEY, WE CAN'T HELP YOU AVOID NIGHTMARES AT NIGHT, BUT WE CAN HELP WITH THE DAYTIME ONES. CHECK OUT RETROSPECT. IT AUTOMATICALLY BACKS UP ALL FILES ON YOUR MACINTOSH. WHETHER IT'S POWER LOSS, THEFT, FIRE, OR DOOFYNES, IT'LL SAVE YOU HOURS OF RECREATING AND WAITING IN UNEMPLOYMENT LINES. RESTORES ARE QUICK AND COMPLETE. IT BACKS UP DATA TO ANY STORAGE DEVICE, AND HAS OPTIONAL COMPRESSION AND ENCRYPTION. PLUS, JUST ADD A REMOTE 10-PACK AND YOU HAVE NETWORK CAPABILITY. WAKE UP. CALL 1-800-225-4880 FOR MORE INFORMATION.

Don't lose it.

dantz

Circle 26 on reader service card

Retrospect and Retrospect Remote are registered trademarks of Dantz Development Corp. Macintosh is a registered trademark of Apple Computer, Inc. Dantz Development Corporation 4 Orinda Way, Building C Orinda, CA 94563 510 253 3000 Fax 510 253 9099

Power Mac News

New 9500 versus PCs

THE 9500 HAS ROUGH PARITY WITH TOP PCs

To blow the Pentium out of the water—that was the promise of the PowerPC 604 CPU jointly developed by IBM, Motorola, and Apple. Intel's Pentium microprocessor would pale by comparison. But Macworld Lab tests show that the newest Power Macintosh, the 9500, which uses a 132MHz PowerPC 604, while extremely fast, does not always surpass the newest PCs using the new 120MHz Pentium. (For more details on Apple's new Power Mac 9500 system see "First of a New Breed," in this issue.)

The 604-based 9500 clearly performs better for raw CPU and FPU work, but PCs still have the edge in disk access. And Macworld Lab's benchmark results show that the way that applications are designed can either overcome a platform's weaknesses or ignore its strengths. For example, Adobe Photoshop 3.0 for Macintosh has been optimized so its disk I/O is faster on a Mac than on a PC, even though the PC's I/O throughput is generally greater than a Mac's. And Microsoft's Excel and Word run significantly faster on a PC than on a Macintosh, even when doing CPU-intensive calculations.

The relative performance of a Windows PC versus a Macintosh depends as much on what software you run as it does on anything else—a

faster CPU does not always mean a faster computer. This trend should continue this summer, when several vendors are expected to ship the first 100MHz PowerPC 604-



based PCs. (The systems will run a beta version of Windows NT 3.5.1.) Most Windows programs run under emulation in NT, so the systems will likely be slower than their Macintosh (and Pentium) counterparts. Their Mac

counterpart is the 120MHz 604-based Power Mac 9500/120. But the few beta native-NT application programs (Excel and Word), run extremely fast on the PowerPC NT personal computer.

While Apple continues to push the performance envelope, it has by no means left the competition behind. It may take the next generation of the Mac Operating System, code-named Copland, to remove some of the performance barriers in the Mac's design, as well as continued use of faster RAM and system buses, to let Apple take full advantage of the PowerPC's impressive capabilities. (For more on related performance issues, see "Power Mac versus Pentium PC," *Power Mac News*, *Macworld*, February 1995.)—GALEN GRUMAN AND MACWORLD LAB



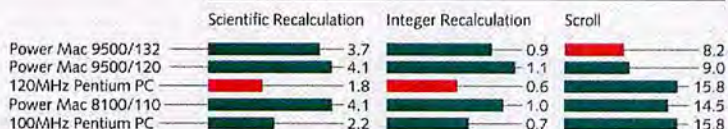
The 9500 versus the Latest PCs

Although the Power Mac 9500 is a much faster Mac, improvements in the designs of Pentium PCs have kept the performance race tight. The 9500 is often faster in CPU-dependent operations and in graphics-intensive tasks, but Pentium PCs hold the edge in disk I/O. For scientific calculation tasks,

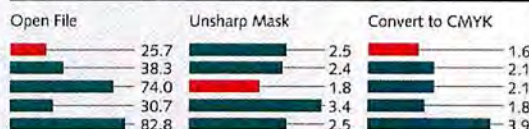
the Mac tests out faster (curiously, not in Excel, but that's probably due to Microsoft's poor design of the Mac version compared with the Windows version; similarly, Fractal Design Painter for Windows' poor memory management makes it much slower for manipulating large images than the Mac version).

Products are listed in decreasing order of overall performance. ■ = Best result in test. Shorter bars are better. Results are in seconds.

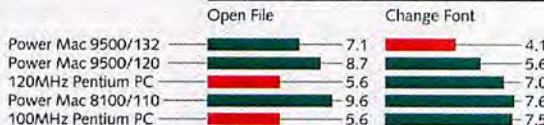
Microsoft Excel 5.0



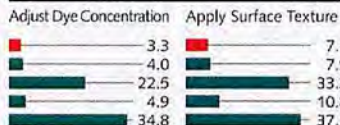
Adobe Photoshop 3.0



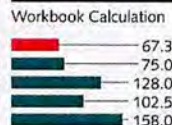
Adobe PageMaker 5.0a



Fractal Design Painter*



Wolfram Mathematica 2.2



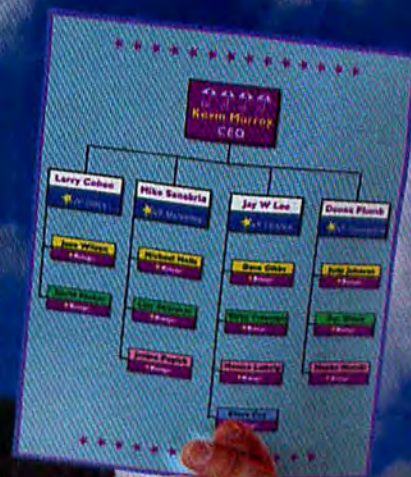
*For compatibility reasons, we tested version 2.5 for the Power Macs and version 3.0 for Windows. Macworld Lab tests show the two versions have nearly identical performance.

BEHIND OUR TESTS

We tested the Windows and Mac versions of the same programs performing representative high-end tasks on a PC equipped with 16MB of RAM, a 256K cache card, and an accelerated video card driving a 17-inch monitor at 8-bit color, using Windows for Workgroups 3.11 and MS-DOS 6.22. The Power

Macs were tested as described in the feature "First of a New Breed," in this issue. The 120MHz Pentium PC is a Gateway 2000, the 100MHz Pentium PC is from Micron Technology.—Macworld Lab testing supervised by Mark Hurlow and Danny Lee

I CAN DRAW! I CAN CHART!



HEAVENS, it's easy now that
 ClarisDraw comes with automatic diagramming for
 UNDER \$200!

At last. Whether you need to create freeform graphics, great looking charts, or both, you'll be delighted to know that the most popular draw package on the Mac – ClarisDraw® – now comes with award-winning ClarisImpact® 1.0 software bundled right inside*. Now you can zip through organizational charts, flow charts, network diagrams, calendars and more, automatically, thanks to the revolutionary intelligence in ClarisImpact. So, for heavenly graphics, fly to your local reseller, or call: **1-800-293-0617 ext. 688.**

CLARIS®
 Simply powerful software™

For Canadian pricing call 1-800-361-6075. *Available only in U.S. & Canada. Expires 9/30/95. Includes ClarisImpact 1.0 software on CD-ROM with on-line documentation. ©1995 Claris Corporation. All rights reserved. All trademarks are property of their respective owners.

Macworld Online

by Macworld Online Staff

Today's media bristles with stories of online espionage, break-ins, and sabotage; and individuals who blithely offer their Social Security or credit card numbers over the telephone are generally loath to send the same information via the modem. In truth, the telephone is far from being an inviolate communications vehicle, and wireless phones are an audio voyeur's delight. Online communications, meanwhile, are gradually becoming more secure.

Tales from the Encrypt

Commercial online services provide more safeguards than does the Internet, but with E-mail there is always the chance that your message might be intercepted, forwarded, or accidentally sent to the wrong address. Many online folk resort to desktop encryption schemes—such as Phil Zimmerman's robust freeware program PGP (Pretty Good Privacy)—that provide at least some degree of security. Keep in mind, however, that for PGP, as for many other encryption schemes, foreign distribution is controlled by U.S. export laws. (The RSA Data Security algorithms used by the PGP program are classified as "munitions.")

PGP uses public-key cryptography, which requires two "keys." The private key is similar to your bank card's secret PIN; your public key may be distributed as widely as you like. When you encrypt

something with your private key, only your public key can decrypt it. Similarly, if someone encrypts something using your public key, only your private key can decode it. This scheme ensures both privacy and authentication. PGP's interface is somewhat clumsy but remarkably secure. For more information on PGP and other privacy tools, go to http://www.acm.usl.edu/~dca6381/c2_mirror/crypto.html.

Several solutions have appeared on the electronic-commerce front that promise secure access and transactions. Particularly encouraging for online entrepreneurs is Terisa Systems' recent announcement that the SSL (Secure

Socket Layer) strategy employed by Netscape's ubiquitous Web browser will be interoperable with the more open sHTTP (Secure Hypertext Transfer Protocol) standard. Other encryption schemes, such as DigiCash and CyberCash, promise easy, secure online transfer of even small amounts of money in the not-distant future.

Creating Passwords

Passwords are the latchkeys that grant online internaunts entrée to vast electronic communities and digital data banks. All commercial online services and many Internet sites require at least one password for access. The reasons

are simple—security and more accurate head counts. Here are a few tips for creating better passwords.

- Never use your own or your child's name or nickname. Spelling a name backward or scrambling the letters won't help, either. Hackers can write algorithms that check for these permutations faster than you can type the rickety password.

- Never use a correctly spelled word; checking against an unabridged dictionary is a common ploy of hackers. Adding a number or two to the mix makes the password more difficult to crack, but never use personal alphanumeric combinations such as your license-plate number.

- Choose a password that is at least 6 characters long and includes number, option-key, mixed-case, and punctuation characters whenever the service allows. Use mnemonic devices such as the first letters in words from a favorite song or poem (for instance, "I was born in a crossfire hurricane" becomes IWBIACH). To make a password more memorable, use a nonsense word, like nUmB#s or tE@4Tw0, that is pronounceable.

- Don't share your password with anyone, and don't store it where a digital interloper might find it. If you have multiple passwords, fight the temptation to keep a list. If you have a password list, consider encrypting it. **m**

LIVE-EVENTS CALENDAR

Plug into Macworld Online for our weekly real-time events that feature some of the brightest stars in the Macintosh universe. In addition to our troubleshooting clinics, we bring editors and writers, artists and visionaries directly to your desktop. It's a great place to spend an hour learning about your Mac. Please come armed with questions, comments, and critiques. America Online events are on Thursdays and eWorld events are on Wednesdays. All events are at 6 p.m. Pacific standard time.

Ask Cary Lu July 5, eWorld

Contributing editor and monthly *PowerBook Notes* columnist Cary Lu brings his considerable knowledge to bear on all your Macintosh-related questions.

Tag-Team Troubleshooting July 6, AOL

Macworld Online's Steve Costa and Matthew Hawn take turns tuning, tweaking, and torquing your troubled Macintosh with their top tips and tricks.

Macworld Lab Report July 13, AOL

Join the Macworld Lab for an evening of tech talk and a peek into the inner workings of Mac-

world's testing labs. Tune in as lab director Lauren Black and her staff talk about benchmarks, performance tests, and maybe a dash of *Star Trek*.

Costa's Clinic July 19, eWorld

Join Macworld Online's own Steve Costa for a walk-in Mac clinic. Steve will help you tune up your computer and choose great shareware, and he gives you the lowdown, the high sign, and the straight dope on all things Macintosh.

The New Edge July 20, AOL

By day, David Steuer develops CD-ROMs and online projects for major New York publishers. But the rest of the time, he's pushing for a new approach to the digital world that puts people first, technology second. Come learn about the Cyborganic group, David's latest passion.

Jim Heid Q&A July 27, AOL

Contributing editor Jim Heid's *Complete Mac Handbook* is a fantastic compendium of Mac lore no Mac owner should be without. At this event, Jim is ready to answer just about any Mac question you can throw at him.

REACHING MACWORLD ONLINE

America Online and eWorld
Keyword is Macworld

For negotiating the information superhighway, aspiring Web authors can take advantage of Painter's GIF and JPEG formats, **with support for interlaced and transparent** GIF files.

Kick the tires of our improved **Surface Texture** effect, with support for multiple, colored lights.

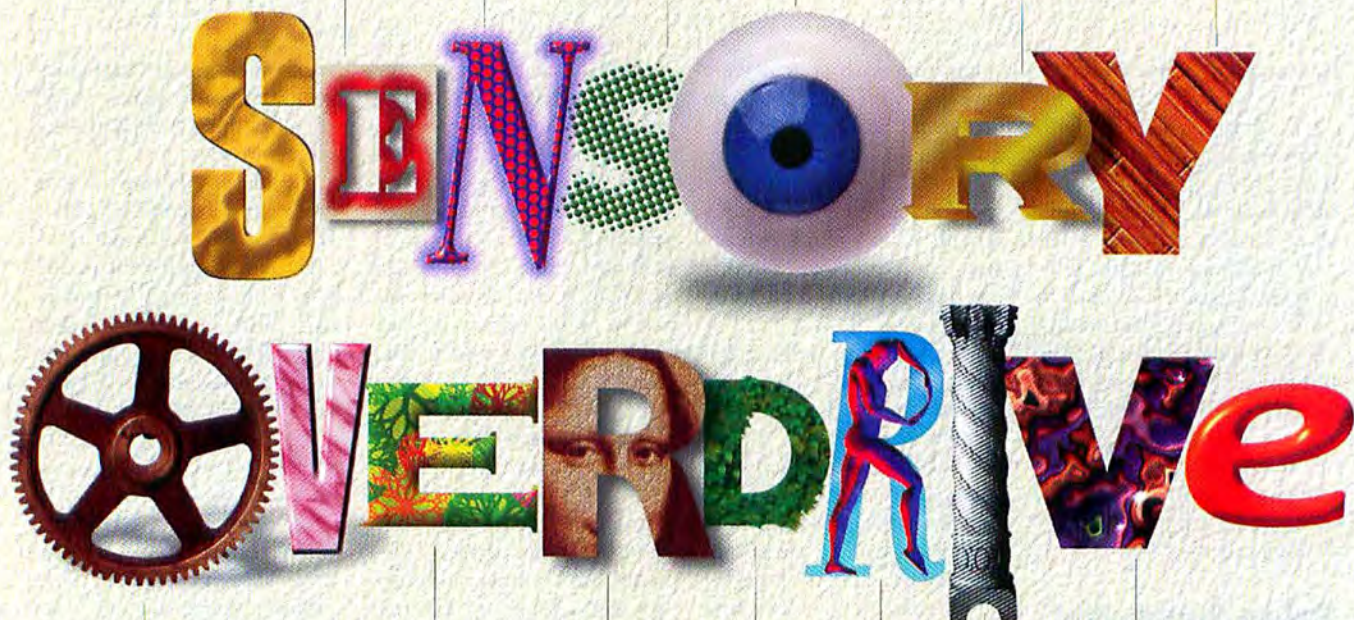
Experience the exhilaration of the ultimate driver's-side airbag—**Multiple Undo**.

Accelerate onto the graphics Autobahn with the **Gradation Editor**, letting you create magnificent, multicolored blends.

Use Painter's **pattern features** to create self-tiling patterns. Includes support for half-drop patterns, too.

This new Adobe-friendly version converts **Photoshop™ 3** layers into Painter's floaters and vice-versa.

Don't forget **Sensational Surfaces**, our new collection of organic paper textures, including stone and wood surfaces.



Check out our newest Natural-Media twist—**Growth Patterns**.

Paint with reality using the **Image Hose**. If you can dream it, you can Hose it.

Make any paper texture into a custom halftone screen with the new **Express Texture** feature.

Automatic drop shadows. Another Fractal first.

Create sepia tones (and much more) with the **Express Gradation** tool.

Don't forget **Fractal Design Poser**, the remarkable figure design tool.

Fly through the fog with the **Fractal pattern generator**, letting you create self-tiling Natural-Media textures.



Shift into high gear with new Fractal Design Painter® 3.1, the powerful graphics engine that brings Natural-Media® to the desktop. For fine artists, Painter is the only product that conveys the spirit and integrity of traditional, natural media like oils, canvas, pencils and pastels.

Photographers will discover Painter's many ways of turning photographs into paintings and its remarkable ability to paint with pieces of photographs. Multimedia developers will appreciate Painter's pattern-creation and animation capabilities. And designers... well designers will be impressed with Painter's

astonishing ability to infuse their creations with pizzazz. Check out Painter 3.1's outrageous new features and experience **Sensory Overdrive**.

Upgrades start at \$12.95 for Painter 3 owners, \$99 for PainterX2 and \$149 for Painter 2.0 users.

Painter 3.1

To order, or for more information, call

800 297-COOL

Ask for Extension 1411, Dept. B1A



FRAC-
TAL
DESIGN
CORPORATION



©1995 Fractal Design Corporation. All rights reserved. Fractal Design Painter and Natural Media are registered trademarks and PainterX2 and Image Hose are trademarks of Fractal Design Corporation. All other trademarks are the property of their respective owners.

Circle 190 on reader service card

New Products

THE LATEST MACINTOSH RELEASES

by Jim Feeley
and Joanna Pearlstein

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

HARDWARE

33MHz FPU for 520 and 540

For those engineering and 3-D-graphics types who need an FPU in their 520- or 540-model PowerBooks, Sonnet offers a full 33MHz 68040 processor board that replaces the FPU-less 68LC040 that Apple ships with its notebook computers. The upgrade also provides a 30 percent speed boost over the stock 25MHz processor in those PowerBooks. The price includes installation and requires you to exchange the original processor board. \$449. Sonnet Technologies, 714/261-2800, 800/786-6260; fax 714/261-2461.

2834FX

Still waiting for that Web page to draw? Maybe it's time you dumped your 14.4-Kbps modem. The 2834FX V.34 modem, built around a Rockwell chip set, transfers data at 28.8 Kbps and faxes at 14.4 Kbps. \$339. Best Data Products, 818/773-9600; fax 818/773-9619.

Blue Line

If you're just about blue in the face from coordinating all your storage needs, you may be ready for the Blue Line, Microtech's system of stackable hard drives, RAID systems, tape drives, and removable hard drives. All Blue Line products connect with Microtech's 4-inch-long SCSI jumpers, and all except the tape drives feature an LCD readout that displays power, SCSI, and sequencing information—plus Microtech's tech-



Blue Line

nical-support phone numbers. Microtech, 203/468-6223, 800/626-4276; fax 203/468-9447.

DataDock

MicroNet's DataDock lets you remove and install storage devices without turning off your computer. Aimed at graphics and multimedia professionals who need to transport huge data files, the DataDock works with hard drive, SyQuest, magneto-optical, and DAT drive modules built by MicroNet. Hard drives can be configured as RAID Level 0 or Level 1 arrays. Rack-mount and tower configurations are also available. Two-slot Fast/Wide docking station with a PDS or a NuBus SCSI card \$1695; Fast SCSI-2 version \$899. MicroNet Technology, 714/453-6000; fax 714/453-6001.

Deltis CD-R

A double-speed CD-recorder and player with 1MB of cache memory, the Deltis CD-R supports multisession recording and all standard CD formats, including Photo CD. Bundled with CD-R mastering software, the drive costs \$1995; without software it costs \$1795. Olympus Image Systems, 516/844-5000, 800/347-4027; fax 516/844-5339.



Deltis CD-R

HyperTape

The HyperTape SCSI tape drive stores 2GB of uncompressed data and up to 4GB of compressed data on a single QIC-Wide minicartridge. The low-cost drive offers transfer rates of up to 30MB per minute. It ships with Retrospect 2.1 backup software. \$499.95, 400-foot

Sony tape \$31.95. APS Technologies, 816/483-6100, 800/235-2753; fax 816/483-3077.

Mediashow Traveler

An LCD projector that takes aim at expensive three-gun projectors, the Mediashow Traveler lets you use its remote control to switch between a Mac and two other video sources. It features an 8.4-inch-diagonal active matrix LCD panel; 24-bit, 640-by-480-pixel resolution; built-in keystone correction; and a user-replaceable 575-watt metal halide bulb. With its stereo audio amplifier, the Traveler weighs 30 pounds. \$9695. Sayett Technology, 716/264-9250, 800/678-7469; fax 716/264-9265.



Mediashow Traveler

MI PB 14.4 PCMCIA Fax/Modem

This PC Card fax modem sends and receives data and faxes at up to 14.4 Kbps. The card includes MNP Class 5 data compression and CCITT V.42bis error correction. It supports PCMCIA release 2.1 and JEIDA 4.1, weighs just 1.5 ounces, and is less than 0.25 inch thick. \$199. Memory, 714/453-8008, 800/266-0488; fax 714/453-8103.

PlateMaker 8200

The PlateMaker 8200 creates printing plates that withstand press runs in excess of 15,000 impressions. The PostScript Level 2 device also functions as a 600-by-600-dpi printer, that you can upgrade to 800-by-800-dpi or even 1200-by-1200 dpi, by adding more RAM. Xanté's Halftone Calibration Technology allows adjustment of halftone gamma curves. The company's Enhanced Screening provides 40 percent more levels of gray than normal screening does at standard line-screen frequencies. For example, the 8200 supports 256 gray levels with 106 lines per inch. The standard configuration includes an AMD 29030/33MHz RISC processor, 16MB of RAM, LocalTalk, and a SCSI port. An Ethernet option is available. \$5495. Xanté, 205/476-8189, 800/926-8839, fax 205/476-9421.



PlateMaker 8200

PrecisionView 17

Geared toward graphics and digital-video professionals, the PrecisionView 17 is a Trinitron monitor with the equivalent of 0.25mm dot pitch and dual-access dynamic focus. Controls for changing image size, shape, and color temperature are located on the front panel for easy access. This Energy Star-compliant monitor supports resolutions of up to 1024 by 768 pixels at a refresh rate of 75Hz. \$1099. Radius, 408/541-6100, 800/227-2795; fax 408/541-6150.

Pro Imager 7000

Here's a large-format scanner for people who need size and speed but can live without 36-bit color. The Pro Imager 7000 quickly scans line art, gray-scale, and color images. The 2400-dpi, 24-bit flatbed color scanner reads images as big as 11.7 by 17 inches. The scanner includes Series II QuickScan and ColorAccess imaging software. \$9995. PixelCraft, 510/562-2480, 800/933-0330; fax 510/562-6451.

SCSI Switch

The rack-mountable SCSI Switch lets two computer systems share up to 32 SCSI devices. Controllable through both its front panel and supplied Macintosh software, this 4-by-2-inch electronic cross-point switch extends the single-ended SCSI cable limit to 40 feet. The SCSI Switch is available in six models with the option of differential SCSI support, plus a choice of 50-pin Centronics, 50-pin high-density SCSI-2, or 68-pin SCSI-2 Wide and SCSI-3 connectors. The 50-pin single-ended SCSI-2 model, the ACI-2012CSN-1, lists for \$1545; other models are available. Applied Concepts, 503/685-9300; fax 503/685-9099.

Tuba II and French Horn II

Don't try taking these out for marching-band practice; their power cords aren't long enough. That's OK, though—these *continues*

Unequaled Protection

From the best in Macintosh security software, ultraSECURE™ and ultraSHIELD™.



Reliability in computer security software, what should your expect? What should you look for? What should you avoid — and why?



To learn more about "Reliability" and other "Key Elements of Computer Security," contact the leader in computer and data protection, usrEZ Software, Inc., to receive your easy-to-read **COMPUTER DATA SECURITY, A PRIMER.**

Includes easy-to-use, comprehensive check sheets to help determine your computer protection needs. Check sheets also enable you to objectively compare security software products and determine how well each meets your specific needs.

A \$12.95 value, now **FREE** in U.S. and Canada, when you mention this advertisement to the security software leaders at:



The Continuing Excellence Corporation.
1-800-482-4MAC (4622) or 714-756-5140

© 1995 usrEZ Software, Inc. usrEZ, ultraSECURE and ultraSHIELD are trademarks of usrEZ Software, Inc. All brand names are trademarks or registered trademarks of their respective holders.

New Products

two monitors are aimed at the business graphics and home-office market. Both monitors meet Energy Star and MPR II guidelines and let you adjust tilt, trapezoidal and pincushioning imperfections, and color balance. The Tuba II adds degaussing and RGB tuning. The 15-inch French Horn II has a maximum resolution of 1280 by 1024 pixels at 60Hz; the 17-inch Tuba II supports 1600 by 1280 pixels at 76Hz. French Horn II \$499 company's estimated price; Tuba II \$699 company's estimated price. Orchestra MultiSystems, 714/891-3861, 800/237-9988; fax 714/891-2661.



Tuba II

Whirlwind RAID

A new line of SCSI Fast/Wide RAID systems aimed at video and graphics professionals, as well as network servers, Whirlwind RAID systems deliver sustained data-transfer rates of 9 MBps in HDT BenchTest and about 5.7 MBps with VideoVision Studio. The 2GB and 4GB arrays are built around Seagate Barracuda mechanisms, while the 8GB configuration uses Quantum Atlas mechanisms. Trillium Remus software and the Atto SE IV SCSI card round out the packages. Spin also offers 2GB and 4GB internal RAID systems for 800 and 8100 series Macs. 2GB array \$2999, 4GB \$3999, 8GB \$5499. Spin Peripherals, 508/787-1200, 800/215-2900; fax 508/787-1201.

SOFTWARE

4-Sight AutoPS

This utility helps graphics and prepress professionals print PostScript files remotely. First, users create a PostScript file and transfer it to its destination with 4-Sight's ISDN Manager or another method. AutoPS downloads the file and prints it to a selected printer or image-setter. Finally, depending on the user's preference, the software automatically either deletes or saves the document. \$295. 4-Sight, 515/221-3000; fax 800/448-3299.

ChatNet

It's not always easy to find a place to have a private conversation in the office. You can nip into the hallway for a quick chat, or talk over the office network.



ChatNet

ChatNet provides serverless conferencing for Macintosh networks, enabling users to interact via public or private conferences, send instant messages, and transfer files. Requires Mac SE, System 6.0.5, EtherTalk or LocalTalk network. \$99 for 10 users; \$249 for 50 users; \$499 for 250 users. Electronic Learning Systems, 904/375-0558, 800/443-7971; fax 904/375-5679.

EasyTyper

Like a psychic friend, your Mac knows what you're thinking—at least when you have EasyTyper installed. This glossary utility learns specific words and phrases; when you type the first few characters and press a user-defined hot key, EasyTyper completes the text for you, in whatever application you're using—without your needing to set up lists of words or abbreviations. Requires System 7. \$59.95. LandWare, 201/347-0031, 800/526-3977; fax 201/347-0340.

GfxCAD 2.0

This architectural CAD package includes two products, FlexiCAD and FlexShell. FlexiCAD is a drafting engine that lets you draw shapes, merge drawings, and perform floating-point CAD operations. The product supplies plotter drivers and supports B-splines, Bézier curves, layers,



GfxCAD 2.0

and unlimited undos and zoom levels. FlexShell is for producing architectural construction documents; it includes the standard plan-layer naming convention developed by the American Institute of Architects. Requires 68030-based Mac with FPU, 8MB of RAM, 17-inch color monitor. \$495. Gfx Computing, 716/782-2468; fax 716/782-2629.

MacEKG 3

If our computers had medical insurance, their health-care providers might recommend MacEKG as a form of preventive medicine. Version 3 of this diagnostic utility adds tests for IDE drives and for two more chips on the motherboard. In addition to monitoring system performance, MacEKG now includes PowerScope, a utility that probes the effect of system extensions on performance. Requires 2MB of RAM, System 7. \$150. MicroMat Computer Systems, 707/837-8012, 800/829-6227; fax 707/837-0209.

MailShark, NetShark, and WebShark

InterCon's three new Internet access products aim to have you terrorizing Internet waters in no time. NetShark provides users with access to E-mail, newsgroups, Telnet, Gopher, FTP, and the WebShark World Wide Web browser; users can perform multiple functions

Circle 36 on reader service card

DESPERATELY SEEKING DESKTOP COMPANION

Single, professional Mac™. Financially secure, bilingual (DOS, Mac), young at heart, powerful build. 16MB RAM, 1 Gig hard drive, 6 SCSI ports. Seeking 24-bit graphics card, hard drive, external fax/modem and a great color scanner. Please send photo.



APPLE™ 130MB HARD DRIVE

This Apple™ 130MB SCSI external hard drive has a lightning-quick 11ms access time. Manufactured by Quantum.

\$399⁹⁹

#19-10230



MICROCONVERSIONS

24-BIT GRAPHICS CARD
24-bit color on up to 17 monitors with QuickDraw acceleration. Compatible with most Performas and LC systems with a PDS slot.

\$499⁴⁶

#15-10286



AVEC 2400 SCANNER

Value priced Mac compatible 24-bit color flatbed scanner. Includes Adobe Photoshop LE and Kai's PowerTools.

\$499⁵³

#37-10152

Anna Williams
250 Dallas Park
Dallas, TX. 7524



RASTEROPS

PRISM GT WITH PAINTER 3.0

Award-winning Hi-Res NuBus graphics card with 24-bit color support on up to 21 monitors and has Quick Draw acceleration.

\$999⁸⁶

#15-10278



CYBERPHONE 14.4

14.4 Kbps external modem for Mac. NEW SPEAKERPHONE feature with voice mail!

\$169⁹⁹

#31-10435

Is your Macintosh® lonely tonight?

Computer City and your Macintosh® – now that's a match made in heaven! From monitors to CD-ROM titles, we've got hundreds of products for your Mac™ from manufacturers like Apple, Microsoft, Hewlett-Packard, Sony, Techworks, Belkin, Syquest and many more.

That's not all. If your Mac lets you down, bring it to our factory authorized service center for prompt repairs – even if you didn't buy it from Computer City! And, we offer extended service programs on many new products.

So, when you're looking for a great place to spend some quality time with your Mac, stop by one of the more than 75 worldwide Computer City locations listed below. Reservations not required.



Authorized Reseller

Circle 240 on reader service card

YOU CAN'T MAKE A WRONG DECISION WHEN YOU GO TO THE RIGHT STORE.™

Although we want our advertisements to be accurate, mistakes occasionally happen. If you have any questions, please see a store manager. If for any reason an advertised item is out of stock, we will offer you a rain check or if you desire, a comparable item, if available. Advertised closeouts, special purchase and limited quantity items are excluded. Apple and the Apple logo are registered trademarks of Apple Computer, Inc. Prices good in the United States only. Prices good through August 31, 1995. Prices may vary by store.

Arizona • Arkansas • California • Colorado • Delaware • Florida • Georgia • Hawaii • Illinois • Maryland • Massachusetts • Michigan • Minnesota • Missouri • Nevada • New Hampshire • New Jersey • New York • North Carolina • Oklahoma • Ohio • Oregon • Pennsylvania • Texas • Utah • Virginia • Washington ALSO IN CANADA- British Columbia • Ontario AND EUROPE

CALL 1-800-THE-CITY FOR THE LOCATION NEAREST YOU!

New Products

simultaneously. The MailShark electronic-mail system lets users read and write messages containing graphics files, sounds, and rich text, including text formatting. Filtering options let users automatically respond to and file messages. InterCon claims WebShark is 40 percent faster than any other Web browser on the market. All three require Mac SE, 5MB of RAM, System 7. MailShark \$59.95; NetShark \$99.95; WebShark \$19.95. InterCon Systems, 703/709-5500, 800/468-1424; fax 703/709-5555.



MC-P/CoCo 2.2

MC-P/CoCo 2.2

Hannah Stewart's MC-P/CoCo displays three windows for facilitating your Photoshop work. The preview window shows images using CoCo's own color-correction algorithms. Inside the color-correction window, you can view 16 separate adjustments in a preview mode, working in either RGB or CMYK color space. Finally, the inks palette window lets users create and display color sets and enter color values for paper or substrate. Requires Photoshop 2.5.1 or later. \$895. Hannah Stewart, 214/651-0640, 800/588-0039; fax 214/651-0644.

PM Design Set

Get more control over Adobe PageMaker with PM Design Set. This set of seven additions to PageMaker lets you turn off printing for individual objects, create fractions, simplify printing to film, merge several publications in a book list into a single file, save documents automatically, fine-tune magnification, and create ligatures. Requires 68020-based Mac, 4MB of RAM, Adobe PageMaker 5.0; PostScript printer recommended. \$79.95. Bullfrog Software Engineering, 206/646-8100, 800/646-8167; fax 206/637-8169.

RSA Secure

If the news stories about stolen company secrets have you worried, here's a solution. With RSA Secure you can protect just a few sensitive files or an entire hard disk. The application encrypts data using RSA's proprietary RC4 Symmetric Stream Cipher, which the company says is more secure than the government's DES standard. To ensure that companies can access encrypted data in emergency situations, the product's Threshold-Based Emergency Access feature lets administrators designate emergency decryption authority to a set of trustees, and establish a minimum number of trustees who must agree before they can implement emergency procedures. Requires System 7. \$99. RSA Data Security, 415/595-8782, 800/782-5453; fax 415/595-1873.

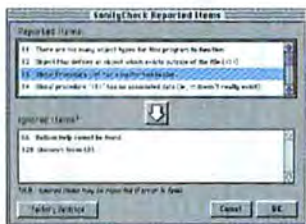
Rock & Roll Art Screen Saver

Which ranks higher on the scale of screen-saver coolness, flying toasters or

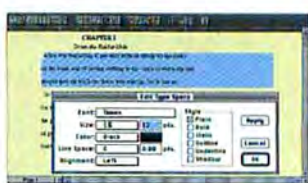
psychedelic rock posters from the sixties? We're not sure. Julianne Multimedia's Rock & Roll Art Screen Saver displays psychedelic posters from concerts at the Avalon Ballroom and the Fillmore Auditorium in San Francisco. Images include Stanley Mouse's *Girl with the Green Hair*, Rick Griffin's *Eternal Reservoir*, and Victor Moscoso's *Break on Through* posters. Requires System 7, 2MB of RAM, 8-bit color. \$29.95. Julianne Multimedia, 415/892-0599, 800/585-4266; fax 415/897-3373.

SanityCheck

Troubleshoot that glitch-ridden 4th Dimension database with Foresight's SanityCheck, a 4D developer's tool that verifies resources, checks for conflicts, and compares file structures. The product can be used as a diagnostic aid during debugging sessions or during the code-compile-run cycle. Also included is Data-ForkCopy, which helps developers resolve resource-fork problems. Requires System 7, 4th Dimension 2.2.3 or later. \$195. Foresight Technology, 817/731-4444, 800/701-9393; fax 817/731-9304.



SanityCheck



Scorpio

Scorpio

Abbott Systems likes to say that with Scorpio, you can buy a word processor for less than the tax on Microsoft Word. This word processor features character formatting, color, a spelling checker, word count, simple tabs, and the ability to jump to any page in a document quickly. Users can designate text, such as your signature, to be inserted automatically when printing each document. Support for Claris XTND filters lets Scorpio read and write formats for other word processors. Requires Mac II, 8-bit color. \$29. Abbott Systems, 800/552-9157; fax 914/747-9115.

CD-ROMS

Home Repair Encyclopedia

If you're up there on the roof and suddenly can't remember how to replace a shingle, simply fire up your PowerBook and battery-powered CD-ROM drive, launch the Home Repair Encyclopedia, and look it up. This CD-ROM uses QuickTime movies, photos, illustrations, and sound to show you how to complete

continues

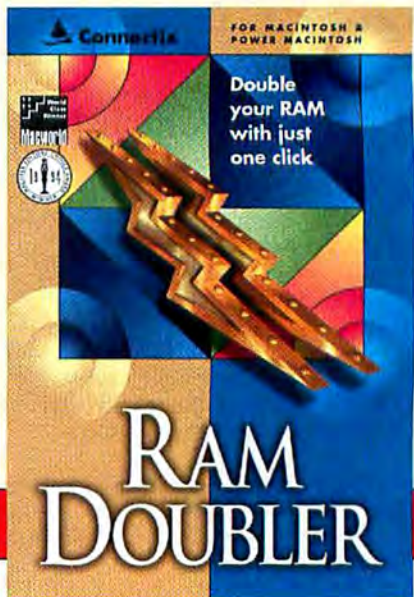
What Do You Say When You're Out Of Memory?

I need RAM Doubler.

The more memory your Mac has, the more productive you'll be. But forget about adding SIMMs. RAM Doubler™ is software that doubles your Mac's memory. RAM Doubler *does what it says it will do.* ~Macworld. And you don't have to open your Mac. Just run RAM Doubler's 15 second installation and you can run twice as many applications – instantly. *May well be the best investment you make this year.* ~MacUser. You'll agree. Buy RAM Doubler today and double your RAM with one click. Your satisfaction is guaranteed. RAM Doubler is available wherever great software is sold.



System Requirements: Macintosh equipped with a 68030, 68040 or PowerPC microprocessor, System 6.05 or later, including all versions of system 7 • 4 MBs required (hard disk required for machines with 4 to 6 MBs) • Not compatible with Mac SE, original Mac Classic, original Mac LC or PowerBook 100 or Mac II without a 68551 PMMU or any accelerator that does not work with virtual memory.



© 1995 Connectix Corporation. 2655 Campus Drive, San Mateo, CA 94403 USA. 800-839-3629 • 415-571-5120 • FAX: 415-571-5195
EMAIL: info@connectix.com • RAM Doubler is a trademark of Connectix Corporation. All other trademarks are the property of their respective holders.

Circle 192 on reader service card

STATISTICA/Mac

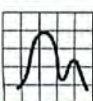
Now rel. 4.1

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-hoc tests, custom designs); Stepwise discriminant function analysis; Canonical analysis; Large selection of time series modeling techniques with forecasting; Factor analysis; Cluster analysis (incl. hierarchical, 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, NEX, and others); and much more.* Manual with comprehensive introductions to each method and step-by-step 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 histograms, 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"; hires. 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 IIx, 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 money-back guarantee.

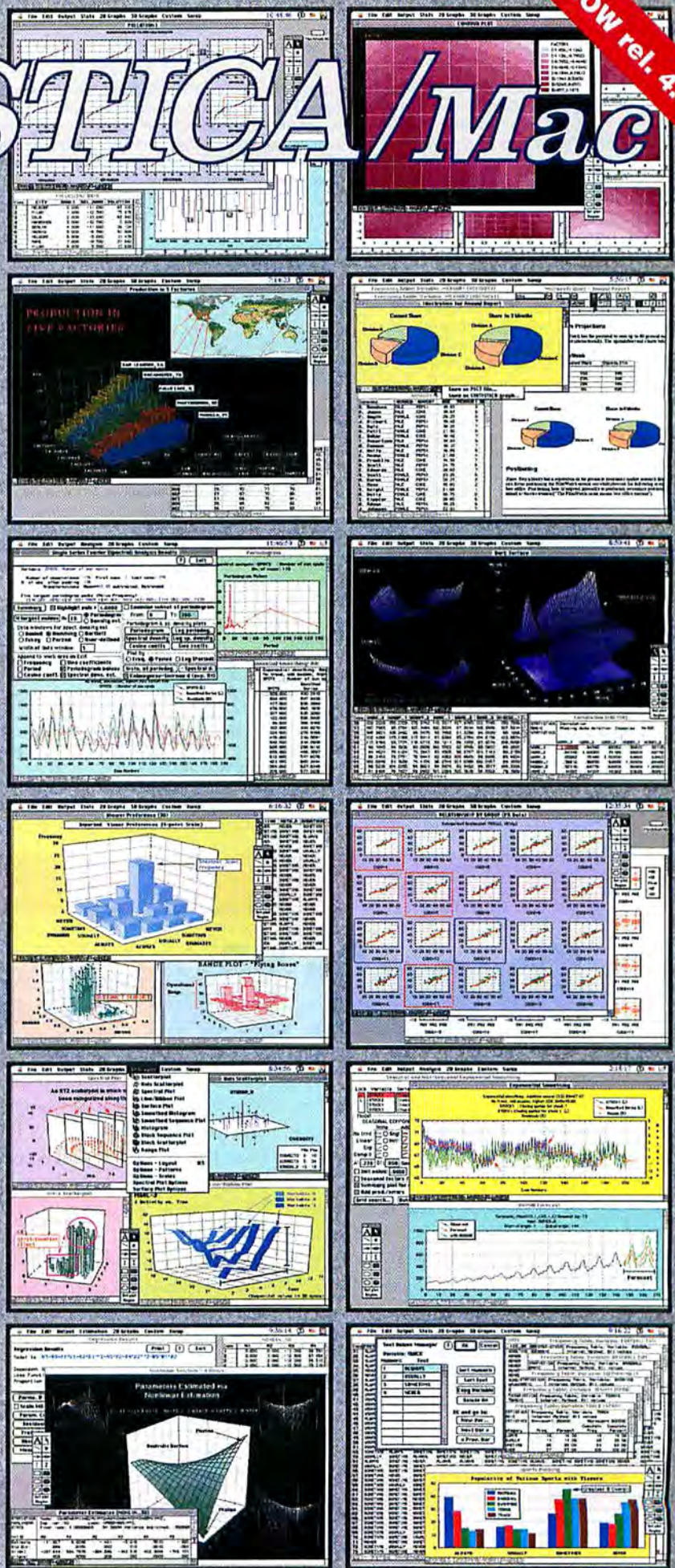


StatSoft®

2325 E. 13th St. • Tulsa, OK 74104 • (918) 583-4149
Fax: (918) 583-4376

Circle 99 on reader service card

Overseas Offices: StatSoft of Europe (Hamburg, FRG), ph: 040/ 4200347, fax: 040/4911310; StatSoft UK (London), ph: 0462/482822, fax: 0462/482855; StatSoft Pacific (Melbourne, Australia), ph: (03) 663 6580, fax: (03) 663 6117; StatSoft France ph: (1) 45 66 97 00, fax: (1) 45 66 66 51; Available from other Authorized Representatives worldwide: Sweden: AkademiData Scientific ph: 018-210035, fax: 018-210039; Finland: Statsoft Oy ph: 24-334678, fax: 24-333867; Belgium: Tekma NewTech ph: 10 61 16 28, fax: 10 61 69 57; South Africa: Osiris ph: 12-663-4500, fax: 12-663-6114; Japan (Macintosh): Three's Company, Inc. ph: 03-3770-7800, fax: 03-3770-7784; Japan (Windows): Design Technologies, Inc., ph: 03-3667-1110, fax: 03-3668-3110; Italy: Prompt SRL ph: 49-893-3227, fax: 49-893-2897; Poland: Compagnia Oprogramowanie ph: 12-369680, fax: 12-360761; Taiwan: Intelligent Integration Corp. ph: 2-759-1721, fax: 2-754-1700. StatSoft, the StatSoft logo, STATISTICA, and Scrollsheet are trademarks of StatSoft, Inc.



New Products

nearly 200 home projects. The product includes advice, hints, and reference guides; built-in calculators help you select building materials and estimate their cost. \$29.95. Books That Work, 415/326-4280, 800/242-4546; fax 415/812-9700.

The Lost Mind of Dr. Brain

If you commonly feel as if you've lost your mind, you'll feel right at home with *The Lost Mind of Dr. Brain*. With this software, you solve puzzles and explore mazes to help Dr. Thaddeus P. Brain, who has accidentally transferred too much of his brain to Rathbone, his lab rat. Your mission: Return Dr. Brain's mind and make Rathbone a cheese lover again. The game includes 3-D graphics, a musical score, voices, and animation. For ages 12 to adult. \$49.95. Sierra On-Line, 206/649-9800, 800/757-7707; fax 206/641-7617.



The Lost Mind of Dr. Brain

The MediaBook CD for Director

Now you can reuse code from the masters for your CD-ROM title—legally. A collection of information and tools for

Macromedia Director users, *The MediaBook CD for Director* includes examples of products created with Director's scripting language, Lingo. Users can adapt the code for their own projects or simply copy and paste it into their own Director files. The CD also has more than 100 royalty-free XObjects for Director



The MediaBook CD for Director

versions 3.13, 4.0, and 4.0.4, and Director for Windows. A Lingo library containing both known and undocumented Lingo features, a set of Director formatting tools, and a directory of additional resources round out the disc's offerings. \$299. gray matter design, 415/243-0394; fax 415/243-0396.

Puppet Motel

First you should go to see multimedia performance artist Laurie Anderson live on stage, then check out her CD-ROM. *Puppet Motel* is Anderson's first performance piece on CD-ROM. It combines music, animation, video, choreography, puppetry, and poetry. Anderson gives you the opportunity to step out of the passive role of spectator to become a vir-

tual collaborator. Experiment with clips taken from her animations and videography; arrange stars in the night sky; wander through the set of Anderson's latest tour, the *Nerve Bible*; and re-edit Dostoyevsky's *Crime and Punishment*. The disc also includes Anderson's description of developing the *Nerve Bible* material. \$39.95. The Voyager Company, 212/431-5199, 800/446-2001; fax 212/431-5799, <http://www.voyagerco.com>.

The Sensational Surfaces CD-ROM

The first in Fractal Design's Really Cool Textures series contains 5 libraries of 20 textures each, including wood, paper, stone, tiles, and other surfaces. Designed for use with Fractal Design's natural-materials graphics environments, Painter and Sketcher, the textures are in the company's proprietary paper-texture format. You can use them to give objects realistic surfaces—oak, pine, walnut, parchment, papyrus, marble, and granite, for example—or to apply abstract geometric designs. \$79.95. Fractal Design, 408/688-8800, 800/297-2665; fax 408/688-8836.

Super Wing Commander

Were you thinking that global peace lies just around the corner? Not by a long shot—at least, not when you are playing *Super Wing Commander*. In this CD-ROM game set in the twenty-seventh century. You become a pilot in the war against the Kilrathi empire, a race of aliens trying to destroy the Terran Con-

federation and humankind. This new version for the Macintosh has digitized sound, new graphics, and additional missions. \$55 company's estimated price. Origin Systems, 512/335-5200; fax 512/331-9558.

Video Producer: A Video Production Lab

This tool teaches the basic skills of video production and provides hands-on training. Based on the work of author Herbert Zettl, the CD-ROM covers camera work, lighting, audio production, editing, and the video process. Aspiring videographers study each content area, take quizzes, and move on to complete a video-production project contained on the CD. \$79.95. Integrated Media Group, 415/595-2350, 800/487-5510; fax 415/593-0499.

ACCESSORIES

Avery CD ROM Storage Systems

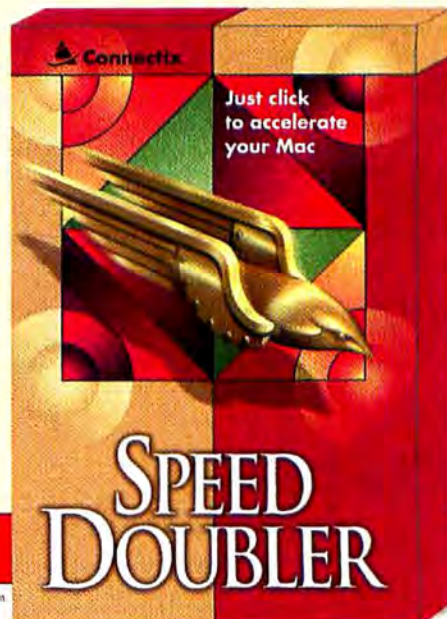
CD-ROMs have a tendency to accumulate like snowdrifts next to computers. To keep the data avalanche under control, Avery Dennison offers a line of portable and desktop CD-ROM storage devices that do away with jewel-box cases while still protecting CD-ROMs and storing their pamphlets. The line starts with the CDH-10 Flip-Style case, which holds 10 CDs with literature or 20 without. The RDC-100 Multimedia track system holds up to 100 CD-ROMs. CDH-10 \$6.95, RDC-100 \$24.95. Avery continues

Break the speed limit.

Break the speed limit on your Mac with Speed Doubler™. It's software that installs in seconds, requires no hardware upgrades and takes your Mac to the next level of performance. You get faster access to the data you use most. Faster disk access. Faster Finder performance. And check this: Speed Doubler automatically doubles the emulation speed on Power Macs.

With Speed Doubler, Power Macs instantly run non-native applications twice as fast! For instance, recalculate a 5000 cell Excel 4.0

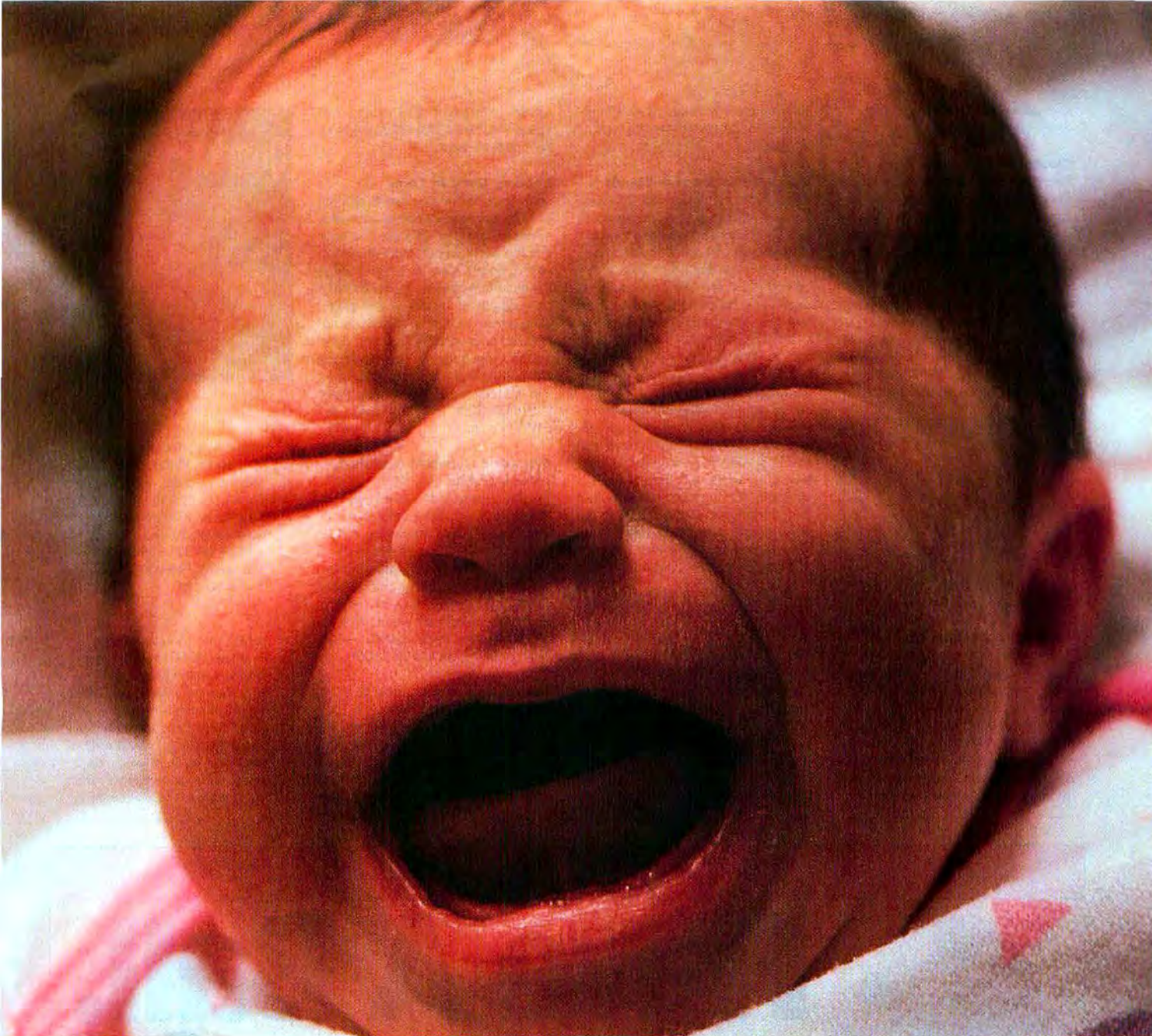
spreadsheet with Speed Doubler in 6 seconds, without it...13 seconds. Run a summary calculation of 1500 FileMaker Pro records in 90 seconds instead of 3 minutes. It's not magic. It's Connectix Speed Doubler. And if you own a Power Mac, you gotta have it. Get Speed Doubler today wherever fine computer products are sold. Your satisfaction is guaranteed.



Requirements: Macintosh equipped with a PowerPC 65040 or 68030 microprocessor • System 7.0 or greater • 8 MB physical RAM or greater • Compatible with Connectix RAM Doubler • Not compatible with Mac Plus, Mac SE, original Mac Classic, original Mac LC or PowerBook 100

© 1995 Connectix Corporation, 2655 Campus Drive, San Mateo, CA 94403 USA • 800-839-3639 • 415-571-5100 • FAX: 415-571-5195 • EMAIL: info@connectix.com
Speed Doubler and RAM Doubler are trademarks of Connectix Corporation. All other trademarks are the property of their respective holders.

Circle 193 on reader service card



"But I Thought My New Macintosh Would Run Windows Applications."

There's no need for tears. You thought your new Mac could run Windows applications right out of the box, but it doesn't. No problem. Just get SoftWindows and run thousands of Windows applications on Mac.

SoftWindows lets you run the DOS and standard mode Windows applications you need at work or at home. With a couple of clicks, you can run databases in Access. Edit spreadsheets from Excel or Lotus 1-2-3. Exchange documents, presentations, even access your company's e-mail, printers and networks.



Includes Microsoft Windows 3.1 and MS-DOS 6.21

Over 150,000 Mac, Power Mac and Performa users already run Windows applications with SoftWindows. So can you. Just look for our "Try-It" CD-ROM at your favorite retailer and test it for 30 days risk-free.

You'll see. It's as easy as taking candy from a baby.

See your local dealer or call 1-800-848-7677.



**FREE
UPGRADE!**
BUY SOFTWINDOWS
FOR POWER MAC 1.0 AND
GET 2.0 FREE!
Look for details on the package
at your local reseller.

SoftWindows

Run Windows On Mac

**INSIGNIA
SOLUTIONS**

© 1995, Insignia Solutions Inc., Mountain View, CA • Phone (415)335-7100 • Fax (415)335-7105. Insignia and Insignia Solutions are registered trademarks of Insignia Solutions Inc. SoftWindows is a trademark used under license. Windows is a trademark and MS-DOS is a registered trademark of Microsoft Corporation. All other trademarks are the property of their respective holders.

Circle 68 on reader service card

New Products

Dennison, 909/869-7711, 800/942-8379; fax 909/598-2905.

CloseFlash and QuickPan

The CloseFlash optically redirects the QuickTake 150 digital camera's flash into a ring that surrounds the close-up lens. This provides even lighting with minimal shadows for close-up photography, according to the manufacturer. Kaidan also introduced the QuickPan, an indexed swivel mount for the QuickTake camera that makes it easier to create the seamless 360-degree panoramas needed for QuickTime VR. CloseFlash \$149.95, QuickPan \$109.95. Kaidan, 215/364-1778; fax 215/322-4186.



GlidePoint Desktop Mac

GlidePoint Desktop Mac

The original developer of Trackpad technology has brought the pointing device used on Apple's current PowerBooks to the desktop. To improve cursor control on larger desktop monitors, the GlidePoint Desktop Mac's touch surfaces are 30 percent larger than those on the 500-series PowerBooks. The device connects through the ADB port and ships with

an ergonomic wrist rest. \$99. Cirque, 801/467-1100, 800/454-3375; fax 801/467-0208.

Multi-Media Speaker Stands

Raising your external computer speakers a few inches above your desk can give you better sound—and free a few extra inches of precious work space. These speaker stands can help. Available in putty and black, the powder-coated wire stands have nonskid rubber feet. They store six CDs. \$24.95 per pair. C-2 Office Gear, 312/327-9200, 800/282-2541; fax 312/327-9078.

Summa Expression

Summagraphics' 6-by-8-inch pressure-sensitive tablet lets users manage features such as pressure control and screen scaling directly from the tablet, without having to access a control panel. It's available with a cordless three-button pen, miniature mouselike pointing devices, or a pressure-sensitive pen. \$389. Summagraphics, 512/835-0900, 800/337-8662; fax 512/835-1916.

BOOKS

The Illustrator Wow Book

More than just a replacement for the manual, Sharon Steuer's book follows the approach used in *Photoshop Wow*, guiding the user through step-by-step exercises, tips for working more efficiently, and descriptions of how an artist created a particular image. The book includes a disk with tutorials, filters, and

utilities. 224 pages. \$39.95. Peachpit Press, 510/548-4393, 800/283-9444; fax 510/548-5991.

Looking Good in Color

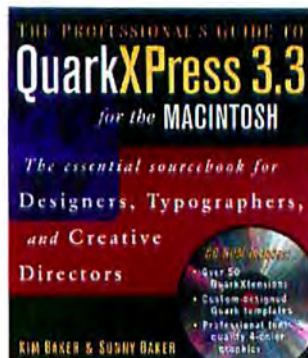
Looking Good in Color teaches all levels of Macintosh and Windows users how to design and print in color. The book emphasizes practical advice as well as color concepts. Gary W. Priester covers the distinction between RGB and CMYK color-description modes, as well as creating custom palettes, using color scanners and color-matching systems, printing on a low budget, using duotones, and printing with varnishes and metallic inks. 300 pages. Ventana Press, 919/942-0220, 800/209-3342; fax 919/942-1140.

Macworld Networking Bible, second edition

Chances are this book can tell you anything you want to know about setting up and managing a Mac network, AOCE, E-mail, TCP/IP, and multiplatform networking. Authors David Kosiur and Joel Snyder start with planning and installing a network and even unravel the mysteries of NBP BrRq. 687 pages. \$29.95. IDG Books Worldwide, 415/655-3000, 800/762-2974; fax 415/655-3299.

The Professional's Guide to QuarkXPress 3.3

This book is aimed at desktop publishing professionals who know the basics but want to get the most out of QuarkXPress. Kim and Sunny Baker include tips and guidelines on using Quark-



The Professional's Guide to QuarkXPress 3.3

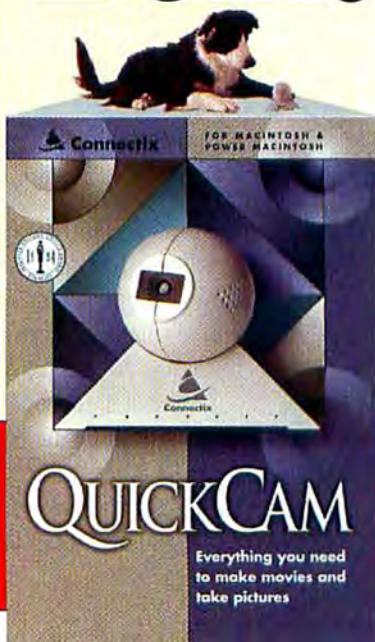
XPress to design page layouts, manipulate type, work with four-color graphics, and prepare prepress work. The book includes a CD-ROM with over 50 fully functional QuarkXTensions, along with typefaces, templates, and graphics. 672 pages. \$39.95. John Wiley & Sons, 212/850-6630, 800/225-5945; fax 212/850-6799. **m**

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

What Do You Do With A \$100 Digital Video Camera?

Have A Ball.

QuickCam™ includes everything you need to make movies and take pictures with your Mac. Plug in one cable, install the software and you're ready to roll. Add still photos to documents, newsletters, databases. Record QuickTime® training movies, video conference, create animated cartoons – all for around \$100. Works with all QuickTime compatible software and on all QuickTime compatible Macs, including PowerBooks®. It's easy, fun, and your satisfaction is guaranteed. Get your QuickCam today where fine computer products are sold.



MAKE MOVIES



VIDEO CONFERENCE



TAKE PICTURES



BE CREATIVE

© 1995 Connectix Corporation. 2655 Campus Drive, San Mateo, CA 94403 USA. 800-839-3629 • 415-571-5100 • FAX: 415-571-5195 • EMAIL: info@connectix.com. QuickCam is a trademark of Connectix Corporation. QuickTime and PowerBook are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective holders.

Circle 191 on reader service card



Stock Your Digital Toolbox & Unleash Your Creativity!



KPT POWER Photos ^{NEW!} #72217

"...an indispensable set of tools for design professionals, especially in combination with KPT Convolver and Kai's Power Tools."
Bill Niffenegger, artist/author, "Photoshop Filter Finesse"

\$119
SRP: \$199

500 high-resolution RGB TIFF images on 10 CD-ROMs!

KPT Convolver TM #68474



"This is the most useful Kai's Power Tools so far and a great value for the money."
MacWEEK, Jan. 30, 1995

\$119
SRP: \$199

The ultimate creative filter effects palette for imaging professionals!

^{NEW!} KPT VECTOR Effects TM #72401



"KPT Vector Effects has opened up a whole new world of possibilities for Illustrator users."
Ted Alspach, author, "Macworld Illustrator Bible" and "Illustrator Filter Finesse"

\$119
SRP: \$199

Killer plug-in application extensions for Illustrator and FreeHand!

\$119
SRP: \$199

KPT Bryce TM #65848

"For professionals and beginners alike, Bryce is the hottest new graphics program to hit the Mac since Photoshop, Painter and Kai's Power Tools."
Publish Magazine, November 1994



We have a way with worlds!

\$119
SRP: \$199

KAI'S POWER Tools TM #65847

"Give yourself a glimpse of the future and a powerful design tool to boot. Buy this product."
Publish Magazine, March 1994



The extensions and filters every Photoshop and Painter user needs!

**Buy one & save! Buy another & save more!
Better yet, buy all five & save an incredible bundle!**

Take Your Pick:
Kai's Power Tools
KPT Convolver
KPT Bryce
KPT Power Photos
KPT Vector Effects



Buy Any	For	You Save
2	\$218	\$180!
3	\$317	\$280!
4	\$416	\$380!
5	\$515	\$480!



LIVE PICTURE TM #68382

"Every electronic imaging professional should have it in their software repertoire."
Photo Electronic Imaging, January 1995

The future of imaging is now
more affordable, faster and more profitable!

\$599
SRP: \$995

**WHILE
SUPPLIES
LAST!**

TO ORDER, CALL 1-800-222-2808

NOTE: When ordering, mention "Priority Code: MHSC" for your special pricing.

**OPEN
24 HOURS!**



FOR MORE INFORMATION ON THESE PRODUCTS, CALL HSC AT 805-566-6220. ASK ABOUT OUR WINDOWS SOFTWARE!
©1995 HSC Software Corp. 6303 Carpinteria Ave., Carpinteria, CA 93013. Phone: 805-566-6220 Fax: 805-566-6385. HSC and Kai's Power Tools are registered trademarks and KPT Bryce, KPT Convolver, KPT Power Photos and KPT Vector Effects are trademarks of HSC Software Corp. Live Picture is a trademark of Live Picture, Inc. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Used under license. All other product names are trademarks of their respective owners. Offers good in the US and Canada for a limited time only and are subject to change without notice.

Circle 5 on reader service card

See HSC at
Macworld,
Boston
Aug. 8-11
Booth #1916

SIGGRAPH,
Los Angeles
Aug. 8-10
Booth #1244

And upcoming
Seinfeld and
COMDEX
shows





Apple Color LaserWriter 12/600 PS

A picture is worth But for some reason, Hew

In this case, a picture seems to be worth slightly more than a thousand words. Because after seeing the difference between printers, we just couldn't keep quiet. As you can see above, the Apple® Color LaserWriter® 12/600 PS with Color PhotoGrade delivers near-photographic



quality that can make virtually everything you print more expressive. True 600 dpi resolution means that sharp, black text always comes out as sharp, black text. Your PostScript™ and TrueType® fonts, as well as your

Introducing the Apple Color LaserWriter 12/600 PS

The Apple output shown was printed on the Color LaserWriter 12/600 PS with all printer settings set to default. The Hewlett-Packard output shown was printed on the HP Color LaserJet with the PostScript upgrade and with all printer settings set to default except the halftone setting set to scatter dither (enhanced) may be registered in certain jurisdictions. All Apple products are designed to be accessible to individuals with disability. To learn more (U.S. only), call 800-776-2133 or TDD 800-533-6223.



Hewlett-Packard Color LaserJet

a thousand words. Hewlett-Packard is speechless.

line art, have never had more impact. And it's incredibly easy to use. Just hit Print. With ColorSync® 2.0, our seamless color-matching



technology, the color you see on your monitor is the color you see on your paper. To hear even more words about the

Apple Color LaserWriter 12/600 PS (words like "surprisingly affordable" and "cross-platform compatibility," to

name just a few), call 800-538-9696, extension 525, for the authorized Apple reseller near you. Or,

if it's more convenient, visit us on the Internet at <http://www.apple.com>. Enough said.



NOVELL

Reviews

Power 100

Macintosh Clone

PROS: Excellent performance; highly compatible with existing hardware and software; outstanding technical support; about \$700 less than a comparable system from Apple; expandable. **CONS:** Relatively slow internal hard drive; minor errors in the user's manual.

COMPANY: Power Computing (512/258-1350).

LIST PRICE: Base model \$2599 (tested configuration \$3249).



THE POWER 100 MAKES good on Power Computing's promise to create a high-performance Macintosh clone. It offers all the capability of an Apple Power Macintosh 8100/100, for about \$700 less. In the Power 100's base configuration, \$2599 gets you 8MB of RAM, a 730MB hard drive, Ethernet, a 24-bit high-performance video (HPV) card in addition to the built-in video, and a pile of software. Power Computing's competitively priced options include a larger hard drive, more RAM, more video RAM, a 14- or 17-inch monitor, a DOS card, and an internal quadruple-speed CD-ROM player. Possible future options include modems, Iomega's 100MB Zip drive, and a recordable CD-ROM drive. Power Computing has worked hard to ensure that you can get the computer you want; like DOS/Windows clone makers, Power Computing configures your computer to your needs at competitive prices.

Power Inside

On the outside, the Power 100 appears to be a typical PC in a baby-AT case—a common PC clone case. But looks are deceptive. Closer examination of the front panel reveals such Mac features as

a restart button and a soft power-on button. Little Apple-esque icons adorn the back of the case. While standard connectors are in different places from what Mac fans would expect, they're all there.

On the inside, it's hard to find substantive differences between the Power 100 and a Power Macintosh 8100/100. Both systems use a 100MHz PowerPC 601 chip. Both have a 256K Level 2 system cache (Power Computing offers a 512K option), dual SCSI buses, three NuBus slots, and a PDS slot. The Power 100 supports up to 200MB of system RAM versus 264MB in an Apple Power Mac 8100/100 and 136MB in an Apple Power Mac 7100/80. Even the chip sets are the same: as part of its license and to ensure compatibility, Power Computing uses the same chips that Apple uses in its own Power Macintoshes.

Elbow Room

Cosmetic differences are obvious to anyone who has peeked into a Macintosh. To fit the motherboard within the baby-AT chassis while still providing all the features of a Power Macintosh, Power Computing completely redesigned Apple's motherboard. The most significant departure from Apple's design is a slotted daughterboard that has ports for all peripherals except ADB, internal video, and LocalTalk printing. There are ports for CD-quality stereo sound-out and sound-in, Apple AUI Ethernet, an external modem, a 2MB floppy drive, CD-ROM and audio-CD playthrough, an internal speaker, and internal and external SCSI buses.

Although the ribbon cables and wires connecting the daughterboard's internal ports to devices are messy, the daughter-



MARK JOHANN

board gives Power Computing the flexibility to change peripherals options. For instance, Power Computing could include a 10BaseT Ethernet connector instead of Apple's AUI connector. The daughterboard also allows owners of early Power Computing systems to upgrade their peripherals' interface capabilities easily. At press time, future options were only in the planning stages.

The Power 100 can accommodate three 12-inch NuBus boards, with ample space left over where two more NuBus or PCI slots might fit in future models. The three drive bays are large enough to hold 3.5-inch or 5.25-inch half-height drives. However, a floppy drive occupies one bay, and in the configuration I tested, a quad-speed CD-ROM player filled another. The internal hard drive occupies a 3.5-inch bay that sits above the power supply. You can install yet another 3.5-inch drive on a side-mount bracket above the RAM banks. In a fully loaded Power 100, space is tight: full-size NuBus boards nearly touch the CPU's heat sink, and a side-mounted drive is squeezed in among the daughterboard, CD-ROM cables, and RAM SIMMs.

Like Apple, Power Computing ships its systems with an included HPV card or an Apple AV card (\$349) installed in the PDS slot. Power Computing has redesigned Apple's HPV card to include both the standard Mac DB-15 video connector and a standard VGA connector. For now, an inconvenient internal DIP switch toggles between the two connectors, but Power Computing hopes to provide a better solution in the future.

More than Just Hardware

The Power 100's bundled extras are what truly distinguish it from comparable Apple machines. Unlike Apple's desktop systems, the Power 100 includes an Apple Design II extended keyboard and an ADB Mouse II. In addition to a modified version of System 7.5.1 on CD-ROM, the

Power 100 includes ClarisWorks; Intuit's Quicken; Now Software's Now Utilities, Now Contact, and Now Up-to-Date; and the Bitstream Creative Collection CD that contains 121 PostScript Type 1 and TrueType font groups. Power Computing also provides FWB's CD-ROM ToolKit and Hard Disk ToolKit Personal Edition, and will soon add Insignia Solutions' SoftPC and a 90-day demo of SoftWindows to this list.

The box has documentation for everything except Quicken, and includes *Mac System 7.5 for Dummies*. The user's guide is clear and concise, but several diagrams contain errors.

Checking Out Customer Service

Service is arguably the factor that will ultimately determine the success of Macintosh clones. Low prices are compelling, but if something breaks, you need a safety net. Apple's history of poor technical support leaves a large void that clone manufacturers can fill. With an experienced staff recruited from Dell, APS, and Apple, Power Computing seems to have designed a robust support system.

Power Computing offers a standard one-year warranty on all of its models and guarantees a three-day turnaround on service. For a nominal fee—three years' coverage costs \$119—users can purchase on-site service with one-day turnaround. The company hopes to solve most problems through stellar phone support.

Power Computing offers toll-free technical support from 8 a.m. to 8 p.m. (central time) every day. During a period when Power Computing was testing its technical support, a *Macworld* staffer called anonymously to check its quality. The technical support was remarkably good. With the technician's patient help, in less than 30 minutes we isolated a tough problem with an extension that works only intermittently on 100MHz 601 processors. The technician even pursued the problem with the company that

created the extension, getting a reference number I could use to call the company directly, as well as giving me his own direct phone line and E-mail address.

Power Computing claims that its customer service representatives will check in with customers in the first days after purchase to make sure that they've received everything and that the system is in working order. Time will tell if the company can continue to provide such support when sales volumes increase, but at the moment, the support is excellent.

Works like a Charm

Fears of poor performance and incompatibility were unwarranted. In fact, the Power 100 bested the Power Macintosh 8100/100 by a small margin, and even turned in better numbers than the Power Mac 8100/110 on some tests. For example, the Power 100 took 98 seconds to evaluate a Mathematica notebook versus the 8100/100's 110 seconds and the 8100/110's 102.5 seconds. Typically, only a few seconds separated the performance of these three machines for any single test. For maximum performance, but without the Power 100's low price, check out Apple's new Power Macintosh 9500, the first Mac to use PCI, the replacement expansion bus for Apple's NuBus (see "First of a New Breed," in this issue).

Macworld Lab performed extensive compatibility tests with popular software and hardware. As we found out, the Power 100 shares with the Power Mac 8100/100 some problems caused by its processor, but otherwise the Power 100 gave us no difficulty.

The Last Word

Customers benefit from Power Computing's impressively low prices. The Power 100 offers the speed, expandability, functionality, and compatibility Macintosh users expect, with the customer support and prices we have wanted for so long.

—TIM WARNER



All the Speed of a Power Mac

■ = Best result in test. Longer bars are better.

Results are times as fast as a Centris 650 (Centris 650 = 1.0). Products are in decreasing order of overall performance.



*With Level 2 cache (256K), HPV video (default VRAM), 32MB of DRAM.

BEHIND OUR TESTS

We reviewed a Power 100 with 16MB of RAM, a 730MB hard drive, a 4X CD-ROM player, and the Power Computing HPV card.

Personal Digital Assistants

Four PDAs

Envoy Wireless Communicator

PROS: Wireless messaging well integrated into Magic Cap interface. **CONS:** Current shortage of Telescript software limits usability; high cost for wireless service. **COMPANY:** Motorola (800/894-7353). **COMPANY'S ESTIMATED PRICE:** \$1000 to \$1500.



Marco Wireless Communicator

PROS: Wide range of Newton software. **CONS:** High cost for wireless service. **COMPANY:** Motorola (800/894-7353). **COMPANY'S ESTIMATED PRICE:** \$900 to \$1400.



MessagePad 120

PROS: Comfortable industrial design; wide range of Newton software. **CONS:** Poor integration with desktop PIMs. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** \$599, 2MB model \$699.



Sony Magic Link

PROS: Simple interface; strong communications features. **CONS:** Current shortage of Telescript software limits usability. **COMPANY:** Sony (800/571-7669). **LIST PRICE:** \$699.95.



MW LAB CONSIDER DICK TRACY'S TWO-WAY video wristwatch, Batman's utility belt, and the lapel-pin communicators from *Star Trek*. Science fiction has been promising powerful digital technology that fits in the palm of your hand for years. Can today's technology deliver? Two years after Apple introduced the first Newton, we took a look at four different personal digital assistants (PDAs). While these handheld computers have improved, we're still not ready to give up our paper-based daily planners.

Four Devices, Two Platforms

There are some features all these PDAs share: infrared data transfer between

devices that use the same operating system, system software with basic personal-information-manager (PIM) functionality, and primarily pen-based data entry on touch-sensitive LCD screens. The screens all lack backlighting and require good ambient lighting to be readable. All the PDAs have 1MB of RAM installed, which serves as both system memory and storage memory for applications and files (the MessagePad 120 also comes in a 2MB version). You can provide expansion and additional storage primarily via low-power, high-speed PC (formerly PCMCIA) Card flash-memory cards, though prices of almost \$100 per megabyte make the cards an expensive proposition.

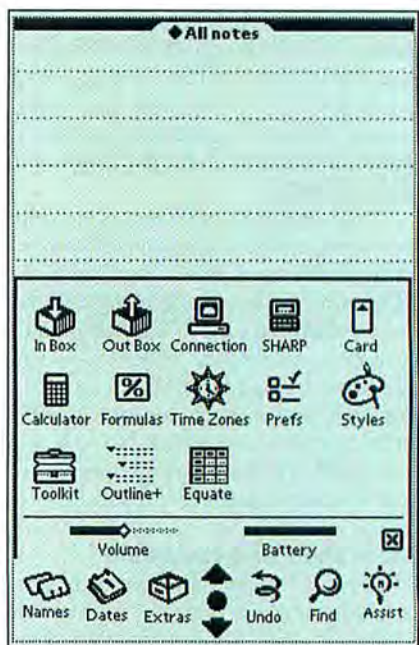
The devices we looked at use two different platforms: the MessagePad 120 and the Marco both use Apple's Newton OS; the Magic Link and the Envoy use General Magic's Magic Cap operating system. Based on the metaphor of an endless pad of paper, the Newton OS allows you to have a blank sheet at all times for entering data. This setup focuses on data entry for forms, spreadsheets, and simple note taking. The applications are stored in a pop-up "drawer."

The Magic Cap OS, on the other hand, is a virtual desktop. Most of its applications exist as objects on the desktop. It uses a horizontal orientation that feels larger than the Newton's vertical work space. The Magic Cap software is built around Telescript, a programming language that embeds small programs, or agents, in messages sent from Magic Cap devices. Underneath an easy-to-use interface, these agents are capable of some sophisticated tasks, from scheduling appointments to rule-based E-mail filtering and delivery. The only problem is that a year after the launch of the Magic Cap software, developer tools for the platform are still scarce. To make the Magic Cap PDAs truly useful, General Magic needs to offer desktop client-server software that takes advantage of Telescript's powerful potential.

These two platforms approach their ideal users from different angles. General Magic emphasizes personal communications, so the Magic Cap software is true to the digital assistant concept where automated agents perform mundane tasks, freeing us to do more creative work. Magic Cap pushes PDAs closer to being smart telephones—contacting other people is the primary goal. The Newton approach is more pragmatic, attempting to replace the thousand tiny scraps of



Digital Desktop The Magic Cap OS's approach is compartmentalized. You enter data into applications that appear as objects on the desktop, such as the contacts file and the appointment book. Magic Cap uses Telescript to integrate and synchronize this data between applications.



Digital Notepad The Newton OS is based on the metaphor of an endless roll of paper, storing data you enter in an object-oriented database (colorfully known as the "soup") that's easily accessed by all your applications. Write *Ramona* on a Newton PDA and it will scan the soup for any other references to *Ramona*, trying to link your data to other entries.

paper we generate daily with a single, silicon notepad. It's designed around information gathering and management, with the goal of uniting scattered data into a cohesive whole. Here are our impressions of each PDA after a month of use.

The MessagePad 120

The MessagePad series is two years old and as a result feels more polished than its younger competition. The Newton OS seems faster and more streamlined than the Magic Cap software and makes enter-

ing information on the MessagePad more pleasurable. The 2MB model of the 120 offers about three times the storage space of the other PDAs. This allows you to store more third-party software in the internal memory, thus saving the PC Card slot for add-on communications products and peripherals.

We both prefer the 120's design to that of any of the other products. The MessagePad just feels good in your hand. Add to that the satisfying performance we experienced with a range of Newton software, and you've got a solid PDA.

The Newton OS's handwriting recognition is still nothing to write home about, despite the ability to do deferred character recognition. But after we installed Palm Computing's text-entry software, Graffiti (see *Reviews*, May 1995), we were pleased by the ease of data entry. Because the Newton OS supports a wide range of applications for vertical markets, the MessagePad seems the best choice for specialized applications like medical and inventory work.

The Marco

The Marco is a slim black tablet that folds open like a book to expose the LCD screen. It runs on Apple's Newton OS. The major difference between the Marco and the MessagePad 110 is that Motorola bundles a radio modem with the Marco.

The Marco isn't as comfortable to carry as the MessagePad, though it's still nicely designed. It's heavier than the MessagePad, due to the radio modem, but still under the 2-pound mark. The nickel-cadmium batteries are meant to provide eight hours of use, but with the modem on full time expect to get about half that.

The radio modem is set up to use the Ardis radio network, which covers the United States fairly thoroughly. We noticed that the modem often provides coverage in areas where cellular phones won't function. RadioMail is the other part of the Marco's wireless package. RadioMail offers an E-mail address and 24-hour paging, supports outgoing faxes (via E-mail), and includes a cursory news and stock-quote service.

The RadioMail service is well designed, but it's pricey. RadioMail charges \$49 monthly for the minimum service, but moderate to heavy users can expect to receive bills over \$100. While an alphanumeric pager is cheaper, the Marco's ability to archive messages and its two-way communications make it an attractive option. CE Software still hadn't released its wireless QuickMail client during our testing, but the ability to log on to our office E-mail system (remotely and locally) would have been very welcome.

If your organization already uses MessagePads, a Marco is an easy way to add wireless functionality.

The Magic Link

Sony's Magic Link was the first PDA to use General Magic's Magic Cap operating system. The Magic Link is a smooth, gray tablet that is used most comfortably held in two hands or placed on a desk-top. The screen is horizontal and the work surface is easy to write on using the stylus or even your fingers. There's no built-in screen cover for the Magic Link, so most users will want to get a slipcov-



From left, Motorola's Marco Wireless Communicator, the Sony Magic Link, Motorola's Envoy Wireless Communicator, and Apple's MessagePad 120.

er for it. It's designed for communication: short E-mail messages, phone calls, and appointment scheduling. Using the Magic Link for these tasks is a breeze, though nearly all the functions of a Magic Link require a phone jack for the internal 2400-bps modem. To get the most out of the Magic Link, you need to sign up with AT&T's Personal Link messaging service, which provides fax, paging, and E-mail capabilities. Compared with RadioMail, Personal Link is inexpensive (currently around \$9.95 per month).

Our biggest complaint about the Magic Link is that only a handful of applications have been developed for it. The Personal Link service does offer support for Telescript, but only between Magic Cap users on Personal Link. That's fine if you expect to send mail only to other Magic Cap devices, but it's hardly a solution most users will be happy with.

The Envoy

Motorola's Envoy folds out the same way the Marco does, but it operates in Magic Cap's landscape orientation. It doesn't include a phone jack, instead assuming you'll use the wireless modem, though

you can add telephone functionality via a splitter cable that plugs into the Envoy's external modem port.

The Envoy is equipped with the same radio-modem package as the Marco, but the RadioMail software for the Envoy is better integrated than the Marco's software. The Envoy uses Magic Cap's intelligent mail agents to customize how mail is delivered and received. If there were more Telescript-capable devices and applications available, the Envoy's communications capabilities would be even better. Still, the Envoy was our first choice for sending and receiving E-mail.

The Last Word

As we looked at these PDAs, strengths and weaknesses emerged, but no PDA had an overall advantage. If you're considering buying one of these digital valets, think hard about what you intend to use it for. Then spend some time in the store getting hands-on experience with the device before you buy.

The wireless modem can add great connectivity, but it adds \$300 to the purchase price, and you can quickly run up a monthly bill over \$100 for only moderate usage. We still consider alphanumeric pagers, remote-access-equipped PowerBooks, or simple telephone technology like voice mail to be better deals.

The basic truth is that as appealing as PDAs might seem, there's still not that much they can do that you can't do with a 49-cent pad of paper and a dime pencil. That's slowly changing, but while the current crop of PDAs have improved and added fairly impressive communications features, they're still too much of a premium product to recommend for all but that small group for whom convenience and connectivity are worth the price.

—LAUREN BLACK AND MATTHEW HAWN

24-Bit Video Boards

Three Graphics Boards

EAsycolor 24/1360

PROS: Enhanced resolution compatible with all multisynchronous monitors; superior Photoshop CMYK-mode acceleration on 680X0 Macs; good value. **CONS:** Slowest in many QuickDraw acceleration tests; no screen zooming. **COMPANY:** EA Research (510/867-0967). **LIST PRICE:** \$1699.



PaintBoard Prism GT

PROS: Acceptable QuickDraw acceleration; good software controls. **CONS:** Must enter Monitors control panel to change resolution; no Photoshop acceleration. **COMPANY:** RasterOps (408/562-4200). **LIST PRICE:** \$999.



Thunder IV GX 1360

PROS: Lots of software controls; ships with color-management software; can change resolution from pop-up menu; superior Photoshop-filter acceleration. **CONS:** Enhanced resolutions work only with specific Radius and SuperMac monitors; overly expensive. **COMPANY:** Radius (408/434-1010). **LIST PRICE:** \$2999.



PCI (PERIPHERAL COMPONENT INTERCONNECT) is the bus of the Mac's future. While this means vendors have dramatically scaled back their NuBus development, the no-longer-"nu" bus technology isn't dead yet. In fact, most

graphic artists continue to rely on NuBus video boards and accelerators—and will for some time to come. With that in mind, I found the latest batch of 24-bit NuBus video boards some of the most exciting that have ever crossed my desk. Three in number—the EAsycolor 24/1360 from EA Research, the PaintBoard Prism GT from RasterOps, and the Thunder IV GX 1360 from Radius—all are 7-inch QuickDraw acceleration boards that support 16 million colors at a resolution of 1152 by 870 pixels. The Thunder IV and EAsycolor 24/1360 also support higher resolutions and accelerate filters and CMYK editing inside Adobe Photoshop.

Speed and Software

All three boards provide impressive QuickDraw acceleration, but as I used the boards, I got a subjective impression that the Thunder IV and PaintBoard Prism were slightly faster than the EAsycolor 24. My unscientific conclusion was backed up by Macworld Lab's official tests, which show that the EAsycolor 24 is indeed significantly slower at scrolling documents inside Adobe Photoshop (in RGB mode) and Microsoft Excel—sometimes by a significant margin. However, the EAsycolor 24 did well when scrolling inside Microsoft Word and in the magnification tests, which require complete screen redraws. The Thunder IV was the fastest board overall, equaling its rivals in all but two of the scroll and magnification tests. The on-board video of the test computers—a Centris 650 and a Power Mac 7100/66—outpaced all three cards in two magnification tests, indicating that QuickDraw acceleration is generally less important than bus speed inside object-

oriented programs such as QuarkXPress and Macromedia FreeHand.

When it comes to software controls, the EAsycolor 24 is the most austere and the Thunder IV is the most capable. The EAsycolor provides just one system extension—a simplicity I value in these days of garbage-laden System Folders. You access the bare-bones resolution and acceleration options via the Monitors control panel. The PaintBoard Prism, on the other hand, has two control panels; they allow you to customize shortcuts for zooming, panning, and changing the bit depth. You can even adjust the scan rate so it's an exact multiple of the NTSC 30Hz rate, thus eliminating the rolling black lines that show themselves when you videotape a computer screen.

But the Thunder IV provides far and away the most bells and whistles. You can automatically resize a window to fit a new screen size, select from five corrected gamma settings, and even set the screen to power off after a specified period of inactivity. (This last function turns off all the monitors connected to your Mac.) The board also ships with Radius's Color Composer, which lets you match on-screen colors to their print equivalents (see the sidebar "Simple Color Matching," in "The Color You Expect," *Macworld*, May 1995). Unfortunately, you're limited to using the A through Z keys when specifying shortcuts for zooming screen pixels. If you're an old SuperMac board owner used to pressing the arrow keys, you'll have to learn a new way.

Packing Pixels onto the Screen

On start-up, the Thunder IV and PaintBoard Prism allow you to cycle through resolutions by holding down specific keys; the EAsycolor 24 is the only board that insists on conforming to the monitor cable's sense code. This conformance

continues



Comparing QuickDraw Acceleration

■ = Best result for each test. Times are in seconds. Shorter bars are better.

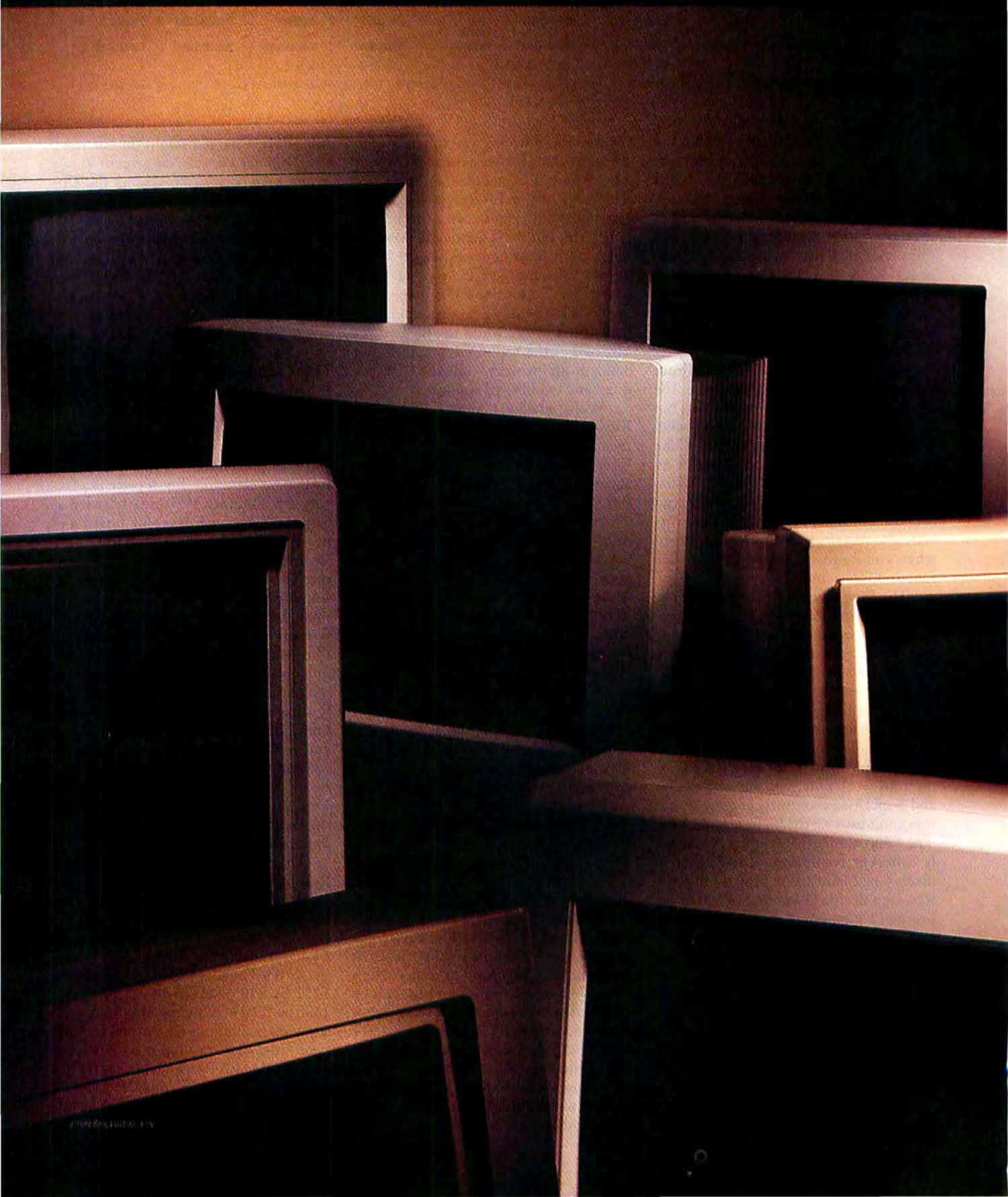
	SCROLL				MAGNIFY		
	QuarkXPress 3.2	Photoshop 3.0	Word 5.0.1	Excel 4.0	QuarkXPress 3.2	FreeHand 5.0	Photoshop 3.0
68040							
EA Research EAsycolor 24/1360	32	34	8	74	4	12	1
Radius Thunder IV GX 1360	26	17	8	42	4	12	1
RasterOps PaintBoard Prism GT	30	22	14	50	4	13	1
Centris 650 Internal Video*	37	46	10	98	3	10	2
Power Mac							
EA Research EAsycolor 24/1360	14	34	10	86	3	8	1
Radius Thunder IV GX 1360	16	17	9	43	3	8	1
RasterOps PaintBoard Prism GT	13	19	9	41	3	8	1
Power Mac 7100 Internal Video	14	53	10	104	2	7	1

*1MB of VRAM installed for 16-bit color at 16-inch resolution (highest possible with internal video).

Tests were conducted on a Centris 650 with 72MB of RAM using 680X0 versions of the applications, and on a Power Mac 7100/66 with 90MB of RAM using Power Mac-native versions of the applications. We used an Apple 17-inch MultiScan monitor set at 832 by 624 pixels and 75Hz. Photoshop memory partition was set at 60MB.—Macworld Lab testing supervised by Matt Clark

BEHIND OUR TESTS

*HOW DO YOU TELL IF
IT'S A "TRINITRON"?*





Comparing 24-Bit Video Boards

■ = Best result for each test. Times are in seconds. Shorter bars are better.

RUNNING PHOTOSHOP ON A CENTRIS 650*

	Unsharp Mask	Gaussian Blur	Resample	CMYK Scroll
EA Research EAsycolor 24/1360	77	46	58	37
Radius Thunder IV GX 1360	42	23	24	56
Internal Video	250	141	60	91

RUNNING PHOTOSHOP ON A POWER MAC

	Unsharp Mask	Gaussian Blur	Resample	CMYK Scroll
EA Research EAsycolor 24/1360	40	25	29	37
Radius Thunder IV GX 1360	17	12	11	27
Internal Video	61	36	29	57

*1MB of VRAM installed for 16-bit color at 16-inch resolution (highest possible with internal video).

BEHIND OUR TESTS

Settings for filter and resampling tests were Unsharp Mask at 200 percent and 10.0 radius; Gaussian Blur at 3.0 radius; Resample to 75 percent.

ensures that the board starts up with the optimum resolution, but it also prevents you from switching to other resolutions once you arrive at the Finder desktop. Unless you own a monitor that subscribes to Apple's latest multisynchronous specifications, you'll need to purchase a sense-code adapter (EA Research sells one for \$29.95), which will allow you to switch resolutions. Even then you'll need System 7.5, which incorporates the new Apple Display Manager.

Both the PaintBoard Prism GT and EAsycolor 24 boards let you change the resolution of your monitor on the fly, but you must use the Monitors control panel and click on the Options button. (The Prism board requires an option-click on the Options button.) The Thunder IV has a pop-up menu of resolutions that you can access at any time; the Thunder IV's software also rearranges icons to fit on screen when you downsize the resolution (this function is also built into System 7.5).

The Prism board can display 1600 by 1200 pixels in 4-bit color, but at this resolution you can make yourself ill panning across the screen. Both the EAsycolor and the Thunder IV boards squish more pixels onto the screen at once, which is ideal for image-editing work. The Thunder IV GX 1360 supports 1360 by 1024 pixels in 24-bit color and 1600 by 1200 in 8-bit color. Unfortunately, these enhanced resolutions work only with specific Radius and SuperMac monitors; generic monitors don't provide the higher resolutions. The EAsycolor 24/1360 supports a slightly different resolution—1380 by 1040 pixels—in 24-bit color. Apparently, EA Research decided to include 1360 in the product's name (and make comparison with the Radius board more obvious). At any rate, the enhanced resolution works on any multisynchronous monitor, generic or otherwise.

Giving Photoshop the Gas

Both the EAsycolor 24 and the Thunder IV accelerate Photoshop functions. (The Thunder IV incorporates Radius's Photo-Engine accelerator as a daughterboard.) But how the two boards accelerate these

functions and whose way is better constitute a debate between the two vendors. The EAsycolor includes an on-board RISC chip, which EA Research claims is roughly as powerful as two conventional DSPs. Ah, but the Thunder IV has four DSPs, so it must be faster, right? Well, not if you count the CPU on your logic board. The EAsycolor RISC chip works in parallel with the CPU, processing one half of the image while the CPU takes care of the other half. DSPs, on the other hand, do all the work while the CPU sits there and twiddles its thumbs.

Well, whatever your take on the RISC-versus-DSP argument, one point seems to be accepted by both sides: the EAsycolor's solution ensures that there is almost no slowdown when you switch to Photoshop CMYK mode, while the Thunder IV does a better job on filters. And that's what Macworld Lab found, too. In our tests, the EAsycolor board was generally every bit as fast at scrolling and magnifying in CMYK mode as it was in RGB mode. Unfortunately, the EA board lags considerably in the RGB tests and frequently continues to lag in CMYK. To give you an idea, the board was almost 200 percent as fast at magnifying as the Centris 650's on-board video and 250 percent as fast when scrolling. The EAsycolor was 150 percent as fast as the Power Mac's on-board video at scrolling, but perceptibly slower when magnifying. The Thunder IV tested close to the EAsycolor 24 in the magnification tests. It was 50 percent slower than the EA board when scrolling on the Centris 650, but 40 percent faster on the Power Mac 7100.

When it comes to filters, however, the Thunder IV accelerates more operations and does it better. The EAsycolor accelerates 8 filters, including the usual Blur and Sharpen crowd as well as High Pass. None of the filters carry the Adobe Charged seal of approval, meaning that the results may differ from what you'd see with Photoshop's unaccelerated filters. The Thunder IV accelerates 13 filters (anything with a radius value, plus Despeckle and Find Edges), 5 transformations, and 3 mode conversions—all with

the Adobe Charged stamp. In our tests, the Thunder IV was 200 percent as fast as the EAsycolor at processing the Unsharp Mask and Gaussian Blur filters on both 68040 and Power Mac platforms, and a whopping 600 percent faster than the unaided Centris 650. The Thunder IV was also consistently 200 to 300 percent as fast at image resampling—which the EAsycolor does not accelerate—as any other tested video option.

The Last Word

If I had to pick the best board from this bunch and price was no concern, I'd snap up the Thunder IV GX 1360, with its better QuickDraw acceleration, superior software, and impressive all-around Photoshop acceleration. But if price is a factor, the Thunder IV is nearly twice as expensive as the EAsycolor board and nearly three times the price of the PaintBoard Prism GT. For users on a budget, the EAsycolor 24/1360 may be a better solution. Admittedly, the software is minimal, but that's secondary. More important is the EAsycolor 24's helpful Photoshop CMYK-mode acceleration, universal high-resolution support for multisynchronous monitors, and generally adequate (though by no means stellar) QuickDraw acceleration. And finally, if you just want QuickDraw acceleration without the Photoshop stuff, the PaintBoard Prism GT performs admirably. You can find less expensive boards, but the PaintBoard Prism's plentiful software options make it worth a look.

Closing items: Both Radius and EA Research have announced plans to release similar PCI boards this year; RasterOps has no plans to release a PCI board. Also, both the Thunder IV and the EAsycolor 24 are available in different resolutions: the \$2499 Thunder IV GX 1152 supports 1152 by 870 pixels in 24-bit color and 1600 by 1200 in 8-bit; the \$3699 GX 1600 supports resolutions up to 1600 by 1200 pixels in 24-bit on supported monitors. Comparable EA Research boards are less expensive—the EAsycolor 24/1152 retails for \$1299, and the 24/1600 lists at \$2499.

—DEKE MCCLELLAND

BY THE PICTURE ON THE SCREEN.

Multiscan 20se



INSPIRING VISION

Trinitron

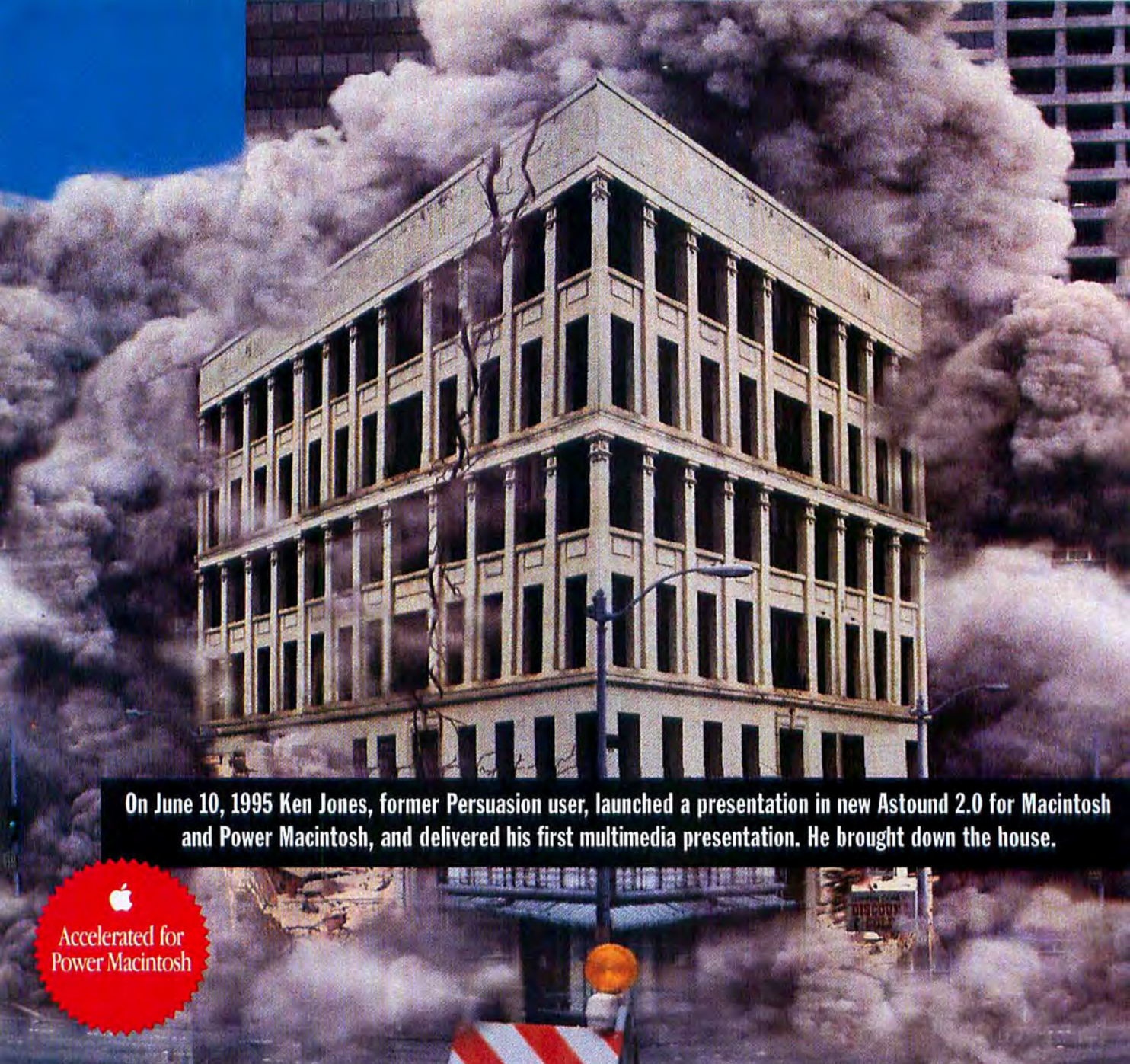
The best monitors have something distinctly different. The Trinitron[®] Inspiring Vision Logo.

Monitors with this logo have state-of-the-art Trinitron technology inside. Including a vertically-flat screen that minimizes image distortion and light reflections from corner-to-corner. And the revolutionary Aperture Grill. It virtually eliminates the doming and scan-moiré effect. Together, the Aperture Grill and unique electron gun system provide you with a crisper, clearer, sharper, brighter picture.

For the highest quality, look for the Trinitron Inspiring Vision Logo. Then you'll know it's truly a Trinitron monitor.

SONY

© 1995 Sony Electronics Inc. Reproduction without written permission is prohibited. Sony, Trinitron, and the Inspiring Vision Trinitron Logo are trademarks of Sony.



On June 10, 1995 Ken Jones, former Persuasion user, launched a presentation in new Astound 2.0 for Macintosh and Power Macintosh, and delivered his first multimedia presentation. He brought down the house.


Accelerated for
Power Macintosh

**Add This Much Impact To Any Presentation
With The Instant Multimedia Power of New
Astound® 2.0 For Macintosh and Power Macintosh.**

Get ready for instant multimedia presentations that will hit your audience like a ton of bricks. Welcome to the attention-getting world of Astound 2.0.

It couldn't be easier. Choose one of over 70 pre-designed templates. Then add text, charts, and more as easily as you would in Aldus Persuasion™ or Microsoft PowerPoint™. But Astound templates have amazing multimedia effects already built in. Just push the "play" button and watch the excitement as text glides into place, 3-D charts tumble and bounce, and pictures materialize into view. You don't have to do a thing!

Nothing beats Astound 2.0 for stunning presentations that respond to your audience.

A built-in texture generator can create an unlimited variety of striking backgrounds, and new effects

like 3-D extrusions and animated tweening ensure attention-grabbing impact. What's more, you can use any on-screen object as an interactive "button," giving you complete control over incredible functions like hiding or revealing graphics and animations, jumping to other slides, or even controlling a QuickTime movie! And Astound 2.0 has an on-screen control panel so you can easily manipulate the speed, the volume, and even the playback order of your presentation.

If you own Aldus Persuasion or Microsoft PowerPoint, take the next step up. Get the Astound 2.0 for Macintosh and Power Macintosh competitive upgrade for just \$99.95.*

To order or for more information
call Gold Disk at 1-800-982-9888.

Astound[®]
#1 In Multimedia Presentations



Copyright 1995 Gold Disk, Inc. Astound and Gold Disk are registered trademarks of Gold Disk Inc. All other trademarks are property of their respective owners. Windows version available.
*Dealer pricing may vary. Suggested Retail Price \$249.95. Competitive upgrade pricing available to owners of Aldus Persuasion and Microsoft PowerPoint.

Circle 77 on reader service card

Aladdin Desktop Tools 1.0

Productivity-Enhancement Utilities

PROS: Strong Copy, Trash, and printing enhancements; wide range of features. **CONS:** Uneven; minor flaws. **COMPANY:** Aladdin Systems (408/761-6200). **LIST PRICE:** \$89.95.



A LADDIN DESKTOP TOOLS (ADT) combines updated versions of older Aladdin utilities with modules based on shareware favorite SpeedyFinder7. Although ADT was ostensibly designed to complement rather than compete with existing utility packages, there is still substantial overlap. However, ADT offers some unique features in a combination that differs from other packages.

Extensions

Desktop SpeedBoost makes the Finder's Copy and Trash functions faster and more versatile. It can copy and delete files in the background, queue Copy and Trash operations, and view and delete queued operations. SpeedBoost's many options range from smart handling of transparently compressed files to a thoughtful ⌘-drag feature to move (not copy) files between volumes.

You can have SpeedBoost's powerful Replace feature automatically replace only changed files, preserving unchanged and more-recent versions. Or you can choose to be asked if you want to replace files; SpeedBoost lets you decide on a file-by-file basis, offers a "replace by date" option, and can merge folders with the same name rather than replace them.

Trash enhancements include options to empty the Trash at shutdown, delete locked files without asking, keep the Trash empty (by deleting items immediately), and overwrite all trashed files so they cannot be retrieved. (ADT also offers this last option on a per-file basis with Desktop Secure Delete.)

ADT's obvious competitors are Symantec's Copy-Doubler and MSA's Copy-right Pro, both of which offer a feature that SpeedBoost lacks: scheduled copying. But CopyDoubler's Fast Replace isn't as sophisticated as SpeedBoost's version, and Copy-right Pro does a fraction of what ADT can do.

Desktop Makeover is a grab bag of minor goodies. It can turn off the Finder's window zooming and file-rename delay; it offers color icons for CDs, remote volumes, and different types of floppies; and it removes the balloon-help icon from the menu bar. I was disappointed, however, that I couldn't reclaim the "free" menu-bar space with my menu clock.

Makeover also features Document Linking, which replaces the "application not found" error message with a dialog box asking you to choose an application. Makeover remembers your choice, linking all documents of that type to the same application. Apple now includes this feature in System 7.5 as Macintosh Easy Open, but I found Makeover easier to use. Finally, Makeover's Menu Settings feature lets you assign ⌘-key combinations to your Finder menu items. While this is a nice idea, I found it awkward compared with Now Software's NowMenus (part of Now Utilities), which does this and more with much greater ease.

Desktop Shortcut enhances the Finder's Open and Save dialog boxes. It can take you straight to the last file or folder accessed; give you direct access to recently used and user-selected files, folders, and volumes via a pop-up menu; create new folders; and search for files by a variety of criteria. In short, Shortcut is on the same turf as Now Super Boomerang. While Shortcut has a few cool things that Super Boomerang lacks, they're insignificant compared with the latter program's additional features and greater elegance.

Desktop Magic Tools adds to Aladdin's Magic Menu extension, which is included in ADT. Magic Tools grants the Finder a few new functions, but not much magic. Get More Info gives you access to a few Finder flags, such as the

Bundle bit, and to the Type and Creator codes for files. Yet it omits things that appear in the Finder's Get Info window, such as Finder Comments and the custom-icon box. Make Alias To lets you save an alias of a selected file with a standard Save dialog but lacks a hierarchical menu of common destinations, which would save steps and time. The Copy/Move function has the same flaw. Lastly, Gather takes a group of selected files and puts them in one folder, but you can gather files from only one volume at a time. Magic Tools can be useful, but it feels like a job half-done.

Applications

ADT's Desktop Printer puts double-clickable, drag-and-drop printer icons on the desktop, which makes choosing an output device a snap—with one important exception. If you have different types of devices using the LaserWriter 8 driver, Desktop Printer can't switch PPDs (PostScript Printer Descriptions), so you still need to use the Chooser. Still, this is a simple, elegant utility. Let's hope Aladdin can deliver a completely LaserWriter 8-friendly version soon.

Desktop Viewer is a drag-and-drop, read-only file viewer that can open virtually anything, though not always in a practical manner. Out of the box, it can view text, sound, PICT, and (with QuickTime) JPEG files. Other file formats can be viewed with XTND translators (not included). With files that lack translators, Viewer defaults to the Programmer's View, which lets you see both data and resource forks.

Viewer lets you copy selections from within any file and save a complete copy of any file, but it doesn't allow you to save selections. This is restrictive. With more-extensive save options, Viewer could be as handy as Abbott Systems' CanOpener.

Oddly, Viewer menus appear in the document window, rather than in the menu bar. This is awkward and disturbingly Windows-like. On the plus side, Viewer functions are accessible directly from Magic Menu and Shortcut. Despite its quirks, Viewer is versatile and useful.

The Last Word

Aladdin Desktop Tools has an impressive array of features. They're not all perfectly implemented, but Desktop SpeedBoost and Desktop Printer make the package worth its \$50 street price; and the rest could be considered a bonus.

—PETER M. STOLLER



View Review The second menu bar makes Desktop Viewer confusing, but it is handy for viewing this PICT file of SpeedBoost's powerful copy options.

"Delrina Fax PRO for Macintosh, ...my business depends on it."

STEPHEN INGHAM
Commercial Photographer
Portland, OR

"I tried using other fax software, but they just didn't cut it. Now, I use Delrina Fax™ to send gray-scale comps to art directors for immediate feedback during a photo shoot. That means faxing directly from Adobe Photoshop™ or Quark Xpress®, followed by faxed invoices directly from Claris FileMaker®. My faxes have got to get there, and they've got to look good—Delrina Fax delivers on both counts."



Stephen Ingham uses only the latest digital tools, including electronic cameras coupled to PowerMacs, storing high-resolution images on drive arrays — no place for an old-fashioned fax machine. But you'll find Delrina Fax is right for your business too, offering features no fax machine can match. And if you already own a fax modem and want to upgrade, rest easy. Delrina Fax supports most Class 1 and Class 2 fax modems, as well as the Apple Express Modem™ and GeoPort Telecom™ adapter.

Still unsure? Delrina Fax has a hassle-free, 60-day, money-back guarantee. Plus *Macworld* magazine says, "Furthermore if you do run into trouble, Delrina's phone-help staff is jaw-droppingly good." (October 1994)

**To order Delrina Fax PRO for Macintosh,
call 1-800-631-8118. Or visit your local
software retailer.**



DELTRINA

Delrina and Delrina Fax are trademarks of Delrina. Macintosh is a registered trademark of Apple Computer Inc. All other product names are trademarks of their respective owners. © 1996 Delrina (Canada) Corporation. All rights reserved.

Circle 137 on reader service card



KPT Convolver 1.0

Photoshop-Compatible Filter

PROS: Allows novices and experts alike to access powerful convolution kernels; multiple undos inside the filter; three flexible modes for applying incremental effects. **CONS:** Cannot preview effects within context of full image window; can't zoom previews inside dialog box; requires an FPU. **COMPANY:** HSC Software (805/566-6200). **LIST PRICE:** \$199.



IF YOU'VE EVER USED THE CUSTOM filter that's included in Adobe Photoshop, you know just how difficult creating your own special effects can be. Though the filter is powerful—allowing you to design sharpening, blurring, edge-detection, and color-embossing effects you can't otherwise access in Photoshop—Custom requires you to enter integer values into a five-by-five matrix of option boxes; Custom then alters a pixel based on the brightness of its neighbors. Even if you actually know exactly what you're doing, you very likely rely on a small repertoire of settings over and over again. It's a shame, too, because the Custom filter boasts literally millions upon millions of unique variations.

The idea behind HSC Software's KPT Convolver plug-in module is to unlock these millions of effects. Named after the so-called convolution kernels that Photoshop's Custom filter maps onto each of the selected pixels in an image, Convolver not only allows you to explore these effects inside a relatively intuitive interface, but it also lets you apply a separate kernel independently to each of the color channels in an image. This means you can sharpen one channel, apply edge detection to the second channel, and emboss the third channel. Unlike Adobe Systems' Aldus Gallery Effects and other plug-in collections that employ predefined kernels to produce highly limited (and frequently bland) effects, Convolver allows you to freely explore an unrestricted range of kernels to create whatever effects you deem most appropriate.

Three Ways to Convolve

Convolver offers three ways to approach convolution kernels—the Explore, Design, and Tweak modes. Rather than working entirely independently, each of the modes builds on the other modes. For example, you can rough out a convolution kernel in the Explore mode, refine

it in the Design mode, and apply the finishing touches in the Tweak mode. This is quite a handy setup for designing incremental effects. You can also reverse functions applied in any mode by taking advantage of the 200 sequential undos that Convolver provides.

Much like the Texture Explorer included with HSC's Kai's Power Tools, Convolver's Explore mode features 15 random variations on a selected image. Click on a variation, and it becomes the base image for 15 new variations. The Design mode also supplies 15 variations, but you can control these by specifying axis parameters. For example, you might explore increasing light variations on the



Convolver's Pet As you work with Convolver, the plug-in awards you up to five stars, four of which deliver a new function. One offers a before-and-after split-screen preview of the image (1), another displays a color wheel when you change the hue and saturation (2), and a third lets you store up to nine settings as you work, on the off chance you might want to revisit one (3). The last function cycles through variations in a continuous animation.

left and increasing embossed variations on the right. If you want to combine two variations into one effect, you can drag between them, a technique the manual calls scrubbing. You may have to read the manual to get up and running with these two modes, but the options are well designed and functional.

In the Tweak mode, you adjust individual kernel attributes by dragging from buttons that serve as invisible slider bars. As you drag, your cursor vanishes and a numerical readout explains the extent of your edit. This approach simplifies the interface by eliminating the need for a column of technical-looking slider bars. However, the vanishing cursor routine serves no practical purpose, and I wish the number would remain visible next to the button after you stop dragging so you could easily stay abreast of how much

tweaking you had applied. The good news is that the effects are cumulative, so you can combine, say, blurring and edge-detection, something that requires a feat of mathematical reasoning inside the Custom filter.

Not all of Convolver's capabilities are available when you first start using the plug-in. As you progress, Convolver awards you a total of five KPT Power-User stars, four of which give you access to additional functions. (The first star is merely a heads-up that lets you know that more stars are on the way.) It's a gimmick, to be sure, but it's not completely without merit. There is something to be said for unfolding the program as the user gains experience, and the new features are themselves highly useful (see "Convolver's Pet"). Just be sure you back up the plug-in module so that you don't have to earn the stars all over again in the event that something goes wrong with your hard drive.

The Last Word

In Latin, *convolvere* means "to enfold." My concern is that Convolver does a little too much enfolding. The interface consumes an entire 13-inch screen with only enough room to spare for the menu bar. This means you have to work exclusively inside the filter with no way to preview the effect in context within the image window. (You can reduce the dialog box's size to see the underlying image window, but the image window remains un-

filtered, so this doesn't help with previews.) Considering that you can't see deselected areas within the relatively diminutive preview diamond, and can't even zoom out to see more of the image at one time, this is a fundamental drawback. While Photoshop's Custom filter most assuredly does not offer Convolver's wealth of exploratory options, at least it lets you clearly see the effects of your edits.

Still, you can't help but appreciate a program that presents powerful convolution kernels in such an imaginative and absorbing package. Though it requires an FPU to run, KPT Convolver ranks right up there with Xaos Tools' Paint Alchemy and the Explorer/Designer modules included with Kai's Power Tools as one of the most exciting and potentially useful filtering options available for the Mac.

—DEKE MCCLELLAND

ArcView®

The Desktop Standard for Geographic Information Systems (GIS)

Now for the Macintosh®

Intuitive GUI
Point-and-click menus and icons make ArcView easy to learn, easy to use

Customizable
Interactive interface design tools to easily add or change menus and buttons

Object-oriented Scripting Language
Build simple extensions or complete applications with ArcView's scripting language called Avenue™

Interapplication Communication (IAC)
Establish IAC dialogs with other applications through DDE for Windows™, RPC for UNIX®, and Apple Events for Macintosh®

Tabular Database Analysis Tools

- Edit
- Query
- Statistics
- Sort
- Relational Joins

Integrated Business Graphics

- Pie, line, and bar charts
- Charts dynamically linked to tables and maps

Graphical Editing
Manipulate geographic objects, such as points, lines, polygons, and text

Address Geocoding
Match your data by address, ZIP Code, city, county, state, and country

Advanced Geographic Analysis

- Proximity analysis
- Point-in-Polygon
- Line-in-Polygon
- Polygon overlay
- Merge/Aggregate

Desktop Mapping

- Legends
- Scale bars
- North arrows
- Drawing tools
- Map templates

Geographic Integration of Enterprise Data

- dBASE®
- Multimedia
- Image integration
- Link real-time events such as GPS and IVHS

Visual Information Management
See the data you want, the way you want it, with ArcView's visual Table of Contents

Smart Help
Start using ArcView immediately with context-sensitive on-line help

Attributes of the Regional Shopping Centers

Name	Address	City
WILLOW STATION	23RD AV	GREELEY
WALWART SHOPPING CENTER	COLLEGE AVE	FORT COLLINS
VILLAGE SHOPPING CENTER	25TH ST	BOULDER
UNIVERSITY HALL	COLLEGE AV	FORT COLLINS
TWIN PEAKS SQUARE	HOVER RD	LONGMONT

Location Revenue Projection
Proposed Shopping Center

Projected Revenue (\$mil)

Year	Revenue (\$mil)
1995	1.5
1996	2.5
1997	3.5
1998	4.5

Demographic Profile

Median Income

Income Range	Percentage
< \$15K	10%
\$15K - \$25K	20%
\$25K - \$35K	30%
\$35K - \$45K	25%
> \$45K	15%

For 25 years ESRI
has set the standard for
GIS. Now we've made GIS
available to everyone.

To order ArcView, for more information, or for a dealer near you, call ESRI at **1-800-447-9778**
Outside the United States, call **(909) 793-2853, ext. 1235** • Send E-mail inquiries to info@esri.com
Visit ESRI on the World Wide Web at <http://www.esri.com>



GIS by ESRI

Saber LAN Workstation

Network-Management Software

PROS: Comprehensive data collection; remote virus scanning; unattended remote-user updating.

CONS: No alarms or traps; no trend or graphic reporting; buggy, incomplete SNMP support.

COMPANY: Saber Software (214/361-8086).

LIST PRICE: \$199 plus \$49 per node.



MACINTOSH LANS ARE GETTING trickier to administer, thanks to the growing number of generic printers, bridges, routers, terminal servers, and personal computers. And Macintosh software products themselves have sophisticated installers. Keeping it all working can be a challenge. Saber LAN Workstation (SLW, formerly GraceLAN) is a LAN-management package that promises to automate the process with two programs: Network Manager for network administration, and Update Manager for remote software updating.

Managing the Net

SLW's Network Manager component consists of responder extensions that you install on each computer to be managed, and an application program that you run on your central administration Mac. (SLW includes a responder for DOS machines, but they must have their own PC-based AppleTalk software, such as Farallon's PhoneNet PC.) When you install each responder, you can configure it to report customized identifying information, such as user name. The responders run in the background, collecting configuration data and usage statistics and reporting them to the Network Manager application on demand.

Network Manager queries responders on a configurable schedule, displaying devices either as a list that you can sort by any heading item; as a topological map; or in detail, one device at a time. Retrieved data includes a detailed hardware inventory, software and fonts installed, available volumes, currently running processes, and networking information. You can view data items by category, or you can design your own list reports with selected items across cat-

egories. SLW also gives you some control over remote systems, with commands to shut down or restart, send a file or message, and synchronize clocks. You can even perform remote virus scans (using the commercial program Datawatch Virex, purchased separately). A change-report feature shows differences between any two data samples.

In addition to AppleTalk-specific data collection, SLW supports Simple Network Management Protocol (SNMP) data collection, a standard in TCP/IP networks. SNMP uses an information database, called the Management Information Base (MIB), to query remote devices about their status. SLW includes three separate MIBs: an AppleTalk MIB, a Macintosh MIB, and the official MIB-II for TCP/IP. The first two MIBs let you retrieve usage statistics from devices running Apple's MacSNMP software (part of the AppleTalk Connection package, available from Apple for no charge). The MIB-II lets you query TCP/IP devices, such as smart bridges, routers, and terminal servers. Although SNMP is a read-write protocol supporting remote device control, SLW supports only reading MIBs. The SNMP feature lets you gather usage statistics not available from the SLW responder.

Network Manager works well but has a few blemishes. It lacks triggers to generate alerts on preselected events, and it doesn't provide for trend analysis or the graphic display of gathered usage information. These are features most LAN administrators want. The SNMP support itself lacks individual community name

support, which is necessary in security-conscious LAN environments. A community name is similar to a password, and in other systems each monitored device can have a unique name. Network Manager requires that you manually change the current community name every time you query a device, which can make monitoring secure networks inconvenient. The SNMP functions also cause occasional crashes, a problem that Saber Software says it will fix in a future release.

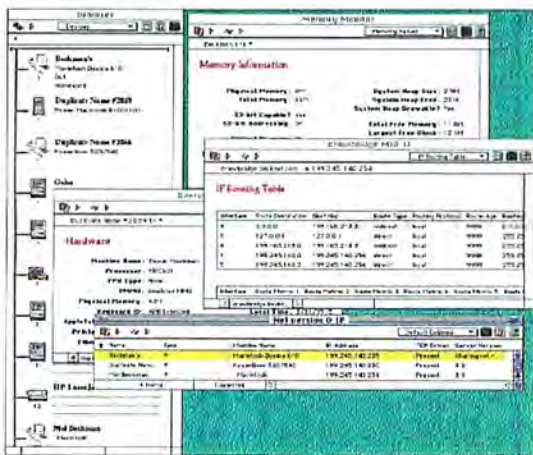
Managing Change

SLW's Update Manager is a useful tool that lets you propagate virtually any kind of software upgrade to remote users. Updating is a three-step process. First, you prepare a package of the program components to be installed. You specify where the components should be placed on the remote user's Mac, and whether existing versions should be replaced. You also specify which users are to receive the package, and you provide any minimum system requirements. Second, you distribute the package to users using SLW's built-in file-distribution queue, which you can configure to send files unattended at night. Third, after each user receives the package, SLW uncompresses and installs it, either automatically or at the user's convenience. If any components require restarting the Mac, Update Manager informs users of this and lets them defer the installation to a later time. Update Manager has built-in security and tracking features that help ensure safe updates with a clear audit trail.

Update Manager is nicely executed but has some rough edges. For example, it forces you to manually collect the items to be updated—a time-consuming and error-prone process—and it can't install individual resource objects, such as sounds or fonts. Saber promises a utility called InstallerWatcher to automate package building in a future release of SLW. InstallerWatcher will compare the files on a system before and after running a software installer and then create the component list and list of target locations that are ready for Update Manager to use. Saber will distribute all updates, including InstallerWatcher, in Update Manager form through its online support BBS.

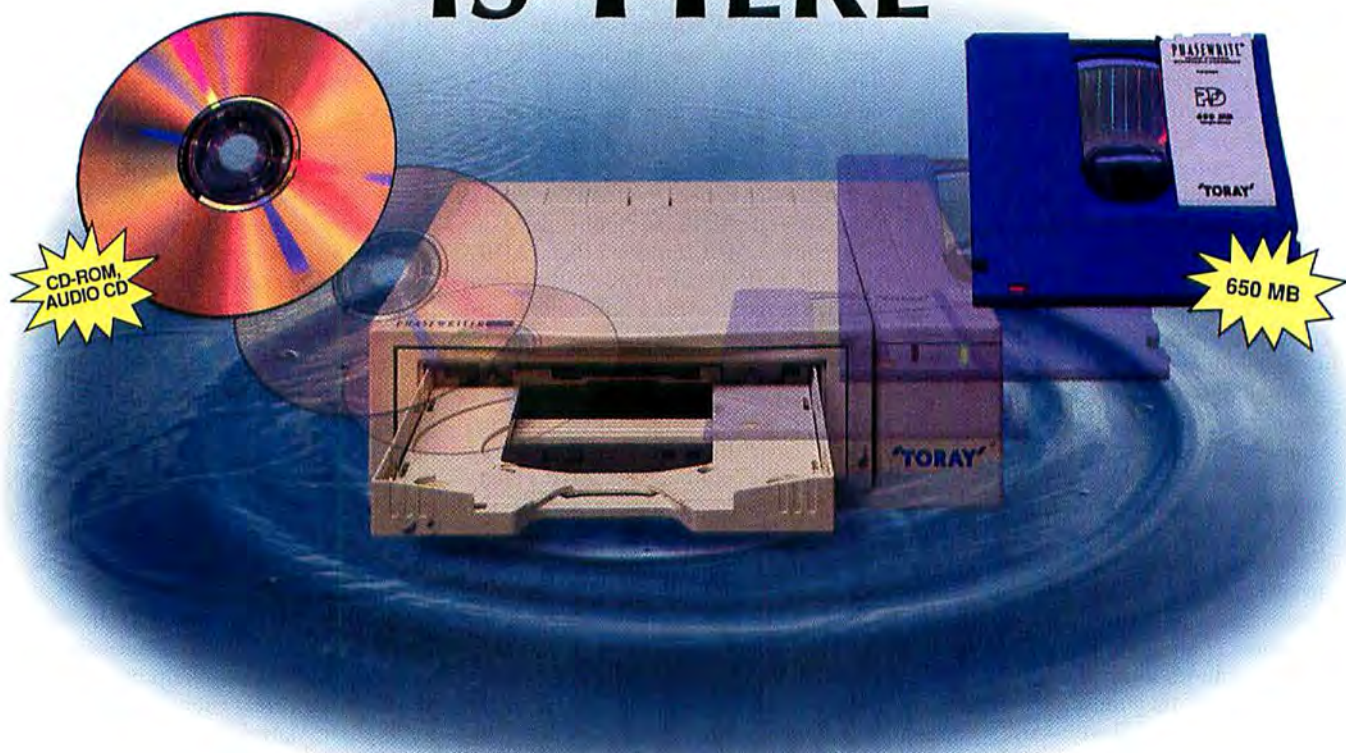
The Last Word

Although SLW lacks some of the niceties of network-management software for other platforms, it's still a useful tool for the price. You could easily spend several times the cost of SLW on more-sophisticated products, but SLW is quite adequate for getting your feet wet in the network-management game.—MEL BECKMAN



View of the LAN Saber LAN Workstation's Network Manager lets you monitor your LAN through a number of views. Topological views graphically map out your LAN by zone. Customizable list views display periodically updated data items. Detail views report data items by category.

THE NEW PD STANDARD IS HERE



ONE SCSI DRIVE BOTH 4X CD-ROM AND REWRITABLE OPTICAL

It's the Phasewriter Dual™ with PD technology from Toray and it transcends existing standards with more flexibility than any other optical drive. Phasewriter Dual reads CD-ROMs at quad speed and reads or writes to optical disks at a blistering .87 MBytes/second transfer rate. Just drop a CD-ROM into our new Phasewriter Dual or switch to a 650 MByte single-sided rewritable disk for portable data exchange. The Phasewriter Dual is setting new standards with higher capacity and CD-ROM compatibility at a much lower cost.

And it's Fast, Fast, Fast!

Plug this drive into any platform hardware or network and you're ready to go.

The single front loading tray holds CD-ROMs or Toray's CD-size rewritable optical (PD) disks. Because it is a SCSI drive, the software identifies and mounts either media automatically.

For information on drives, media or the retailer nearest you, call **1-800-TORAY-PD**.

PHASEWRITER **DUAL**™

by

'TORAY'

email: info@toray.com Internet: <http://www.toray.com>
©1995 Toray Marketing & Sales (America), Inc.

Circle 206 on reader service card

Color It 3.0

Paint Program

PROS: Multiple undos; customizable toolbox; unusual pressure-sensitive tablet controls; straightforward Unsharp Mask filter; Levels and Curves; independent channel editing; CMYK separations; excellent convolution capabilities; a rare bargain.

CONS: Inadequate eraser tool; can't cancel some operations; no support for Photo CD or JPEG formats. **COMPANY:** MicroFrontier (515/270-8109). **LIST PRICE:** \$149.95.



ONCE UPON A TIME, PAINT programs and image editors of all varieties and price ranges roamed the Macintosh environment

with the same degree of freedom and bonhomie once associated with the bison that roamed the grassy plains of the Old West. But then Adobe Photoshop rode into town and blasted everything within a 10-gigabyte radius to smithereens. Of the 20 or so paint programs that used to cavort so happily on my screen, only 3 hearty old-timers dared venture into the light last year—Fractal Design's Painter, Pixel Resources' PixelPaint Pro, and MicroFrontier's sturdy little Color It.

Granted, Photoshop is a wonderful application with amazing capabilities, but it's simply too much program for novices and intermediate users. And at \$895 retail, only professionals can reasonably afford to buy it. That's where Color It comes in. Version 3.0, which is Power Mac-native, is a robust pixel editor for inexperienced artists and casual graphics enthusiasts. It offers the standard collection of painting and selection tools along with a hefty supply of special effects and precision editing functions. But the best news is its price, slashed to half the previous version's. More than a year ago, MicroFrontier gave away several thousand copies of the program for the price of the disk. Until August 31 of this year, MicroFrontier is offering a \$49.95 competitive upgrade program, not just from other graphics products, but from page-layout, word processing, and integrated applications as well. A hungry vendor with a good product is what I call an ideal combination.

High-End Options for the Rest of Us

In addition to Color It's unique and impressive capabilities from versions gone

by—which include multiple levels of undo, a customizable toolbox, intuitive color controls, uncommonly flexible selection and masking tools, expert anti-aliasing and feathering options, and support for Photoshop plug-ins—version 3.0 offers a handful of powerful new features that boost the program's power and value. You have total control over pressure-sensitive input. You can even specify that increased pressure make a line lighter or thinner, rather than darker or thicker—a surprisingly useful alternative. A new Unsharp Mask filter lets you focus images with a degree of precision equaled only by Photoshop and PixelPaint Pro.

Color It also simplifies things by presenting Photoshop's Radius option as a more straightforward Intensity slider bar (see "A New Twist on an Old Sharpener"). The options aren't as precise as they are in Photoshop, and the previews are more static than in Photoshop, but the filter serves its purpose well without overwhelming the uninitiated.

Color It also muscled in on Photoshop's color-correction territory with its



A New Twist on an Old Sharpener You can now sharpen the focus of an image using Color It's Unsharp Mask function, which includes previews and a straightforward slider bar. I drew the lines with a pressure-sensitive Wacom tablet. For the red lines, I specified that the strokes should get thinner as I pressed harder, and I specified that the yellow lines should get thinner as I let up. I also applied a special blending mode to the yellow lines to achieve a translucent effect.

Levels and Curves commands. Again, neither of these functions equals its Photoshop counterpart, but you can expertly adjust brightness and contrast and even edit individual color channels, a new high for programs under \$200. You can also edit color channels independently using the standard paint tools and special-effects filters. Color It now provides CMYK separation options. And though the program lets you edit each CMYK channel separately, you can never see more than one channel at a time, making it extremely hard to tell what's going

on, especially if you're a new user. (As Photoshop users know, CMYK editing takes a big toll on your computer's processing capabilities.)

Among Color It's best and most surprising capabilities are its convolution functions. Made popular by Photoshop's Custom filter and HSC Software's KPT Convolver, convolutions are numerical pixel-by-pixel operations that result in fascinating edge-detection and embossing effects. Color It performs some amazing and unusual tricks of its own, offering an accessible collection of presets—renamed since version 2—along with a tool that actually applies convolutions as you paint. The latter function packs a powerful punch, kind of like a sharpen or blur tool on steroids. My favorite function, however, is a convolution editor that actually helps you design your own filters. While it's beyond the capabilities of most intermediate users, anyone who's attempted to use Photoshop's Custom filter will appreciate the convolution editor's extra amenities immensely. If you ask me, every one of these items ought to be standard equipment in Photoshop.

After all this gushing, I must admit that Color It 3.0 isn't likely to lure a single experienced user away from Photoshop (although the convolution functions may be tempting to many). The focus filters and color-correction functions aren't as sensitive; the eraser tool is hard-edged (and a bug prevents it from reverting properly in version 3.0); the program doesn't support Photo CD or JPEG; you can't cancel operations from the keyboard; and you can't quickly revisit a filter dialog box—just to name a few items on the shortlist. Rather, Color It offers its own distinct and sometimes superior features that cater especially to nonprofessional users.

At the same time, the program bears a strong enough resemblance to Photoshop that experienced folks can come to terms with Color It after very little effort. And you just couldn't ask for a more affordable price.

The Last Word

Frankly, I can't think of a better program for learning how to create graphics on the Mac. With so many old paint programs fading into the sunset, it's gratifying to see that good ones like Color It survive.

—DEKE MCCLELLAND

Size it up.

Tabloid-size output for under \$3,000* with the HP LaserJet 4MV.

Now you can see your designs in all their glory. The LaserJet 4MV printer not only delivers oversize output, it gives you a full-bleed at 11" x 17" after trimming. And, if you're going to have it big, you might as well have it fast. So this LaserJet handles a variety of paper sizes with a 16-ppm engine. Tabloid-size prints at 9 ppm. In addition to superior 600 x 600-dpi print quality, your complex graphics benefit from HP's Resolution Enhancement technology, 12 MB of standard memory and more than 120 levels of gray in Adobe™ PostScript™ language or enhanced HP PCL 5. Of course the LaserJet 4MV is totally Mac compatible. LocalTalk and Ethernet mean it's network ready – for any environment. But the best part is that it'll cost you less than \$3,000. Call for more information and print samples.† And get the big picture.

HP LaserJet Printers



*Average U.S. retail price. Actual price may vary. Adobe and PostScript are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. ©1995 Hewlett-Packard Company PE12518
†Call 1-800-LASERJET, Ext. 9177. In Canada, call 1-800-387-3867, Dept. 9177.

Color Compass 1.0

Color-Management Utility

PROS: Multiple levels of undo; intuitive drag-and-drop interface; supports major graphics programs; creates palettes from PICT files.
CONS: Can't resize or reorder swatches in custom palettes; can't search for colors by name.
COMPANY: Praxisoft (703/729-3391). **LIST PRICE:** \$129.



VIRTUALLY EVERY GRAPHICS program includes tools for editing colors and creating custom palettes. But Color Compass, a utility that does nothing but mix, blend, and edit colors, provides speedy, specialized tools that allow you to blend, match, and tweak colors in subtle ways not possible in most programs. And if you work with a variety of graphics, page-layout, and multimedia programs, you can save time by exporting a customized Color Compass palette for use in all those programs.

The program provides a number of ways to create colors. The Color Blend window allows you to work with two-, three-, and four-color blends. Simply pick the colors you want to blend (from a pre-existing palette, the Apple Color Picker, or by setting specific RGB or CMYK values), and load them in a blend window by dragging color swatches into position. The program instantly creates a multi-color gradient based on the colors you selected. You can then drag the cursor along the gradient to select a new color.

You can also extract colors from PICT files to create palettes based on existing images. Color Compass automatically creates a palette containing color swatches of the 256 colors that appear most frequently in the image.

Once you've selected a color, you can tweak it further using the program's other palettes. The Color Edit palette lets you create warmer/cooler and darker/lighter variations. The Tints & Shades palette allows you to add varying degrees of black or white. Still another palette finds and displays, as color swatches and by name, the six standard Pantone colors that most closely match the selection.

Dragging a color swatch into the center of the Color Family palette produces more variations. The color wheel displays a color's complement (its opposite on the color wheel), double complements (the two colors midway between a color and its complement), and triadic complements (the two colors equidistant from

the original one on the color wheel).

The Color Compass interface makes all this color manipulation quick and easy, employing a simple drag-and-drop approach. To edit colors, you simply drag color swatches from palette to palette. To add a color to a new palette, you drag a swatch to an open palette window.

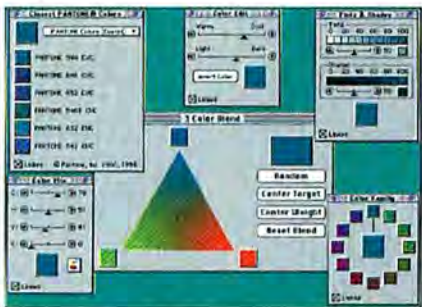
To speed things up even more, you can link the palettes so that adjusting the selected color in a blend window automatically updates that color in all the other palettes simultaneously. Shortcuts are numerous: you can open and close every palette with a single keystroke; option-clicking on a color swatch displays its color information in RGB or CMYK percentages; control-clicking on a gradient lets you reweight the blend, controlling the rate at which the colors melt into each other across the gradient. Also, the program handles up to 99 levels of undo, which allows for experimentation.

Once you've created and gathered the colors you want, you can export your finished palette for use in Macromedia FreeHand, Adobe Photoshop, PageMaker, Illustrator, and other popular graphics programs. (Praxisoft now provides a free upgrade that supports QuarkXPress.)

For a program that offers so much flexibility and convenience, Color Compass has limited palette options: you can't drag palette colors into a new order or resize the displayed color swatches. Also, you can't search for a color by name.

The Last Word

Expert graphic designers generally know how to make a color warmer, darker, cooler, or richer simply by adjusting the appropriate CMYK values. But Color



Mix and Match The six interlinked palettes in Color Compass allow you to combine colors; make them darker, lighter, warmer, or cooler; match them to their Pantone equivalents; and calculate their opposites on the color wheel.

Compass is a useful, well-designed utility for organizing colors, and it's especially helpful for those who would like more visual feedback and assistance in creating colors for use in other applications.

—JOSEPH SCHORR

Insta Software

Relational Databases

PROS: Inexpensive; include ready-to-use forms and templates; require little training or setup.
CONS: Limited flexibility; sparse documentation.
COMPANY: Chang Labs (408/727-8096).
LIST PRICE: \$29 per module.



MANY BUSINESSES COULD BENEFIT from a relational database to track clients, vendors, invoices, sales, and so on, but buying and setting up a relational database is typically an expensive, time-consuming, and programming-intensive process. Chang Labs' Insta Software series is a notable exception. The company's preprogrammed, ready-to-use database products are inexpensive and easy to use, and each module offers genuine relational database capabilities.

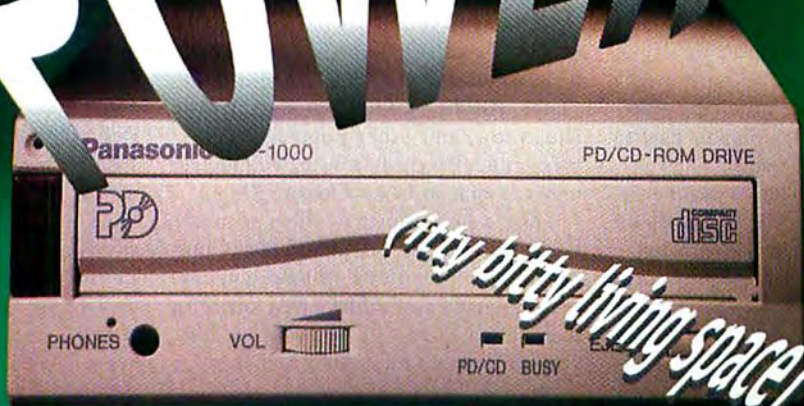
These small, no-frills packages are designed for very specific markets. Insta Printer, for example, is a contact manager for commercial printers and copy shops. All the forms a printer is likely to need—work orders, design-job estimates, delivery memos, and so on—are built-in and ready to use. Insta-Photographer handles contacts, invoicing, and other record-keeping tasks for commercial, retail, and wedding photographers. The Insta Software series also includes databases specifically for contractors, real estate agents, and consultants, plus general-purpose business products for creating invoices, mail merge, and managing contacts. Each product is priced at \$29.

These programs lack the tools to design a database. You can't create your own fields, design new forms, set up custom reports, add graphics, or create calculation or summary fields. You can't change fonts, sizes, styles, or colors, and you can't even delete existing fields. Everything is completely preset. While this limits flexibility, it also means you can use the database straight out of the box.

Operating an Insta database is pretty straightforward. Most commands are button-driven, and the data links and calculations you need to create documents and reports are built-in. For example, to create a new invoice or work order for a client, you simply select a contact record, then choose the type of document you want to create. The program links the document to the contact, automatically transferring all the appropriate contact information into the document. After you

continues

UNLIMITED POWER



POWERDRIVE² from Panasonic

A rewritable optical disk
and CD-ROM drive all in one.

Wish? Did someone say wish? A wish for a backup storage device? And CD-ROM? All in one drive? Say no more. PowerDrive² is at your command. Its optical disk gives you incredible storage, plus it reads and writes like a hard drive.



PowerDrive²'s CD-ROM player gives you the best of both worlds, too. It reads existing 2X and emerging 4X titles. And don't have a big Mac attack about compatibility: PowerDrive² easily connects to any Mac, MacII, or PowerPC.

PowerDrive² from Panasonic. It's the new standard of multimedia storage. For more information on the new Panasonic PowerDrive², call 1-800-742-8086 and ask for ext. PD.

All other brand and company product names are trademarks or registered trademarks of their respective companies.

Circle 86 on reader service card

Panasonic

Communications & Systems Company

PD-MCW

enter price and quantity, you click on the Fill button, and the program does all the math on forms, calculating totals, subtotals, taxes, and so forth.

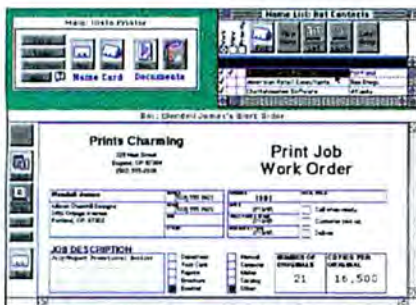
Because the database is relational, the data in all linked documents is updated automatically. Revising a contact record to reflect a new address, for example, automatically updates all linked invoices, letters, and other documents. Locating information is also fast and efficient. To find a record, you type the first few characters of a name into the Company field; as soon as the program recognizes the name, it brings up the record.

Though personalized options aren't plentiful, the Insta programs do give you some control over the arrangement and display of information. You can organize contacts into 13 different groups, or views, and display each view separately. Also, you can define keywords to categorize and search for contacts. You can combine Insta modules to create a more sophisticated system, such as adding mail merge capabilities to any of the programs by buying the mail merge module.

Documentation is sparse—instructions for all ten Insta Software products are covered in 24 pages—and far from comprehensive, but you get lots of help in the form of Apple Guide tutorials. Unfortunately, you need at least System 7.5 to use Apple Guide. While most features of the Insta programs are self-explanatory, better documentation would simplify using the sophisticated features, such as setting up keywords and filters.

The Last Word

At \$29 each, the Insta Software programs are a great deal; you get a tool to manage business contacts effectively with a setup time of literally a few minutes. If you can live with Chang Labs' functional but simple approach, you'll save a lot of money and time in the end.—JOSEPH SCHORR



Instant Paperwork Insta Printer includes the templates you need to generate work orders, invoices, estimates, and other business documents. New documents are automatically linked to information stored in the contact database. Multiple windows let you view individual contact records, lists of contacts, documents, contact histories, and schedules.

FastTrack Schedule 3.0

Project Scheduler

PROS: Arranges activities in outline-like hierarchy; can paste graphics on Gantt charts; offers shortcuts palette; can save multiple display setups; can filter and sort activities. **CONS:** Shortcuts palette cannot be customized; all workers must have same work calendar. **COMPANY:** AEC Software (703/450-1980). **LIST PRICE:** \$299.



WITH THE RELEASE OF FASTTrack Schedule 3.0, AEC Software has increased the capabilities of its project-scheduling program without compromising the simplicity. Project schedulers come in a variety of shapes and sizes, but the basic premise is creating a graphical project timeline called a Gantt chart so you can compare the planned schedule to the real thing.

FastTrack Schedule lets you customize many aspects of a Gantt chart. Aside from selecting time periods (from hours to years), you can set start and end dates for a project, design new symbols for activity bars and milestones, paste graphics onto the chart, add new columns of information, and selectively show certain phases of your project.

FastTrack Schedule's new detailed calendar lets you select particular workdays for your project. The Work Hours option now lets you choose discontinuous work periods, so you can skip lunch hours when planning the actual time for a project. However, you cannot define different work calendars for different workers, so you can't plan for part-timers' hours or different workers' schedules.

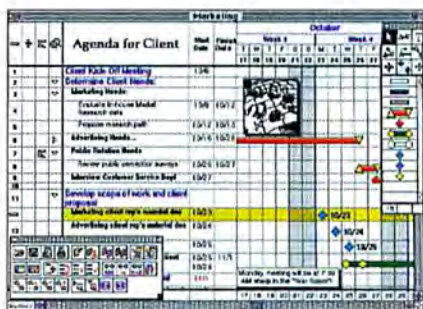
When you create a Gantt chart in FastTrack Schedule, you can set up a hierarchy of tasks and subtasks, and use this outline-like hierarchy to simplify your chart's appearance. You can collapse your project to only the major tasks, for example, hiding the details of each subtask.

To help control and customize your Gantt chart, FastTrack Schedule has added four new formatting columns, called action columns, which you can display to the left of your Gantt chart. The first column contains the number of the row; you can use this column to select the entire row or a contiguous series of rows. The second column, Move Activity, allows you to drag rows up or down. The third column lets you set page breaks anywhere in the chart, while the fourth column can expand or collapse the outline levels. You can display

any or all of these columns at any time.

FastTrack Schedule makes changing resources or contractors within a schedule a simple process with the new find-and-replace feature. You simply type in the text string you want to change and the replacement text, and FastTrack makes the change automatically. I found this feature particularly useful for changing personnel and resource assignments.

FastTrack Schedule's report capabilities were limited in the past, but the new version's have been improved. Using the new filtering option, you can select items that meet your criteria, such as a particular worker or time period, and FastTrack displays only activities that relate to that item. You can also sort either the entire project or a set of activities filtered according to a selected item. You can save filtered layouts for reuse.



Simple but Powerful Tools This Gantt chart has a graphic and a text note pasted into the chart area. The four new action columns are on the left: a page break has been inserted after task 7, and task 6 has been collapsed to hide its subtasks. The new shortcuts control palette is on the lower left.

FastTrack Schedule has added a control palette for various menu shortcuts, such as filtering, sorting, or expanding and collapsing tasks and subtasks. Similar to the shortcuts palette in ClarisWorks, this control palette can be resized from the default 1-by-28-icon palette strip to any size that fits your screen. However, unlike ClarisWorks, FastTrack doesn't allow you to define and add your own shortcuts to the control palette.

The Last Word

Unless you often require extensively detailed reports of your project's resources or need to link related project schedules, I recommend FastTrack Schedule for project planning. The control palette and action columns have improved its interface, and features such as filtering, sorting, saving multiple display setups, and the new work calendar have increased its power.—DAVE KOSIUR

MAC BOOSTER

PCI SCSI RAID CONTROLLERS
AND ADAPTERS FROM

 **DPT**



Designed for
Macintosh computers
with PCI

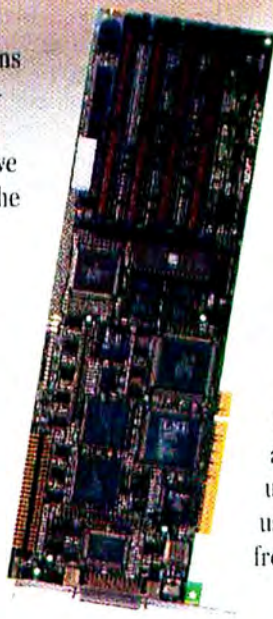
At DPT, we've always been real fans of the innovative Macintosh® products from Apple®. Now, we're pleased to announce that after being a Mac booster from afar, we are now ready to **directly** boost the performance of the new line of Macintosh computers with PCI.

SmartRAID Controllers

For the fastest RAID-ready performance, SmartRAID is the right choice. These standard and Wide-SCSI controllers come with caching and support for hardware-based RAID 0, 1 and 5 already built-in. They provide the fastest on-board processors to handle demanding workloads with ease.

Upgradable SmartCache SCSI Host Adapters

DPT provides the only SCSI Host Adapter that gives



a logical upgrade path for adding more power and features as your needs change. Start with the powerful standard or Wide-SCSI adapter. Then, if you need faster performance, simply add the optional caching module and up to 64MB of hardware-based cache memory. Snap on the optional RAID module to turn your SCSI Adapter into a powerful RAID controller. Nothing could be simpler – or faster.

Call us today for your free Mac Booster Kit and find out for yourself how DPT SCSI products can boost your performance when you're using the new Macintosh computers with PCI from Apple.

 **DPT**

Distributed Processing Technology

1-800-322-4378

140 Candace Drive, • Maitland, FL 32751

Circle 122 on reader service card



TelePort Platinum

Fax Modem

PROS: Consistent, reliable connections; fast fax performance; QuickDraw GX fax driver. **CONS:** Doesn't support V.terbo; minimal modem-status displays. **COMPANY:** Global Village Communication (408/523-1000). **LIST PRICE:** \$279.



GLOBAL VILLAGE'S TelePort Platinum weighs just 10 ounces, but this Mac-only fax modem offers V.34 (28.8-Kbps) data and 14.4-Kbps faxing capability. The Platinum also provides an incoming-call-recognition feature—which allows users to juggle voice and fax calls, as well as an answering machine—all over a single telephone line, without requiring a switch box.

The Platinum ships with version 2.5.3 of Global Village's highly regarded Global-Fax software. This newest version includes native PowerPC code for its fax driver and viewing engine, so it can deliver high performance on a Power Mac (the software also provides 680X0 code). The newest features

include a QuickDraw GX fax driver, gray-scale fax support, and an extremely flexible address book that can store calling-card numbers. The OCR module is average, providing decent text translations of documents that have clear text.

The Platinum handles faxing with little fuss, and the quality is excellent, although gray-scale faxes, even those sent in the highest-quality mode, tend to have a dithered look. While faxing from QuarkXPress, I did receive a warning about a potential reliability problem, but I ignored the message and successfully faxed several complex documents to their destinations.

The GlobalFax software uses the TelePort control panel to set default modem-ports speeds, connection protocols, and speaker volume. The control panel also provides a Maximum Throughput setting (115.2-Kbps), which capitalizes on an AV's or Power Mac's high serial-port speed. However, this affects only the transmission of data between the computer and modem; it doesn't affect the modem's connection speed. (Global Village says a software update, offering higher serial-port capability for all Centris and Quadra mod-

els, should be available on its BBS and Internet server by the time you read this.)

The Platinum's status displays are minimalist. The modem has three green lights: one signifies that the modem is on, one indicates that you're connected, and one flashes during data transmission. The TelePort control panel displays only whether the modem is ready or connected; you don't see the modem protocol or connection speeds as you do with Global Village's PowerPort line.

Previous Global Village modems (except the Gold II) used AT&T data pumps (the modem's controller chips), but the TelePort Platinum uses a Rockwell chip set to achieve V.34 performance and provide the call-discrimination feature. The Rockwell chips don't support the V.terbo (19.2-Kbps) connection standard offered by Global Village's Mercury line, which may be a disadvantage if you also have a V.terbo modem.

The Last Word The Global Village TelePort Platinum performs well, and the latest incarnation of the company's fax software offers a terrific combination of speed and quality, all at a competitive price.

—GENE STEINBERG



ROBERT PERRY

Snatcher 1.0

Internet-Access Software

PROS: AppleScript support; allows multiple-site connections and file transfers; allows browsing during file transfers. **CONS:** Difficult to cycle through open windows. **COMPANY:** Software Ventures (510/644-3232). **LIST PRICE:** \$49.95.



ONE OF THE JOYS OF SURFING THE Internet is searching through FTP (file-transfer protocol) sites, which archive everything from the frivolous to the indispensable. For years the standard FTP tool has been Fetch, developed at Dartmouth College. Popular World Wide Web browsers can also access FTP sites, but the newest and best such tool is Software Ventures' Snatcher, a simple, scriptable, and robust FTP client.

Snatcher does everything Fetch does, and then some. While Fetch allows you to connect to only one FTP site at a time, Snatcher lets you connect to multiple sites simultaneously.

But Snatcher's real power lies in its file-transfer capabilities. Fetch can download only one file at a time, and it prevents you

from browsing until the transfer is complete. Snatcher, however, allows you to transfer several files at once, whether from the same FTP site or from several FTP servers. While you're downloading, you can also connect to other sites or continue to browse. During a file transfer, Snatcher displays a dialog box indicating the transfer status of each download, as well as the total time remaining for all transfers (see "Minutes to Countdown").

Snatcher's interface employs a Finder-like approach. For instance, you can choose to view items in FTP-site directories by the same criteria the Finder offers (kind, date, icon, name, and so on). You can copy files from an FTP site simply by dragging their icons to your desktop or to a folder on your hard drive, rather than navigating to your

download destination via a dialog box, as you must do with Fetch.

My one complaint about Snatcher's interface is its lack of a menu item for cycling through the open windows that can quickly clutter a screen. You must click on each open window to find the site you want.

What also makes Snatcher a keeper is its extensive AppleScript support, which streamlines such mundane FTP tasks as connecting to a server. The product includes scripts for connecting to more than 100 popular FTP sites. While connected to any FTP server, you can make an alias for connecting to that site simply by invoking the Make Alias feature. If a site is busy, you can drop its alias onto the Busy Buster AppleScript, which tries to connect to the site repeatedly until it succeeds. (Using Busy Buster, I connected to Stanford University's popular FTP archive—during peak hours—in about a minute.) Other scripts handle errors, count the number of items in a folder, or retrieve a file and then quit.

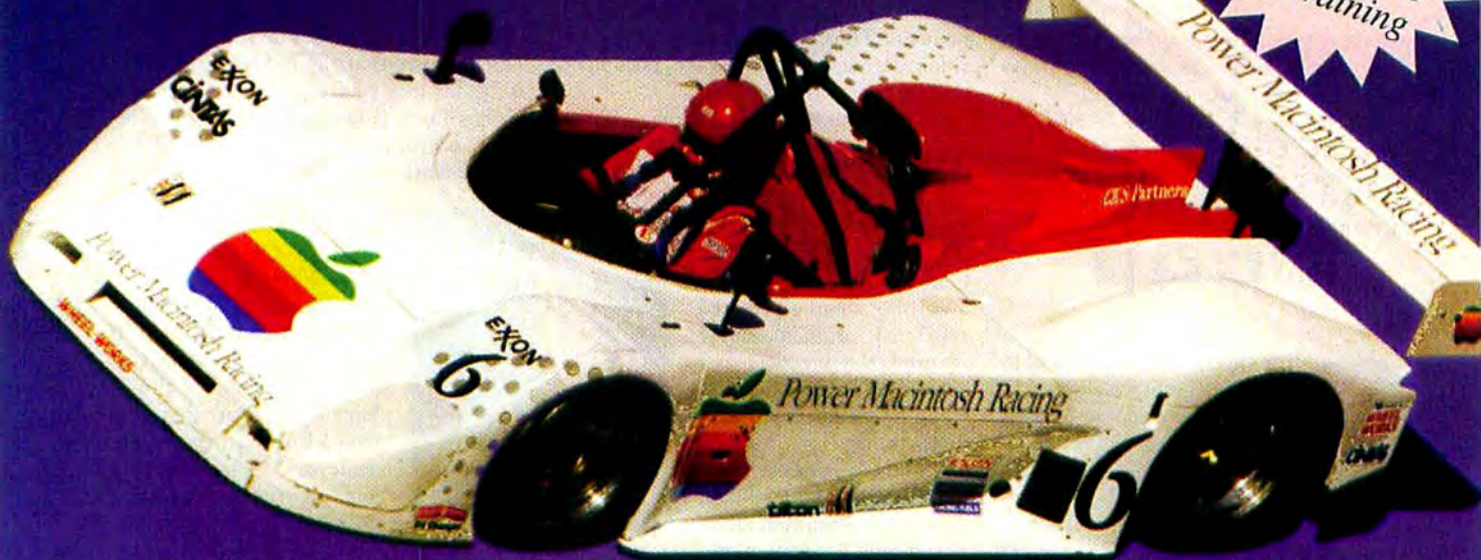
The Last Word If your FTP needs are minimal and your wallet is thin, Fetch—which is free to educators and nonprofits, \$25 when used commercially—is extremely capable. But if you want multiple, simultaneous connections and file transfers, the ability to browse while downloading, and useful scripting features, you should switch to Snatcher.—JOANNA PEARLSTEIN



Minutes to Countdown When downloading files with Snatcher, you can view their status and the time remaining in the transfer.

SPEED LEARNING

Only
\$49
for 2 Hours
of Training



Save Hundreds of Hours and Thousands of Dollars by Using the MacAcademy Video Training Series

The MacAcademy Video Library

4th Dimension 1 2 3 4 5 6	Networking 1
Canvas 1 2 3 4 5	Nisus Writer 4.0 1 2 3 4
ClarisWorks 1 2 3 4 5 6 7	Now Contact & Now Up-To-Date 1
Design & Layout 1	PageMaker 1 2 3 4 5 6
Director 1 2 3 4 5	Painter 1 2 3 4
Electronic Desktop to Pre-Press 1 2	Peachtree Accounting 1 2 3
Excel 1 2 3 4 5	Persuasion 1 2
FileMaker Pro 1 2 3 4	Photoshop 1 2 3 4 5 6 7 8 9 10
Fonts 1	PowerBooks 1 2
FreeHand 1 2 3 4	PowerPoint 1 2
HyperCard 1 2 3	Premiere 1 2 3
Illustrator 1 2 3 4 5	QuarkXPress 1 2 3 4
Infini-D 1 2	Quicken Personal 1 2, Business 1 2
Integrating Programs 1	QuickTime 1
Lotus 1-2-3 1 2 3	SuperPaint 1 2 3
Macintosh Basics (7.1 or 7.5) 1 2 3 4	Troubleshooting 1 2 3
Mac P & L 1 2 3	Utilities 1
MacProject Pro 1 2 3 4	Word 1 2 3 4 5 6
MacWrite Pro 1 2 3	WordPerfect 1 2 3 4 5 6
MiniCad 1 2	Works (Microsoft) 1 2 3 4 5

Clip Art
FREE
For Ordering The
Video Training Series

Daytona Beach... We know the need for SPEED. The MacAcademy Speed Learning System will quickly bring you up to speed on your Apple Macintosh and PowerMac computers. This award-winning solution for effectively mastering the Mac and application software for the Mac will teach you the power of the operating system and all the new features, tips, and techniques of the software applications. If you haven't taken advantage of this dynamic training solution, we want to make you this special limited offer... Select a training series from the library of over 40 different software applications, and we will send you a special clip art package of 100 color images FREE.

To Order or for a FREE Catalog Call

800-527-1914

FAX 904-677-6717

We feel that you will find our MacAcademy video training series an invaluable learning source. However, if you are not completely satisfied you can return your videos within 30 days for a full refund, and the Clip Art package is yours to keep for ordering the Speed Learning System. \$49 per video: credit cards, checks, and purchase orders are accepted. Please add \$3 per order, plus \$1 per video, shipping and handling.

Be sure to include the Department Code to get the FREE Clip Art.

Department MW895
100 East Granada Blvd.
Ormond Beach, FL 32176-1712

Training Alliance Member

MacAcademy

The numbers listed under the titles indicates number of videos available.

Circle 106 on reader service card

© FMI 1995

TransJammer

Video Transition Effects

PROS: Excellent quality; large selection; Power Mac native. **CONS:** Slow on 680X0 Macs; manual lacks illustrated list of transitions. **COMPANY:** Elastic Reality (608/273-6585). **LIST PRICE:** \$149.95.



TRANSITIONS ARE THE spice of video life. Scene A dissolves into scene B, a title peels away to reveal a different scene beneath—these are mainstay seasonings in a video producer's kitchen. They can be overused, but in appropriate amounts, they enliven and enhance a video.

Elastic Reality's TransJammer is a collection of 100 transition effects for Adobe Premiere and Avid VideoShop. TransJammer operates as a plug-in for these programs, so it's easy to learn—simply install it in the plug-ins folder, and its effects become available.

Kind of. You don't actually see 100 new effects in your Transitions window. Instead, you see a single new entry for TransJam-

mer. Drag its icon to the project window, positioning it between the A and B scenes for which you're creating a transition, and choose the effect you want from the subsequent dialog box.

This approach eliminates cluttering the Transitions window with 100 new effects, most of which you can customize to yield hundreds more. If you find you use some effects constantly, you can build stand-alone versions of them, which appear in the Transitions window, just like the transitions that ship with VideoShop and Premiere.

So what's included? There are classic as-seen-on-TV transitions: a rotating cube that explodes to reveal a new scene, for example. There are variations on common effects: one scene wipes another off the screen, but in a jerky-jerky way. There are all-business effects: scene A is gradually replaced by an animated bar chart whose bars contain scene B. And there are effects you're not likely to see on "World News Tonight" any time soon: scene A is replaced by profiles of cows—yes, cows—falling from the top of the screen to the bottom, while scene B appears within each cow's shape (see "Got Cows?"). This effect alone makes TransJammer a must-buy for every video producer in the dairy industry.

Unfortunately, you'll spend much time clicking to discover what each effect does. TransJammer's manual desperately needs a



Got Cows? One TransJammer transition you probably won't want to milk: cow outlines fall from above, revealing the image in the next scene.

section illustrating each effect; some tips for customizing them wouldn't hurt, either.

The quality of TransJammer's effects is as good as anything you'll see on television. If you have a 680X0 Mac, though, give yourself time, because TransJammer all but demands a Power Mac. In my tests, a one-second transition that took nine seconds to render on a Power Mac 7100/80 took over a minute on a Quadra 840AV.

The Last Word Many of TransJammer's effects are corny, but there are as many gems as there are cows in this collection. If you're tired of the same old transitions—and you have an appropriate sense of restraint—you'll find plenty of uses for TransJammer. —JIM HEID

Master CD Pro

Recordable CD-ROM Drive

PROS: Quad-speed, multisession writing; bundled software supports many CD formats; dedicated hard drive not required. **CONS:** No archiving software; user-interface quirk can lead to CD write errors. **COMPANY:** MicroNet Technology (714/453-6000). **LIST PRICE:** \$4995.



MICRONET'S MASTER CD PRO IS A powerful—and pricey—CD-R (compact disc-recordable) drive aimed at professional CD producers. (For more on CD-R technology, see "Desktop CD-ROM Publishing," *Macworld*, March 1995.) The Master CD Pro bundle consists of a Yamaha CDR100 quad-speed drive in a large and rugged MicroNet cabinet, Astarte's Toast CD-ROM Pro software, and one 74-minute recordable CD.

The CDR100 drive is multisession capable and can write a 74-minute CD in about 20 minutes at quad speed. The drive also supports double- and single-speed writes—useful when you're copying from a CD-ROM reader or a slower hard drive. The CDR100 also doubles as a quad-speed

CD-ROM reader. It's capable but not exceptional as CD-R drives go: it's expensive, it displays only limited progress information on its front panel, and it doesn't support volume-production features such as multi-unit slaving. The bundled Toast software is what makes this package useful.

Toast supports a wide range of CD formats: Macintosh, ISO 9660, CD-I, CD Plus, XA, video, and audio. An advanced mode lets you perform generic copying—making a bit-for-bit copy of a source CD from a CD-ROM reader, or of a previously created image file. The software performs no data checking for generic copies, so you can copy data in any format.

To write a CD, you first choose an output format and one or more sources of data (Toast supports hard disks, CD-ROM readers, and temporary partitions using free contiguous hard disk space). The software creates the temporary partitions and mounts them so they appear as independent volumes; that way, you don't have to dedicate an entire hard drive to CD image assembly. Before writing a CD, Toast lets you run simulations at various write speeds to verify that all input sources can deliver data adequately. Once you've found a reliable speed, you proceed to live writing, which can't be interrupted without irreparably damaging the output CD. Unfortunately, Toast has a user-interface flaw that can lead you to do



just that: after simulating a given speed, Toast does not automatically set the write speed for you—you must do it manually. If you forget, your CD will write at the default quad speed and possibly experience data underflow, resulting in a corrupted disc.

Toast has several other useful features, such as verification, ISO 9660 renaming, alias checking, and hybrid output. It does not, however, include any archiving capability: you must store an entire input source, not individual files or folders.

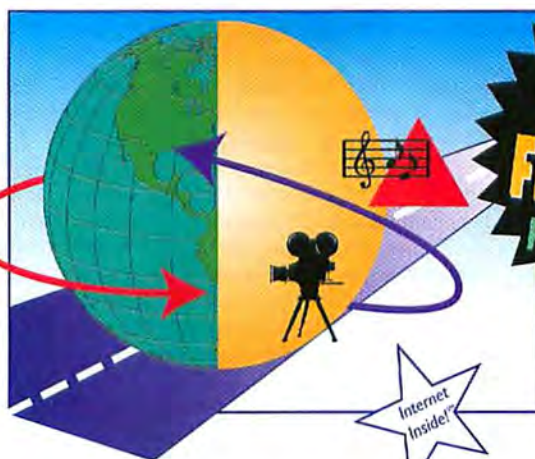
The Last Word The Master CD Pro bundle is a nice, ready-to-run tool for professional CD production. The lack of archiving software limits its value as a general-purpose device for data backup, but support for multiple formats and hybrid CD construction make it a versatile CD-production workbench. —MEL BECKMAN



5 MINUTES TO FREEDOM

INSTANT INTERNET ACCESS

**CONNECT
TO THE
INTERNET
IN LESS
THAN
5 MINUTES**



**7-DAY
FREE TRIAL
FOR MACINTOSH®**

Instant InterRampSM

Forget on-line services; InterRamp connects you directly to the Internet. That's the BIG difference.

In less than 5 minutes, you'll have access to MOSAIC, Gopher, WAIS, Veronica, Archie, ftp, E-Mail, NEWS and other hot Internet applications. You have the entire world-wide Internet at your fingertips.

Just a few clicks of your mouse, you're connected.

All applications are automatically configured for immediate use. It's that SIMPLE.

We're so sure you'll love Instant InterRamp, we'll let you try it absolutely FREE without any obligation.

All you need is a computer and a modem; we'll send you the Instant InterRamp software.*

Also, PSI offers high-performance LAN Internet solutions for your organization. Ask our sales representative for more information.

PC & UNIX
VERSIONS ARE
ALSO AVAILABLE

CALL NOW FOR FREE DEMO
1.800.PSI.0852
PREFERRED CUSTOMER NUMBER #00141



FAXBACK INFO: 1.800.fax.psi.1 • INTERNET E-MAIL: interramp-info@psi.com • WORLD WIDE WEB: <http://www.psi.net>

DOWNLOAD THE SOFTWARE FROM THE INTERNET: <http://www.psi.net/interramp/>

* Restrictions apply. FREE trial requires credit card for verification purposes only. • PERFORMANCE SYSTEMS INTERNATIONAL, INC. • 510 HUNTHAM PARK DRIVE • HERNDON, VA 22070 • USA • ©1995 Performance Systems International, Inc. PSINet and the PSINet logo are registered trademarks. All other trademarks and service marks are used with their permission and remain the property of their respective owners.

Circle 95 on reader service card

MacPhase 2.0

Image Processing Software

PROS: Fast; feature-rich; great math-function assortment; Pascal-like macros; nice graphs.

CONS: Not for beginners. **COMPANY:** The Otter Solution (315/768-3956). **LIST**

PRICE: \$279.



PERHAPS BECAUSE I'M WRITING A book about Microsoft Office 4.2, I've developed an intense affection for programs that, unlike the Office suite, are gratifyingly fast. MacPhase is an outstanding example of this. Not only does it offer every image processing feature you would find in Adobe Photoshop (as well as math tools for constructing filters beyond the wildest dreams of most multimedia artists), but it also makes everything—including complex filters and math transformations—happen at the speed of a mouse-click, with no lag or waiting. Now *that's* positively bracing.

MacPhase 2.0 incorporates two years' worth of requests from technical users. The program's two biggest enhancements, which will be of more value to imaging experts than to beginners, are its macro-

programming and data-visualization tools.

The macro system, a language with Pascal-style syntax, can be approached by writing code or by recording a series of actions. The Record Macro feature is important because it means that you don't have to learn much programming to automate repetitive processing—in fact, you can learn the little you do need simply by inspecting some recorded macros that come with MacPhase.

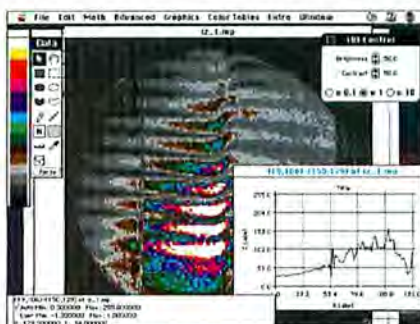
The data-visualization tools, including a variety of contour and 3-D rendered plots (with associated drawing layers), compete in terms of sophistication with the tools of the significantly more expensive suite from Spyglass (Dicer, Transform, Plot)—at least for modest-size data sets. MacPhase provides some unique features, such as sound annotation of plots (to record your comments). It can also play a 2-D plot as sounds, which helps you pick out subtle points in Fourier-transformed data.

MacPhase add-ons have evolved to provide scores of filters oriented toward graphics, from Alien Skin to Watermark. There are also scientific-interest add-ons, such as convolutions in which an arbitrarily chosen data window is the convolution kernel, and conversion of an image to a numerical spreadsheet. The Otter Solution is currently the vendor for these and other third-party add-ons, which are due to include

GPIO, video, and serial-port interfacing by summer 1995.

The only drawback of MacPhase is that tech support is largely confined to E-mail. Since the program is geared to serious users, this shouldn't generally be a problem. Just don't buy expecting lots of hand-holding. Still, if you have a research-quality image processing problem, you have the advantage of extremely knowledgeable support (usually by the programmers themselves).

The Last Word I love this program. It offers the full spectrum of standard scientific and graphics image processing tools, with excellent performance at a modest price.—CHARLES SEITER



Pixelated MacPhase's advanced image processing tools work nearly instantly. Besides a line-slice histogram like this one, you can generate custom filters or Fourier-transformed images.

Phyla 1.0.3

Object-Oriented Database

PROS: Logical, efficient object-based design.

CONS: Object rather than database terminology; documentation skimps on some basic topics.

COMPANY: Mainstay (805/484-9400). **LIST**

PRICE: \$495.



YOUR FIRST FEW DAYS OF USING Phyla will be like entering a new database world. Instead of flat files you have classes of objects; instead of fields you have attributes. As you work through Mainstay's well-designed tutorial and start thinking of invoices, mailing lists, and customer files as objects, you begin to see tenuous similarities to more traditional databases such as Claris FileMaker Pro and ACI US 4th Dimension. Finally, if you're an old Mac database hand, you'll have a shock of recognition—Phyla is like the perennial Mac favorite, Helix Technologies' Helix Express.

Phyla is predicated upon the rise of C++ as the dominant programming language, rather than an imitation of earlier databases. If you hired a C++ programmer to design an invoice system for your business, the pro-

gram would have class definitions just like those in a Phyla database (see "Containment Policy"). Suppose you create an object called customer that you define by the following attributes: name, address, and phone number. In Phyla, and in C++, modifying the object to add a fax number is trivial. But in Phyla (not so in C++), it's also easy to relate your customer object to other objects such as invoice or credit information—you just draw a relation arrow between the objects and type in the relation definition.

Simplicity of design and ease of modification are big pluses for Phyla, which allows you to build fancy relational databases by dragging objects between windows. Another advantage is speed. Because Phyla

continuously updates what other databases call *calculated fields*, reporting is very quick; recalculation is a background activity. On a Quadra 610 (there is no Power Mac version of Phyla yet), Phyla is also faster than market leader FileMaker Pro at nearly every flat-file searching and sorting task. Password protection of whole databases and parts of databases is also clean and intuitive.

While Phyla doesn't require that you learn a programming language, it wouldn't hurt to have had an introduction to SmallTalk or C++. At least you would have a head start on Phyla-speak, which shares almost nothing with traditional relational-database terminology. Some key topics in practical database usage, such as label printing and paper-report formatting, need more explaining in the documentation.

Phyla can import and export flat data files (used in other database programs), but this product still wouldn't be a first choice for a cross-platform office.

The Last Word While nonprogrammers can use Phyla effectively, it's a more natural database choice for small-office users with some object-oriented programming background. Phyla lacks the large third-party support and consulting environments that have grown up around 4D and FileMaker. But it's fast, and it's a solid implementation of modern object-database practice.—CHARLES SEITER



Containment Policy Phyla's use of logical, object-oriented building blocks for a database makes sense, but traditional database users must reorient their thinking.

**Before you buy a color printer,
you'd better double-check your facts.**

STANDARD FEATURES

PROFESSIONAL COLORPOINT 2 MODEL 4/14	TEKTRONIX PHASER 440/480
--	--------------------------------

DUAL TECHNOLOGY ✓✓

ADOBE POSTSCRIPT LEVEL 2 ✓ ✓

33MHZ RISC PROCESSOR ✓

135 ADOBE TYPE 1 FONTS ✓

AUTO TRIM ✓
(Automatically cuts paper/OHP)

INTERNAL HARD DISK ✓
(No additional RAM needed)

4-COLOR FULL-BLEED PRINTING ✓
(Right out of the box!)

INDUSTRY-STANDARD ✓
COLOR MANAGEMENT

DCS FILE SUPPORT ✓



Do the research and you'll discover that the Professional ColorPoint 2 is twice the printer of any of its competitors. It has all the features you want standard, so you can print full-bleed, 4-color pages right out of the box. Plus, with Seiko Instruments' unique Dual Technology, it's like getting two printers for the price of one.

Dual Technology means the Professional ColorPoint 2 can output both thermal wax transfer and dye sublimation prints. Use the thermal wax transfer mode to output inexpensive ad, collateral, and packaging comps, or rough drafts of brochures and presentations. Then

switch to dye sublimation mode when you're ready to print high-quality, photorealistic final output. So instead of being tied to the higher cost of materials with a dye sub-only printer, you'll save thousands of dollars on supplies by using thermal wax transfer during your proofing stages.

Check it out for yourself. For free sample output and a brochure on how the Professional ColorPoint 2's Dual Technology can save you up to forty thousand dollars a year in output costs, or for a free demonstration, call

800-888-0817.

SII 
Seiko Instruments

Circle 93 on reader service card

Vivid 3D Pro

Sound-Enhancement System

PROS: Sweeping, enveloping sonic effects; ideal for system sounds and games. **CONS:** Audio CDs may sound harsh or distorted; audible thump when switched on or off; slight background hiss. **COMPANY:** NuReality (714/442-1080). **LIST PRICE:** \$149.95.



STEREO IS AN INEFFICIENT WAY TO deliver a realistic sound image. You have just two channels trying to re-create the three-dimensional sound of a live performance. The Vivid 3D Pro from NuReality is a sound processor that uses the patented SRS (Sonic Retrieval System) technique to restore sonic cues from recordings to produce 3-D sound from two speakers.

The unit has a power-on/off switch at its base and five additional settings on the front panel. One switch turns the SRS processing on or off, and another changes the input source from mono to stereo. The Space slider control adjusts the width of the SRS effect, increasing or shrinking the 3-D soundstage. The Center slider control enhances reproduction in the *presence region*,

allowing you to pull the human voice and other midrange sounds into the foreground or push them into the background. A volume control adjusts overall sound level. The unit also features a small built-in amplifier, useful if you use modest speakers that lack their own amplifier.

Hooking up the Vivid 3D Pro takes just minutes. The compact unit installs between your Mac and your loudspeaker system, and all the proper cables are supplied. You just plug everything in and turn it on.

To test the Vivid 3D Pro, I used a Power Mac 8100 equipped with an Apple CD-ROM drive and a set of Bose Acoustimass Multimedia speakers. I used NuReality's own CD sampler disc (\$5.95) and some of my favorite games and audio CDs.

On monaural system sounds and games, as well as stereo games, the pseudo-3-D effect was enveloping; I felt immersed in a game's sound effects. Unlike standard stereo, the Vivid 3D Pro doesn't lock you into a specific sweet spot (position for best sound) when you're listening—you get the 3-D effect anywhere in the room.

The SRS sonic effect wasn't as successful with audio CDs. Though the Vivid 3D Pro enlivened dry-sounding recordings by expanding the soundstage, high frequencies sometimes seemed less crisp and clean. And the SRS output could overwhelm rich recordings, distorting the sound. In such



situations, I reduced the degree of SRS enhancement with the slider controls or turned the feature off entirely.

There are other negatives: turning the power switch on or off produces a highly audible thump, though I observed no damage to my equipment. There is also a slight background hiss at normal volume levels.

The Last Word For system sounds and games, NuReality's Vivid 3D Pro sound processor can work wonders. With audio CDs, the SRS effect doesn't always provide a satisfactory result. For most purposes, though, this unit enhances your Mac's audio capabilities.—GENE STEINBERG

Three by Five 2.0

Writing Tool

PROS: Good brainstorming tool; powerful outliner; useful flash-card feature. **CONS:** Needs better Undo; mediocre manual. **COMPANY:** MacToolkit (310/395-4242). **COMPANY'S ESTIMATED PRICE:** \$99.



THREE BY FIVE IS AN IDEA-ORGANIZATION program that uses the metaphor of index cards being moved around on a corkboard. The program also has a full-featured outline view.

The Three by Five document window contains one or more card files. The card files can hold any number of index cards, with each card containing an idea or a picture. You can copy and paste, or drag and drop, cards between card files in the same document or in different document windows. To link cards, you simply drag one card over another. Five types of cards are available: Text Cards; Label Cards, for headers of a column of other cards; Picture Cards, which contain PICT images; Movie Cards, for QuickTime movies; and Custom Cards, a mix of any of the other types. You

can assign categories to cards, then search and select cards based on those categories or on any text in the cards.

A unique feature of Three by Five is the ability to create flash cards that you can print or display on screen. Only one side of a card can be displayed at a time; the Flip Card and Shuffle Cards buttons allow you to move easily through the cards. A bar indicator shows the number of cards you've worked through and how many remain.

Three by Five lets you move freely between the corkboard and outline views. You can add or delete topics in either view, and you can select and move noncontiguous topics in both views. As in the outline view, you can show or hide subtopics in the corkboard view by double-clicking on the

topmost card of a group of linked cards.

You can include pictures, or even QuickTime movies, in a Three by Five outline. The Font Override feature lets you change the font, size, and color in your outline, and each level in the outline has a unique style so it's easy to see which topics share the same level of organization. Most outliners use a rigid, linear approach: start at the most important topic and add topics in descending order. Three by Five allows you to develop ideas in its corkboard view, and you don't have to link ideas hierarchically. This process—first brainstorming, then linking the ideas—is closer to the way many people work.

Three by Five, though easy to use, needs refinement. Undo doesn't work for tasks such as moving cards in the corkboard view. The program could use more \mathbb{C} -key equivalents for oft-repeated chores such as showing and hiding subtopics. There are errors in the manual, and the manual's index leaves much to be desired.

The Last Word Three by Five is a capable program for brainstorming, re-arranging, and presenting ideas. Version 2.0 greatly improves outlining and adds import and export capabilities, as well as more card types. Whether you prefer to see your ideas linked graphically or as text in an outline, Three by Five gives you the tools to work effectively.—TOM NEGRINO



Pushpin Organization With Three by Five you can put your ideas on a corkboard and then link them in any order.



Hungry for new business? Key in "restaurants" (or whatever you're looking for) under business type, then the area code or zip code for the area you want and - *dinner's served* - you get an instant prospect list.

It slices, it dices. It does things no ordinary phone book can. It's Select Phone, the amazing phonebook on CD-ROM. With over 90 million residential and business listings, and so many ways to access that information, it's no cream puff. Search by name, address, city, state, zip code, area code, or business heading. Do a wildcard search. Or a reverse search. Search the whole U.S.A., or just one town. Track down a particular listing, or a whole group of listings. Whatever plans you're whipping up, it's a kitchen magician. Use Select Phone to find old friends, or new business. Then, when you have the listings you want, you can mail to them, call them up, or export them to a word processor. Easy as pie.

For the names of software stores carrying Select Phone call 1-800-99-CD-ROM.

Online go to sales@procd.com or visit our world wide web site at <http://www.procd.com>.



**FIND WHAT YOU'VE
BEEN MISSING.**

Circle 217 on reader service card

**Looking for cooking schools in California?
Here's the recipe.**



Math Workshop

Multimedia Math Education

PROS: Challenging problem-solving activities; animated characters and puzzles hold children's interest. **CONS:** On-screen help more annoying than useful; some games too conceptual for young children. **COMPANY:** Brøderbund Software (415/382-4700). **COMPANY'S ESTIMATED PRICE:** \$40.



NEVER CONSIDERED MATH ONE OF MY favorite subjects, but I'm now revisiting it with my six-year-old daughter. Math Workshop—a multimedia collection of math-related and problem-solving games—offers some innovative ways to help your child learn (while you relearn) mathematical concepts.

You start out in the Control Room, where your guide, an overall-clad teenager named Poly Gonzales, asks you to sign in and click on one of seven activities.

One of our favorite activities, Rhythm Shop, combines music and math by letting you cut, glue, and meld brightly colored fraction bars to fit a melody.

When you solve a math problem—such

as adding or multiplying—in Bowling for Numbers, a bowling pin drops or pours into place. You get a certificate of achievement after you get ten strikes.

My daughter also liked Hidden Picture Puzzles, which focuses on geometric and spatial awareness. After you choose one of nine pictures on a TV screen, the TV screen goes blank and colored polygons appear next to it. As you drag them onto the screen, they reveal parts of the picture that are always accurately positioned; this initially misled me into thinking that the pattern pieces were fitting correctly—not necessarily the case. In fact, some of the hardest puzzles were well beyond my daughter's reach.

Super Sticklers involves recognizing segments and shapes. After choosing a drawing on the Sticky Easel, you get a jumble of Sticky Lines that correspond to parts of the drawing. You drag the lines and shapes into place, sort of like tracing a template. You can (and often must) rotate the pieces to find the correct orientation; unfortunately, the help button's proximity to the rotate button results in unexpected and annoying visits from Poly—having her dispense the manual's tricks and tips instead of explaining how to play the game would make more sense.

Puzzle Patterns and Pattern Windows are fun, but the concepts of pattern positioning and relationships seem too complex

for young children. The same goes for Rockets, a strategy game in which you must use computational and estimation skills to decide how many rockets to launch each turn so that you're the last one to blast off.

The Last Word Except for a few of the most complex puzzles, Math Workshop's games seem better suited for the 6-to-9-year-old crowd than the suggested 6-to-12 age group. The program did not run on my 40MB Centris 650 with 32-bit addressing on, though it worked fine on a 20MB 610. (Brøderbund was unable to reproduce this problem on either a high-RAM Quadra or a Power Mac.) But once we got it up and running, Daron and I thoroughly enjoyed Math Workshop.—CATHY ABES



Rhythmic Fractions Assemble the correct rhythm bars on the Fractionaire, and the goofy-looking Algebird dances to your tune.

Zonkers 1.0

Desktop-Enhancement Package

PROS: Good icon editor; easy-to-use interface. **CONS:** Icon package is rather bland. **COMPANY:** Nova Development (818/591-9600). **LIST PRICE:** \$19.95.



EVEN IF YOUR EMPLOYERS WERE gullible enough to spring for a screen saver when you told them it would prolong your monitor's life, you'll never manage to convince them that Zonkers, a collection of Mac enhancements, is an essential part of your business life. Zonkers doesn't even pretend to be practical, businesslike, or prudent. There's only one reason to buy this software package—double-clicking on a rainbow-tie-dyed folder is much more fun than double-clicking on a boring gray one.

Zonkers installs a control panel from which you can modify seven different elements of your desktop. You can change icons, scroll bars, cursors, buttons, menu-bar items, windows, and desktop patterns using the 2000 different enhancements Zonkers provides. (The CD-ROM version

of Zonkers comes with 5000 enhancements.) About half are icons Nova Development bought from an existing collection by Component Software.

My reaction to the enhancements was mixed. The folder and file icons are pretty uninspired and unoriginal for my taste, but I like the way Zonkers modifies the other desktop elements. I used the program to change menu-bar titles into animated icons, add color to window scroll bars, and set my desktop pattern to cycle through a random selection of the included Thought I Could's Wallpaper patterns every hour. Within the Zonkers control panel are eight modules that let you configure the seven desktop elements and their display. (The eighth module is a colors module that controls the colors of windows menus, scroll bars, and buttons.) You can also create elements from



The Mighty Banana Slugs I used Zonkers' icon editor to make an icon of my all-time favorite college mascot: UC Santa Cruz's Banana Slug.

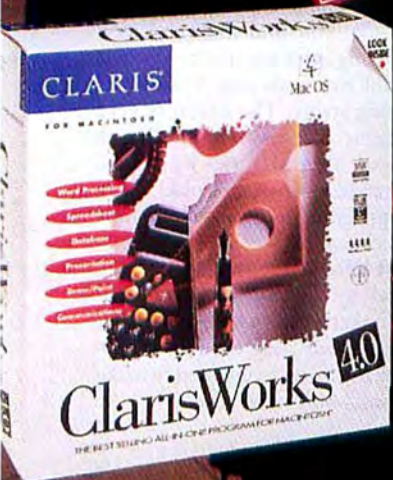
scratch in some modules. All these enhancements take up about 7MB of disk space, and the control panel adds 83K of RAM to your system software.

Zonkers also installs an optional pull-down menu in the menu bar of your Macintosh, right next to the Apple Guide icon. You can access all of the different modules in the Zonkers control panel from this menu, including the stand-alone icon-editor application.

Launching the icon editor opens a pair of windows where you make all your icon changes. In one window, you select a new icon from one of Zonkers' icon libraries. Simply drag that icon over to the one you want to replace in the first window, and drop it on top. The change is automatic. And if, like me, you find Zonkers' icon selection wanting, you can always use the editor to build your own icon libraries or modify existing icons. The editor is very similar to other icon editors like Drib-Click Software's Icon Mania. It uses a separate window to change icons pixel by pixel, using basic paint-program tools in black-and-white, 16-color, and 256-color modes.

The Last Word I can't look anyone in the eye and say this is a must-have program. But Zonkers' broad-based approach to customizing your Mac is pretty compelling, especially if you're inclined to make your own icons.—MATTHEW HAWN

Choosy moth ClarisWorks kicks the kumquat



MacUser, 1995

In Canada, please call 1-800-361-6075, ext. C30

* MacWorld (4/95), MacUser (3/95 & 4/95), MacHome Journal (2/95), MacWeek (11/28/94), MacWorld UK—World Class Award 1994. ** Based on total purchased units (licensed copies) worldwide of integrated ("Works") software applications for the Macintosh. © 1995, Claris Corporation. All rights reserved. Claris and ClarisWorks are registered trademarks and ReadyArt and Simply Powerful Software are trademarks of Claris Corporation. All other trademarks are property of their respective owners.

ers agree quats out of Microsoft.

CLARISWORKS THE INTEGRATED SOFTWARE PACKAGE RATED #1 BY MAJOR MACINTOSH PUBLICATIONS.

From MacWorld and MacUser, to Mac Home Journal, the editors unanimously agreed: ClarisWorks beats Microsoft, hands down. And now the best-rated, best-selling** works program just got better. Introducing ClarisWorks 4.0.

In addition to full-featured word-processing, spreadsheet, database, graphics, painting, and presentations capabilities, ClarisWorks 4.0 now offers over 100 new features. Features that customers requested most—Assistants for home finances and mailing labels, time-saving features such as stylesheets, ReadyArt™ Libraries with 500 images, database List View, and plenty of others. Best of all, ClarisWorks 4.0 isn't a pig of a program, hogging up megs of memory and disk space—it's still compact and speedy. No wonder it's the works package of choice for home, office and education.

So pick up the latest version of the works package that the choosy mothers chose—ClarisWorks 4.0. For more information, educational pricing, or upgrade details, visit your nearest reseller, or call 1-800-293-6617, ext. 673.



Top: Use the drag-and-drop ReadyArt Libraries to add clip art to any document.
Bottom: Answer a few simple questions and in seconds you'll have perfect labels.

CLARIS®

Simply powerful software.™

FIRST OF A NEW BREED

Apple breaks with the past to deliver the fastest, most expandable Macintosh ever: the Power Mac 9500

THE FIRST OF APPLE'S SECOND-GENERATION Power Macs has arrived. The new Power Mac 9500 breaks with the past while also borrowing from it. Although it's a second-generation Power Mac, the 9500 brings with it many firsts. It's the first Mac to use the PCI expansion bus instead of the NuBus slots the Mac II introduced back in 1987. It's the first Power Mac to use the second-generation PowerPC 604 CPU. It introduces CPU-upgrade and memory-expansion schemes that are new to the Macintosh world. And it brings a variety of architectural improvements, from an improved 680X0 emulator to a faster SCSI bus, that you can expect to see in future Power Macs.

But like the original Mac II, the 9500 provides a scaled-down set of built-in features. There's no on-board video circuitry; you need to install a PCI-based video card to connect a monitor. Even the five-slot Quadra 950, the most expandable 68040 Mac that Apple ever made, provided on-board video.

The 9500 also lacks AV features—it supports 16-bit, 44kHz stereo audio recording and playback, but it can't digitize video or route its image to a TV set without third-party hardware.

No, the 9500 is all about speed and expansion, not built-in capabilities. Think of it as the most lavish foundation ever built.

The 9500 is initially being offered in two versions: the 120MHz 9500/120 and the 132MHz 9500/132. The 9500/120 costs \$4699 and includes a 1GB hard drive and an ATI Technologies mach64 accelerated 24-bit video card. The 9500/132 costs \$5399 and includes a 2GB hard drive. Both models include 16MB of RAM and a quadruple-speed CD-ROM drive.

BY **JIM HEID**





The new Power Mac 9500 takes advantage of the faster PCI bus. Expect to see faster, cheaper add-on cards, such as video cards from Radius and ATI Technologies.

A 604 to Go

The Power Mac 9500 delivers on Apple's promise to use new PowerPC-family CPUs as they become available from IBM and Motorola. The PowerPC 604 sports internal improvements that make it faster than the 601 used in the first-generation Power Macs, and it runs at faster clock rates—up to 132MHz now, with faster speeds on the horizon. (The fastest 601-based Power Mac, the now-discontinued 8100/110, runs at 110MHz.)

Fastest Mac Yet Macworld Lab's tests confirm the 9500 to be the fastest Mac ever (see the benchmarks in "How Fast Is the Power Mac 9500?"). But is it the fastest personal computer? According to Macworld Lab tests of the latest 120MHz Pentium systems, the answer is, often but not always; see *Power Mac News*, in this issue.

First Replaceable CPU The 9500's 604 CPU lives not on the motherboard

itself, but on a 4-by-7-inch card you can unplug and replace. Thus, for \$500 to \$1000 you can quickly turn a 9500/120 into a 9500/132 when Apple releases its upgrade later this year—and you can take advantage of higher-speed 604 CPUs as they become available. (Apple expects 150MHz 604 chips to be available relatively soon, perhaps by 1996.) Apple is publishing the specifications for its CPU-upgrade slot, so expect to see other companies deliver warp-speed CPU upgrades, some of which might even combine multiple processors.

When you install a CPU-upgrade card, the 9500's internal buses run faster, too, boosting video and memory-access performance and SCSI throughput. (That doesn't happen in a PC's CPU OverDrive upgrade.) For example, in the 9500/120 and 9500/132, the CPU buses run at 40MHz and 44MHz, respectively; when 150MHz 604 chips become available,

however, installing one will bump the buses up to 50MHz. (At CPU speeds between 100MHz and 150MHz, the buses run at one-third the CPU's speed. But the buses' upper limit is 50MHz, so don't expect to get 60MHz buses when you pop in a 180MHz 604 someday.)

From SIMMs to DIMMs

In the first-generation Power Macs, you add memory through 72-pin Single In-Line Memory Modules, or SIMMs. SIMMs transfer 32 bits of data at a time; to accommodate the PowerPC 601's 64-bit memory architecture, upgrading RAM means installing SIMMs in pairs.

The 9500 introduces a new memory-expansion board: the 168-pin Dual In-Line Memory Module, or DIMM. DIMMs provide a 64-bit-wide data bus that eliminates the hassle of buying SIMMs in pairs and installing them in physically contiguous slots. If you do



How Fast Is the Power Mac 9500?

■ = Best result in test.
Results are times as fast as a Centris 650 (Centris 650 = 1.0). Longer bars are better. Products are listed in decreasing order of overall performance.

The first Power Mac using the new PowerPC 604 shows the benefit of using this state-of-the-art CPU: raw speed. In all measurements, the prototypes of the 604-based Power Mac 9500 outperformed all other Power Macs. We couldn't gauge how much faster the new PCI bus is compared with the old Power Macs' NuBus since neither Apple nor other developers had PCI cards available to test,

although PCI should bring at least a twofold speedup for graphics display. A surprising finding was the 9500's performance in 680X0 emulation—thanks to a faster CPU and a new 680X0 emulator, even in emulation mode the 9500 is faster than any 680X0 Mac ever was, with the key exception of FPU-intensive work common to rendering and analytical computing.

Overall Score

Indicates typical performance in a mixed-use environment, such as a company or school.

CPU-Intensive

Indicates performance for most business and personal tasks.

FPU-Intensive

Indicates performance for analytical, 3-D, and other specialized uses.

Disk-Intensive

Indicates performance of the Mac's data-transfer capability, which affects all users.

The Fastest Power Mac Yet . . .



. . . Is Also the Fastest 680X0 Mac



*Running in 680X0 emulation; Infini-D couldn't run under this mode, so we factored it out of all our 680X0 tests.

BEHIND OUR TESTS

Macworld Lab tested several functions in eight key programs plus the Finder to determine real-world performance for the three critical performance areas faced by most users: The CPU-intensive tasks evaluate the Mac's essential computing performance; the FPU-intensive tasks gauge performance for tasks that take advantage of the floating-point unit; and the disk-intensive tasks gauge the performance you'll get for launching programs, opening and closing files, and copying files.

We then averaged the results, giving the CPU-intensive score 60 percent of the weight and the FPU and disk scores 20 percent each, to derive the Overall Score, which gives

an accurate measure of the Mac's performance for most business uses. These results are comparable with recent Macworld benchmarks. We tested native versions of software on the Power Macs and 680X0 versions on the 040 Macs. The software included System 7.5; Adobe Illustrator 5.5; PageMaker 5.0a; Photoshop 3.0; and Premiere 4.0; Fractal Design Painter 2.0; Microsoft Excel 5.0; Specular International Infini-D 2.6; and Wolfram Research Mathematica 2.3. Our 68040 Macs had 16MB of RAM, while the Power Macs had 24MB. All systems were run with 8-bit color on 17-inch monitors.—Macworld Lab testing supervised by Mark Hurlow and Danny Lee

install two identically sized DIMMs, the 9500's memory architecture ties them into a 128-bit memory bank, interleaving access to them and providing, according to Apple, a 10 to 15 percent performance boost. (A similar scheme for some early Quadras boosted performance 5 to 7 percent, according to Macworld Lab tests.)

DIMMs used in the 9500 must have an access speed of at least 70 nanoseconds. The 9500 provides 12 DIMM slots (there's no RAM soldered onto the motherboard) and can support more memory than any Mac yet: up to 768MB with 64MB DIMMs and up to 1.5GB with 128MB DIMMs. Buying 768MB of DIMM-based memory will set you back about \$25,000. Newer Technology, which was Apple's DIMM supplier for prototype 9500 models, expects DIMMs to cost roughly 5 to 10 percent more than SIMMs. Newer is developing a DIMM expansion unit that would allow the use of existing 72-pin SIMMs in a 9500.

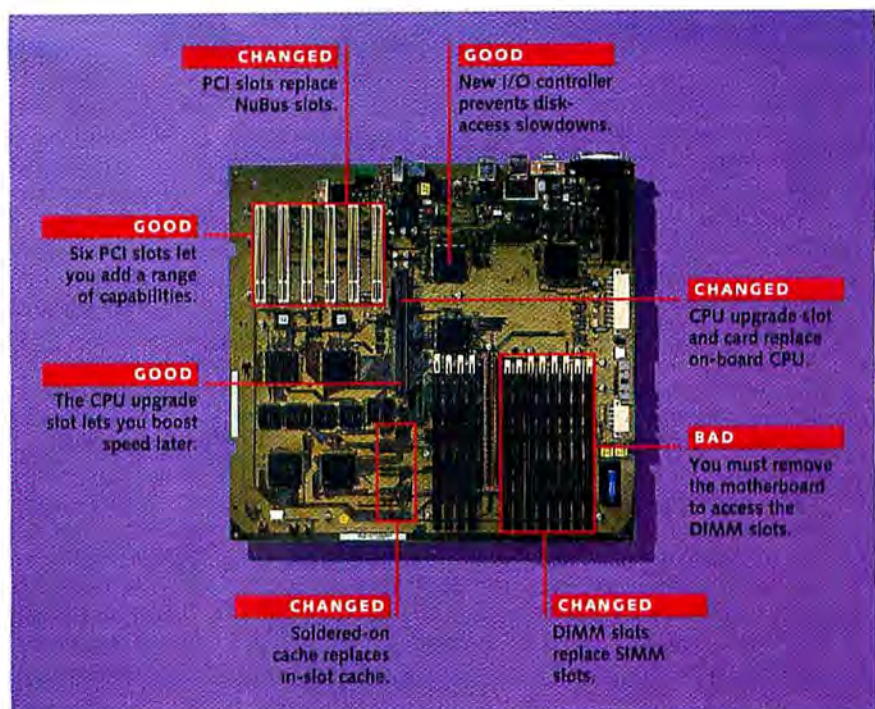
Installing the DIMMs is similar to installing SIMMs in a Power Mac 8100—unfortunately. The 9500's case design, essentially a stretched version of the 8100's, requires that you remove the motherboard to upgrade memory.

The Power Mac 9500 also introduces a new external-cache memory scheme. Where previous Power Macs contained SIMM slots for cache memory, the 9500 has 512K of cache soldered onto the motherboard. And the cache itself works differently; it provides a 128-bit-wide data path (versus first-generation Power Macs' 64-bit path), and it uses a copy-back rather than write-through scheme. In English: caching is a lot faster than in first-generation Power Macs.

From NuBus to PCI

With the first-generation Power Macs, Apple often chose compatibility over performance. The first Power Macs' use of NuBus slots was a prime example—faster slots would have yielded faster machines but forced Macintosh users to buy new cards. But for a variety of reasons, the first-generation Power Mac NuBus slots (particularly in the 7100) were often significantly slower than those of the previous powerhouse, the Quadra 840AV.

The 9500 sheds these constraints by adopting the PCI expansion architecture, which is becoming increasingly popular in the PC world and a de facto standard on Pentium-based PCs (see "Why PCI," *Macworld*, June 1995). PCI provides dramatically faster performance than NuBus and makes it far easier for hardware developers to create cards that work in PCs as well as Macs. Apple says that if a developer adheres to the PCI 2.0 specification



Blueprint for the Next Generation The Power Mac 9500 uses a new motherboard, based on the 8100's design, that incorporates several changes to boost performance and reduce cost.

when designing a card, it will only have to write driver software to make the card work with PCI Power Macs.

That sounds too good to be true, but several major PCI developers I talked to confirmed this was their experience (see the sidebar "Who's Doing PCI: An Update").

By letting users buy expansion cards that work in PCs and Power Macs, PCI makes it easier for businesses to mix platforms. And because PCI cards sell in greater volume, they cost less. For example, an accelerated 24-bit graphics card for NuBus can cost \$1000 to \$2000. Compare that with the similar mach64 PCI card, which costs about \$700 (ATI, 905/882-2600).

To ease the transition from NuBus, Second Wave (512/329-9283) has introduced PCI versions of its NuBus expansion chassis. The \$595 Xpanse PN200 contains two NuBus slots and draws its power from the Mac's SCSI connector—clever. The \$995 Xpanse PN400 contains four slots, and the \$1895 Xpanse PN800 contains eight.

Second-Generation Improvements

The snap-in PowerPC 604, the DIMMs, and the PCI slots are the biggest news in the 9500, but the new Mac also sports a variety of other enhancements, many of which will be standard in future Macs.

Better Networking The 9500 has not only a standard AUI Ethernet port, but also a 10BaseT connector, eliminating the need for an extra-cost adapter for use on a 10BaseT Ethernet network.

More significant, the 9500 is the first Power Mac to ship with Apple's Open Transport networking architecture. Besides being written in native PowerPC code and providing better performance, Open Transport is a new implementation of the AppleTalk and TCP/IP network protocols designed to support next year's Copland Mac OS release (see *Networks* news, *Macworld*, March 1995).

Improved Input/Output The 9500's internal SCSI bus supports SCSI-2 Fast and, according to Apple, provides sustained data-transfer rates of 6MB to 7MB per second with Apple's 1GB and 2GB hard drives. Other aspects of the 9500's I/O subsystem are also faster, thanks to a new direct memory access (DMA) scheme that minimizes the CPU's involvement in data transfers across the SCSI and PCI buses as well as through the serial and Ethernet ports.

New Emulator Called the Dynamic Recompilation Emulator (DRE), this new OS component runs 680X0 programs faster than did the emulator in the first-generation Power Macs. Where the old emulator translated 680X0 code line by line, the DRE compiles 680X0 programs into native PowerPC code on the fly. Compiled code is stored in a 256K cache; if it's needed again, the DRE retrieves it from the cache instead of recompiling.

Apple claims the new emulator runs 680X0 programs 20 to 30 percent faster

WHO'S DOING PCI: AN UPDATE

In the June 1995 feature "Why PCI," *Macworld* listed numerous developers who had announced support for the PCI Power Macs. These included ATI Technologies, Diamond Multimedia Systems, Genoa Systems, and Matrox for accelerated video cards; EA Research and Radius for graphics accelerators and digital-video adapters; Adaptec and FWB for accelerated SCSI controllers; and 4-Sight, Asanté Technologies, Dayna Communications, Digital Equipment Corporation, Farallon Computing, Fore Systems, and Interphase International for high-speed network interfaces.

The PCI bandwagon is even more crowded now. In addition to the companies above, the following developers have announced PCI products for the Power Mac 9500.

Digital Video Avid Technology, Fast Multimedia, Intelligent Resources Integrated Systems, and Truevision have announced plans to ship PCI-based digital-video cards.

PC Compatibility Orange Micro's Series 400 card contains a 486 processor and can be upgraded to a Pentium, and it can accommodate up to 64MB of RAM. The card supports an optional SoundBlaster-compatible daughtercard that provides two serial ports, one parallel port, one game port, and sound-

input and -output jacks. It also improves video performance.

Networking and Communications Spectra Systems, Neutral, DCA, and Rockwell Network Systems have announced high-speed network interface cards. InnoSys is developing a high-speed, four-port serial interface card that will link PCI Power Macs to airline reservation systems. Creative Solutions will ship a PCI card that adds six serial ports.

Prepress and Imaging Yarc Systems is developing coprocessing and graphics accelerator cards as well as raster-image processing cards to drive color laser copiers and image-setters. Electronic Imaging Systems is developing PCI interfaces for high-end drum scanners from Dainippon Screen and Linotype-Hell; the latter company is also delivering a color-space conversion card.

Science and Engineering National Instruments is developing GPIB interface and data-acquisition cards. Precision Digital Images is developing high-resolution digitizing boards for scientific and medical imaging.

Storage Atto Technology, Distributed Processing Technology, MicroNet Technology, and QLogic have developed SCSI-2 adapter cards and disk-array products.

than the old one. By and large, *Macworld* Lab tests bear this out. However, both 9500 models were significantly slower when emulating 680X0 floating-point code, finishing behind even a Centris 650.

Tweaked System Software The 9500 series uses Mac OS 7.5.2, a new version of the system software that incorporates the System 7.5 Update 1.0 plus some additional enhancements. (Apple has also changed the name from System 7.5 to Mac OS 7.5.) The Resource Manager, a portion of the Mac OS that's used extensively by programs, as well as by the OS itself, was rewritten in native PowerPC code, as was the Ethernet network driver

and SCSI Manager. (*Macworld* Lab tests show that the native SCSI Manager and internal SCSI-2 Fast bus pay off: the 9500/132 was 47 percent faster than an 8100/110 in disk-intensive operations.)

Mac OS 7.5.2 also contains a new mechanism for native-PowerPC device drivers, which among other things will make possible faster transfers between the Mac and PCI cards. This mechanism, called the Driver Services Library, is one of the first stepping-stones to next year's Copland Mac OS release (see "The New Mac OS Unveiled," *Macworld*, July 1995).

The new system version also does away with the 4GB-disk-partition limitation of System 7.5 by supporting drive volumes of up to 2 terabytes (that's 2048GB). Alas, the Mac's file system still limits file sizes to a maximum of 2GB and allocates disk space rather inefficiently on large volumes.

Foundation for Graphics Acceleration Part of the Driver Services Library will make it easier for hardware developers to create accelerated graphics cards. Previously, hardware developers had to devise their own acceleration schemes; now there's a defined structure for graphics acceleration.

The Last Word

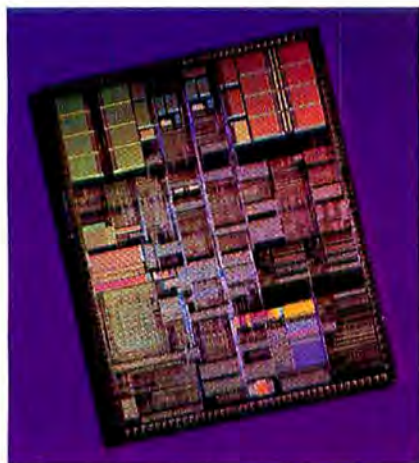
The Power Mac 9500 is not the second-generation Power Mac for the rest of us—it's too pricey and comes with too few built-in capabilities. Those who are waiting for a midrange second-generation Power Mac, particularly one with built-in AV features, will have to hold out a

while longer. Even if you crave a 9500, you might have to wait—judging by Apple's recent track record, supplies of the 9500, particularly the 132MHz model, may be scarce at first.

But the 9500 is an excellent foundation for a high-end production workstation—for color publishing or media production. Its speed and expandability should also make it popular in the scientific and technical markets. By breaking with the past, by stressing performance over expansion compatibility, and by adding more native system software, the first of the new Power Macs blazes a trail that the mainstream second-generation Power Macs will follow.

And what of the first generation? One of the claims Apple made when it released the original Power Macs was that the machines would become faster as more portions of the Mac OS went native. However, Apple doesn't think it can bring the DRE enhancements to earlier Power Macs because their ROMs would have to be replaced. And Apple hasn't yet decided whether to bring the other system enhancements to the earlier Power Macs. It should. The pioneers who made Apple's transition to RISC a success shouldn't have to wait until next year's Copland OS release to enjoy the benefits of a faster Mac OS. **m**

Contributing editor JIM HEID has been writing about new Macs since November 1983. He's the author/producer of the *Macworld Complete Mac Handbook Plus Interactive CD*, third edition (IDG Books Worldwide, 1994).



Changing of the Guard While the IBM PowerPC 601 CPU will continue to be used in future Macintoshes, the new 604 (shown here) from IBM and Motorola has taken the role of leading-edge CPU for personal computers.

New Quantum Drives

The classic choice in hard drives.

Simple. Rugged. Award winning design. The Tsunami has been an industry favorite for years.

Tsunamis feature quick Quantum hard drives, switchable active termination and whisper-quiet fans. Performance and value are packed in this sleek style that stands upright with a small footprint, or stacks neatly on its side.

Tsunami external drives are shipped ready to plug and play with power and SCSI cables, Silverlining hard disk management software and solid warranties up to 5 years.

TSUNAMI DRIVES

1080MB
\$429

SPECIAL PRICES

	INTERNAL DRIVE	TSUNAMI CASE
--	----------------	--------------

Quantum - 2 year warranty

540MB	\$199	\$299
-------	-------	-------

730MB	\$229	\$329
-------	-------	-------

* Five year warranty upgrade available \$19.95

Quantum - 5 year warranty

1080MB	\$329	\$429
--------	-------	-------

2150MB	\$799	\$899
--------	-------	-------

4300MB	\$1299	\$1399
--------	--------	--------

* Free software with La Cie Drives including Silverlining, Ziff-Davis MacBench, EZ Label and Virtual Disk.

30 Day
Money Back
Guarantee

MW
EDITORS' CHOICE

1
TOP CHOICE



SILVERSCANNERS



The Pro's
CHOICE

Silverscanner III - Package 1

- Color It!
- Read-It Pro OCR
- Silverscan

\$1499

Silverscanner III - Package 2

- Photoshop (full)
- Read-It Pro OCR
- Silverscan

\$1799

Silverscanner DTP

- Photoshop LE
- Read-It Pro OCR
- Silverscan

\$899

Transparency Adapter

\$799

Sheet Feeder Attachment

\$499

Put brilliant 30 bit color and outstanding optics on your desktop. Quick, automatic, and customizable. Silverscanners ship with Silverscan, La Cie's award-winning software.

Silverscanner III

Top performance with 600 x 1200 dpi, interpolating to 4800 dpi. For the professional or the recreational user, when you want speed and the best color reproduction you can get.

Silverscanner DTP

Full-featured performance for the home office set-up. 400 x 800 dpi native resolution. 3200 dpi through software.



FREE
with La Cie
VIP Scan!

INSTANTLY
SCAN BUSINESS CARDS
INTO YOUR MACINTOSH.

La Cie's VIP SCAN™ turns your card file into a powerful database quickly and easily. VIP SCAN records and files logos, names, addresses and phone numbers for quick access. With one click, data exports to Now Contact, Symantec Act, or Claris Organizer.

VIP SCAN also comes complete with Now Contact, the leading contact management software.

VIP SCAN and
Now Contact
Only \$199

LACIE
LIMITED
A QUANTUM COMPANY

1-800-999-0182

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

Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Silverscan, 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 1995 La Cie, Ltd. All rights reserved.

Circle 52 on reader service card

Is Apple Serious

Some would-be clone makers say that

Have the shifting sands at Apple buried a key growth strategy—the use of licensed Macintosh clones to reach new customers—and perhaps foreclosed the promise of a thriving Mac-clone market that would bring lower prices, more innovation, and better product choices?

by Charles Piller

Since last fall Apple has insisted that it supports open licensing of the Macintosh Operating System. Apple then announced that, to ensure the future of the Mac, it would promote a strong clone market that could rapidly grow the Mac OS market share. Apple officials predicted that the clone strategy would lift the Mac market share 3 to 4 percent by mid-1997—meaning millions of Mac clones would have to be sold—and that the company's strong PowerPC push would add another 2 or 3 percent, growing the Mac from its perennial 10 percent market share to 16 percent or so.

Achieving that goal would be a huge accomplishment; Mac sales would have to grow at several times the rate of other personal-computer sales, which are themselves growing quickly. Such meteoric growth, Apple officials hoped, would quell the doubts consistently expressed by market analysts that Apple would ever be more than a niche computer maker.

Yet of the four Mac OS licensees announced in the past six months, only Power Computing—a start-up company—will build mainstream systems. And the 100,000 units that company hopes to sell in the next year would not even register on industry market-share surveys. The other three licensed clone makers—DayStar Digital, Radius, and Pioneer—will all produce specialized systems for niche markets.

As each month passes, Apple loses time to wage its battle to capture hearts and minds before shipment this August of Windows 95—Microsoft's new OS that features many capabilities pioneered by the Mac. Now is the time for Mac clones to battle PCs, yet still no major computer company has announced intentions to produce a Mac clone. Why?

Does the Mac lack appeal for major companies, or is Apple less committed to a clone market than its rhetoric suggests? Some key computer executives in Asia say the problem is Apple, not the Mac. In a series of interviews, these executives tell *Macworld* that Apple has yet to make up its mind about cloning. Key executives in the

United States echo these concerns. And in comments to *Macworld*, Apple's top licensing officials indicate that Apple's commitment has been scaled back.

"We have changed the earlier vision statement or charter to grow Mac OS market share," says Apple's new director of OS licensing, Larry Lightman. "[Licensing] will still be a very important aspect of growing market share, but we're not trying to do it on our own. That goal is no longer being pinned as heavily on Mac OS licensing." Instead, he explains, Apple will seek growth by investing in a broad range of efforts and technologies. Lightman says that Apple is no longer publicly estimating the growth of the Mac OS market share. Given scant progress toward its original market-share goals, Apple's change in tone may have been predictable. But what caused the change in the clone charter?

Reading Apple's Tea Leaves

Factional infighting at Apple has greatly delayed its licensing program, according to Chris Hsu, acting director of overseas operations for Taipei, Taiwan-based Tatung (a major supplier of Apple-branded monitors and Packard Bell PCs). Hsu's views are echoed by several other Taiwanese and Japanese executives. Despite that concern, these executives still view Apple's recent reorganization (see "Apple's New Business Model," *At Work* news, in this issue) with cautious optimism. They suggest that Apple's executive vice president, Ian Diery, was forced out in the recent reorganization because he was not sufficiently supportive of licensing, indicating Apple's commitment to licensing.

On the eve of Apple's reorganization, Tsutomu Kobayashi, deputy general manager for corporate R&D at Osaka, Japan-based Sharp, commented that Apple's vice president for licensing, Don Strickland, had been frustrated with a lack of support from higher management; Kobayashi predicted that Strickland would leave unless he got a bigger staff and budget. In the new Apple structure,

about Clones?

Apple's efforts are only halfhearted. A Macworld investigation.



JEFFREY PULIO

Strickland has indeed left licensing. He now is vice president of Apple's business and government divisions, although he will continue to have indirect involvement in licensing.

Unlike Diery, Strickland is widely respected as a forceful advocate of licensing, so the net effect of the reorganization—Diery out, Strickland transferred—is far from clear. "Apple's ability to stay focused on a product line is not well

demonstrated," says one knowledgeable industry source. "As a case in point, Strickland leaves just as he's getting going [on clones]."

Strickland and Lightman deny that the recent reorganization had anything to do with internal differences over licensing, and senior vice president David Nagel tells *Macworld* that internal debates about licensing "are long since over." Lamar Potts, formerly director of finance

at the AppleSoft division, recently replaced Strickland. He and Lightman say that under the new Apple structure, licensing is now closer to the mainstream of the company and that the licensing program will be refined over time.

Elusive Licenses

Whatever refinements Apple deploys, many Japanese and Taiwanese computer makers view the licensing program with

considerable skepticism. They say Apple fears that Asian clone makers would cannibalize key markets, particularly in Japan, where Apple captures some 16 percent of personal-computer sales—the kind of market share Apple says it wants worldwide, with the help of clones.

What evidence do these potential clone makers cite to support their claims? Several Taiwanese companies that have explicitly expressed interest in creating Mac clones have so far been unable to obtain a license. These include Tatung, Datatech Enterprises (DTK), Mitec, First International Computer (FIC, which is

too high, and the companies working on PowerPC were scared off,” Lin says. Asked if Apple is as eager to license as it says, Lin responds this way: “Eagerness is one thing, but pricing is another.” Tatung hopes to have resumed licensing negotiations by the time this article appears.

K. J. Chou, regional marketing manager for Motorola Electronics Taiwan (which runs a PowerPC technical-support center jointly with IBM), concurs with Lin. Chou says that other Taiwanese computer makers agree that Apple’s licensing fees are prohibitive.

These high fees have caused Frank Huang, chairman of Umax, to seriously doubt Apple’s commitment to Mac OS licensing. “I want the [Mac OS] license, but Apple won’t offer it,” he says. “Apple is afraid that Taiwanese companies will force Apple to cut their prices.” Huang says that Apple should give away licenses at first to grow the Mac OS market quickly. “Apple, to survive, has to be an open company,” he urges. “Taiwanese companies will work hard for Apple.”

Apple’s Strickland flatly denies that Apple’s licensing fees are too high: “We’re trying to expand the platform share, and you can’t do that with onerous licensing terms.”

In defense of Apple’s efforts, Nagel tells *Macworld* that Apple has licensed the Mac OS to “at least two other compa-

proposals—suggesting that Apple’s licensing staff, which numbers about 20 engineering, technical support, sales, and marketing people (plus a smaller number of others borrowed from other Apple divisions), is not large enough to cope with a rapidly expanding clone market.

Apple licensing director Lightman says that Pioneer, a newcomer to computer design and manufacturing, wanted to go slow to ensure that it set achievable goals. Still, a long negotiating process is likely to be the norm, he acknowledges.

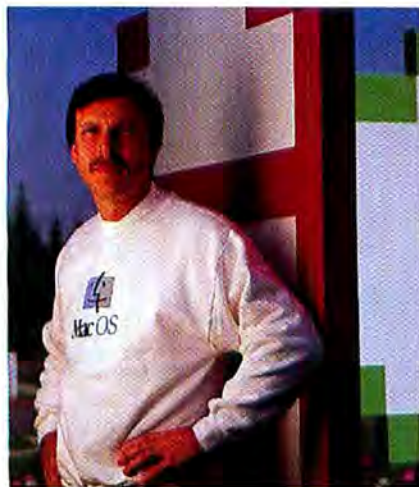
“Given that these companies [would be] given access to the crown jewels, there are many patent and intellectual-property issues to iron out,” Lightman says. Apple will operate more quickly as it gains experience, “but we pretty much understand that we just cannot support rampant licensing of the Mac OS.”

Chi-Yuan Liu, a top manager at the Computer and Communications Research Laboratory (CCL) in Taiwan, a quasi-governmental R&D lab with close ties to the country’s major computer makers, points out how this slow start is hindering the efforts of potential clone makers: Apple has not yet developed a model for sharing information on the Mac hardware design—necessary for any clone maker who wants to innovate, even in relatively minor ways.

Apple officials say that their licensing team is well supported within the company. “We have run into a learning-curve issue,” admits Strickland. But he insists that licensing does not lack for budget or staff. “When Apple built the Macintosh and designed the Macintosh business it was not with licensing in mind,” Lightman says. To restructure for licensing “is a very difficult proposition, and one that may have been underestimated.”

Lightman says that Apple is placing a high priority on supporting the first licensees to dispel any skepticism about its ability to support larger companies down the line. He says that Apple’s licensing infrastructure and documentation will be fully in place by midsummer. “We’re getting to the point now where we are stronger and you will see bigger and more important licensing agreements.”

Yet to support even a single major clone maker, says Sharp’s Kobayashi, Apple would need a far bigger team than it has so far assembled. Power Computing’s experience is instructive on this point. CEO Steve Kahng says that Apple has bent over backwards to support his company, dedicating several technical, legal, and marketing people—amounting to a large portion of its licensing staff—full-time. Kahng agrees that the needs of a large company would vastly outstrip



ROBERT HOLZGREN

We just cannot support rampant licensing of the Mac OS

LARRY LIGHTMAN

Director of Mac OS Licensing, Apple

already slated to produce Power Computing’s Mac-compatible motherboards), and Umax (a leading imaging company).

Tatung would seem an ideal candidate. At press time, the company plans to release PowerPC 604-based systems using Windows NT in June 1995, despite a threat by Intel to cut off the supply of 80X86 and Pentium chips if Tatung committed to PowerPC. Although the threat was not carried out, says Wen-yen K. Lin, a top Tatung executive, “our opinion [remains] that Intel is too strong.”

Lin says her company has a very good relationship with Apple and is keenly interested in creating Mac clones to complement its other PowerPC systems. Even so, Tatung has not been able to agree on licensing terms with Apple.

Apple sent a negotiating team to Taiwan in February, but “the license fee was

enies.” He declines to name the companies, where they are located, their size, or when they would announce products, but says that “they are certainly names you have heard of, significant names in the computer world.” Nagel also points out that Apple predicted last fall that the first Mac clones would come to market in the second half of 1995, and that Power Computing began shipping its machines in May, ahead of the predicted schedule.

Licensing Staff Too Small?

Some companies view the protracted negotiations that successful licensees have endured as a sign that Apple’s efforts to generate a clone market are halfhearted. Pioneer needed more than five months to negotiate its license for a machine to be sold into the Japanese audiophile market, which Pioneer itself describes as tiny.

Part of the problem, says Jun-ichi Shibata, chief product planner for Pioneer’s computer division, was getting Apple to translate and respond to contract

those of Power Computing, in part because Power Computing hired key Apple engineers to work on its system designs, which reduced dependence on Apple.

Taiwanese companies offer a way for Apple to support more clone makers without a dramatic increase in licensing staff or a fundamental change in its approach. Steven Cheng, vice president and general director of CCL, says Taiwanese companies would place a high priority on Asian markets—an area Strickland sees as critical to clone sales—and put a plan into place that would ease Apple's support burden.

That plan is based on the combined efforts of CCL and the Taipei New PC Consortium (TNPC), an organization that includes all major Taiwanese computer companies (including the five noted earlier) except Acer. TNPC was formed to develop PowerPC-based devices. CCL's nearly 1000 employees help develop new technologies for TNPC members.

The relationship between IBM, Motorola, and CCL is very close. CCL licenses technology from IBM and Motorola, then adapts this technology for the specific needs of TNPC members. In part due to CCL's help, TNPC members will soon release computers based on IBM's PowerPC Reference Platform (PReP) standard, CCL's Liu says.

And a TNPC member, United Microelectronics Corporation (UMC), will soon release the first clone PowerPC chip set to compete with chip sets produced by the IBM/Motorola/Apple team, according to Liu. (The chip set controls several motherboard components and the PowerPC chip itself, which the companies would still get from IBM and Motorola.) Liu argues that a relationship modeled after the CCL/IBM/Motorola one could support Taiwanese Mac-clone makers in ways that Apple lacks the resources to accomplish.

Fear of Competition?

"For almost one and one-half years Apple has been in a soul-searching mode about how to turn licensing statements into actions," says CCL's Cheng. "The communication channels [between Apple and TNPC] are wide open and there is goodwill, [but] Apple must develop an internal corporate consensus on how to deal with Taiwanese companies."

Fears of cannibalization have caused Apple to keep TNPC companies at arm's length, according to CCL's director of computer system technology, Chih-Yuan Chin.

Sharp's Kobayashi also believes Apple remains reticent about licensing due to



FRANK HUANG
Chairman, Umax

fears of cannibalization. "The Japanese companies would build thinner, lighter PowerBooks with better LCD displays and longer battery life," he says, and could grab a huge part of the notebook and sub-notebook market from Apple's lucrative PowerBook line. Kobayashi would not discuss his company's views about the Mac OS but says that "Sony is very interested. Apple could have licensed to Sony three years ago," but Sony hasn't been able to get Apple to come to terms. Sony declines to comment.

Taiwan's CCL is collectively bargaining with Apple for TNPC members, although in nearly all cases, each company would separately license with Apple once a general agreement is reached. Liu says that negotiations have been slow, in part because Apple may fear the consolidated competitive strength of TNPC members and would prefer to license selected Taiwanese companies.

"Apple views Taiwanese companies with suspicion," says Umax's Huang. But Taiwanese companies could quickly build up the Mac-clone market because they are risk takers, have aggressive corporate cultures, and have the manufacturing flexibility and capacity to do the job fast, he argues, predicting that TNPC could grow the Mac OS market share by as much as 10 percent—doubling Apple's market share—within a couple of years.

Apple sees Asian companies as critical to the clone market—although perhaps not in the short run, Lightman says. "We definitely have not crossed TNPC

off our list. If we are interested in having mass-produced clones available to everyone, that might be a good way to go. [But] there's a difference between having a glut of Mac clones on the market and having a [clone maker] that's committed to [generating] demand in the business and government markets, for example. We have to look at companies that will make those kinds of commitments, rather than companies that will merely commoditize the Mac marketplace."

Stifling Innovation

The small size of Apple's licensing staff suggests to some companies that Apple is trying to keep others from adding funda-

I want the [Macintosh OS] license, but Apple won't offer it

mental innovations to the Mac. "Look at Apple's licensing resources," says a knowledgeable industry source. "To put the Mac OS sticker on your product, you need Apple's approval. If you change things, they may not certify it." Thus, Apple may be effectively restricting most clones to straightforward repackaging or minor modifications of Apple's Macs. The first Mac clones—whether from Pioneer, Power Computing, or Radius—all are evidence of this.

An apparent exception is DayStar, which anticipates easy certification for its more innovative Genesis MP multi-processor clone. But because DayStar is developing the new technology for Apple, it's easy to argue that even DayStar's clones won't stray beyond Apple-authorized innovations. In fact, the underlying technology will be available to all Mac licensees, and Lightman says it does not involve changes to the Mac OS.

Another knowledgeable industry source says that contrary to Apple's long-stated claims that it is looking for licensees with sizable research and development budgets who will innovate on the Mac design, Apple's licenses are actually structured to inhibit innovation. "By definition, if you can't change anything, you're second to market with a given piece of technology, whatever it is. You're licensing something that Apple is already preparing for market."

Lightman acknowledges that Apple cannot support significant innovation by clone makers at this time, due to the tight integration of the Mac's OS and its hardware. Many meaningful hardware changes would require potentially costly and difficult changes to the Mac ROM or

OS—something Apple is not ready to support at this time, Lightman admits.

Apple is also stifling innovation to keep certification and testing costs down. "As we allow licensees to differentiate against our board design, we lose the ability to test against a standard Macintosh," Lightman says.

Wait for the Converged Platform

All this, of course, will change after the converged hardware reference platform (CHRP) specification—a new PowerPC-

[would need], by and large, industry-standard components so that they can leverage their manufacturing base," he tells *Macworld*. "They need design flexibility relative to Apple, to go after the markets they want and to become full-fledged competitors against Apple."

The recently announced PCI-based Power Mac (see "First of a New Breed," in this issue) represents the first Mac design that begins to approach that "industry-standard" benchmark, Strickland adds. But when you can't differentiate at the motherboard level, the proposition of a Mac clone becomes far less attractive to a large computer maker. That's why most—if not all—of the biggest companies will hold off until after CHRP is in place.

"Before 1997, when you start with a derivative of an Apple design, you're not going to put all the R&D and marketing dollars behind it. You're going to wait for the [CHRP]," Strickland says. "Without the [CHRP], licensing would be a niche business."

Is It Too Early to Clone?

The question is fundamental: Can Apple land a big company before CHRP? "It's absolutely true that we have to have at least a couple of licensees in the top 20

CHRP may be dampening the enthusiasm of potential clone makers right now. "A company has to ask itself, 'Is it worth the very, very difficult channel and manufacturing problems to get into a straight [Mac] clone market when a year and a half from now a much more appealing market will exist?'" says Glen Miranker, vice president for hardware engineering at FirePower Systems, a PReP developer that has already committed to producing CHRP-based systems. Sales volumes would have to be very high to entice a large company.

Apple's Nagel argues that a low-end clone market based on current Mac designs may survive well into the CHRP era. And some companies might reason that a push into the Mac clone market now would offer a strong competitive edge against Mac OS vendors in the post-CHRP environment. Of course, that strategy implies confidence that Apple will port Copland to CHRP on schedule.

"Apple is hopelessly and chronically late on its software," says one knowledgeable industry source. "If you're a big company looking for a strategic product, you have to wonder if Apple can deliver on CHRP and on Copland in the 1996/97 time frame. Should you rush headlong into making clones for a year's extra experience when you're not 100 percent sure the product you're really after—the CHRP-based Mac—will be around?"



With the right terms, Sony would have had a license years ago

TSUTOMU KOBAYASHI

Deputy General Manager for Corporate R&D, Sharp Corporation

based computer design under joint development by IBM, Apple, and Motorola and based on IBM's PReP—becomes available (see "Mac Hybrids," *Macworld*, April 1995). CHRP and Copland (the next-generation Mac OS, due by 1997), will divorce the Mac OS from hardware, making it possible to build generic systems that would run the Mac OS as well as most other major operating systems other than Windows 95 or Windows 3.1. Parts for Mac clones would then be cheaper and more accessible (see the sidebar "Can Apple Meet Demand?"). And Copland will support technical innovation by clone makers. But these major technology changes will not occur before 1997.

Accordingly, even Apple's Strickland does not sound hopeful that a big company will find the current Apple licensing approach acceptable. "A major licensee in the top five computer companies

computer makers worldwide" before CHRP, Strickland acknowledges. "And you have to have licensees that are not just in niche markets, but they need to be broadly based in areas where [system] sales are growing fast," such as the business market and countries like China.

After CHRP frees Apple from the heavy demands of supporting clone makers, the company could theoretically peddle licenses from a booth at Tokyo's famed Akihabara district—a vast farmer's market of computers. In the long run, CHRP will ensure the economies of scale that major vendors need to justify large-scale competition in the Mac market.

Tatung is a case in point. Tatung's Lin says she would like to offer the Mac clones before CHRP if her company could achieve high volumes quickly. But ultimately, Tatung needs CHRP to be able to create a single basic design that runs OS/2, Solaris, and the Mac OS. "Otherwise we'd have a difficult choice between the IBM platform and the Apple platform," Lin says.

Although crucial in the long run,

Looking for Big Players

Given the interest that many computer makers have shown in Mac clones, it's clear that some *are* willing to enter the market early and gamble on Apple's promises. Apple is in turn focusing on those that it thinks will grow the market the most, Apple's Lightman says. "Any-one we would look at for a hardware license will have to be capable of moving the market-share needle," he says. Companies that could sell only in the tens of thousands or even the low hundreds of thousands of units "probably would not qualify," unless they had a credible strategy for breaking into new markets.

Smaller companies would be encouraged to create products based on Power Computing's design (which Power Computing is actively looking to license) and to license merely the Mac OS from Apple, reducing Apple's support obligations. Power Computing's Kahng predicts that he will license at least three companies in different parts of the world—"all household names in their areas"—by August.

For now, the Asian computer giants Fujitsu, NEC, and Acer (a major manufacturer of Apple-branded Macs) can be ruled out. Executives at all three compa-

nies tell *Macworld* that their companies will not produce Mac clones any time in the foreseeable future. (Acer may build a PowerPC-based game machine using Apple's Pippin technology, however.)

Likewise, major European computer makers—including Groupe Bull/Zenith Data Systems in France, Vobis in Germany, and Olivetti in Italy—are not ready to create Mac clones, although Vobis has stated its intention to license the Mac OS after CHRP. Olivetti, as the largest investor in Power Computing, holds an option to use and distribute Power Computing technology but has not yet committed to doing so.

That leaves a few likely prospects:

Canon A leading producer of Macintosh printers and a key Apple distributor in Japan, Canon will have released its first (non-Mac) PowerPC computers by the time this article appears.

IBM Big Blue has everything a successful PC maker needs to deliver a credible alternative to the Intel/Windows standard—except a mass-market operating system. It too has non-Mac PowerPC systems ready for release this summer.

Toshiba Already a PowerPC developer, and boasting deep pockets and topflight engineering, Toshiba is a worldwide force in peripherals and laptops.

Sharp This major consumer-electronics, computer-peripheral, and PDA maker also enjoys considerable computer know-how.

Sony As a consumer-electronics

powerhouse, Sony has a vast network of dealers and customers and could make a killing on low-end Mac clones. It also has inside Mac experience, as the designer and manufacturer of the PowerBook 100.

TNPC Notwithstanding Lightman's concerns about the Mac market becoming commoditized, the Taiwanese consortium offers the desire, PowerPC expertise, and manufacturing prowess to rapidly grow the clone market.

Time Is Running Out

If no major clone makers are announced until after the end of this year, says Umax's Huang, Taiwanese companies will doubt Apple's sincerity about licensing altogether. Sincerity aside, Apple faces a very practical time limit after which pre-CHRP clones won't make much business sense to many companies. And time is running out.

"I don't discount the possibility of our doing a Mac clone, but the more time that goes by, the less attractive that option becomes," says a top executive at a large U.S. computer company. "Frankly, even if we were going to make a decision today to make a Mac clone, we wouldn't have a product until the end of the year, and that's getting perilously close to CHRP."

When TNPC members ship PReP-based systems that cannot run the Mac OS, PReP "will be their first priority," says Cheng. If no Taiwanese companies show pre-CHRP Mac clones at the fall Comdex trade show in mid-November,

don't expect clones from these companies before 1997, when the CHRP platform is completed, he warns.

Clearly, some large companies are content to bide their time and clone the Mac after CHRP. But can Apple itself afford to run a leisurely licensing operation during this bridge period? Windows 95 and Intel's new P6 processor are breathing down Apple's neck. But right now, Windows 95 is late and expected to be extremely buggy, presenting Apple with an important—although transitory—opportunity to solidify its hold on the technological high ground.

Just as important, the Mac OS is the only mainstream OS slated to be ported to CHRP. But Windows NT, which will be ported to CHRP long before the Mac OS, should get a Windows 95-like facelift by late 1996, making it a more serious mass-market competitor. "I'd be very happy to compete [against] NT on the PowerPC on the desktop level," says Apple's Nagel, because the Mac OS will have a huge lead in software applications.

Perhaps more important in the long term, Microsoft's next OS (code-named Cairo), promised by early 1998, will combine Windows 95 and Windows NT within a single *microkernel*-based system—a design that keeps core OS services independent of hardware. Microsoft could then confront Apple with a mainstream competitor that runs on CHRP machines. Such competition could prove deadly to the Mac OS if it hasn't made serious market-share gains by then.

"Apple really has to speed up the clone business, otherwise they have no chance" versus PCs, says Umax's Huang. Apple simply can't effectively do the job of three companies—full-service hardware, software, and research and development—he argues. It needs clone makers to take over some of the burden, so Apple can refocus its own efforts on competitive system software and innovative technology. Huang and others say that a serious Mac-clone market today would stimulate potential CHRP-based manufacturers to choose the Mac OS.

So if Apple waits much longer, don't look for any big companies to announce Mac clones until at least January 1997. Of course, by then the biggest companies might ask whether the window of opportunity has closed. They'll wonder whether Apple plus a small Mac-clone market equals a credible competitor in the OS wars. And they'd have good reason to wonder. **m**

Macworld senior editor CHARLES PILLER reports on Macintosh clones and the impact of technology on public affairs and public policy.

CAN APPLE MEET DEMAND?

While Apple insists that it is wholeheartedly behind its licensing program, the company acknowledges that serious demand-forecasting miscalculations have resulted in parts shortages that have delayed the release of announced clones. These shortages might also affect the timing of other companies who are considering making a Mac clone. The difficulties were severe enough that to ship some of its Radius 100 image-editing Macs as soon as possible, Radius resorted to buying Mac motherboards and other parts from outside sources, including dealers.

Perhaps the most vexing shortage may be of PowerPC CPUs. Motorola admits that the PowerPC 604 needed for top-of-the-line Power Macs (such as the new 9500) is in short supply. There has also been a shortage of 100MHz and 110MHz PowerPC 601s, and sources inside several clone-making companies report difficulty in competing with Apple for those chips. A source close to one clone vendor also says that certain Apple-proprietary, Mac-specific connectors are in short supply.

Several clone vendors now say that the situation is improving, however. In the short term, Apple has actually allocated some of its share of components to licensees, reducing Apple's ability to ship its own systems, according to Don Strickland, vice president of Apple's business and government divisions. Several sources close to clone vendors say that some of the shortages were a simple matter of waiting three to four months for suppliers to increase output.

However, some shortages of common parts such as DRAM, SRAM, and certain capacitors and resistors are affecting the entire personal computer industry and are expected to continue because of intense demand.—Tom Moran and Charles Piller

BEST PRICING • GREAT SELECTION • AWESOME

Each MacConnection Hotline Expert is trained by the manufacturer and ready to provide the perfect solutions for you!

The Most Powerful Word Ever!

- Even more capabilities
- Extensive automation
- Fully customizable

*Upgrade price after \$30 mfr's rebate. Offer expires 8/31/95



16544 Word 6.0 \$299.95

Call our Microsoft Experts at
800-600-8251

Total Control Over Your Data

- Faster and easier
- Drag-and-drop/-plot
- Automated Wizards

*Upgrade price after \$30 mfr's rebate. Offer expires 8/31/95



16545 Excel 5.0 \$299.95

Call our Macromedia Experts at
800-600-8254

Fabulous FreeHand 5!



Quick and precise, with powerful new functions, text tools, and color control.

17276 FreeHand 5.0 **\$149.95**
Upgrade
18962 FreeHand 5.0
Competitive Upgrade... 149.95
17252 FreeHand 5.0 399.95

For more Macromedia product listings see **Graphics** category!

Call our MDS Multimedia Experts at
800-600-8256

Dynamic Multimedia!

Fast, Affordable CD-ROM **\$149.95**

17960 MDS 2x CD-ROM Drive
21182 MDS 4x CD-ROM Drive 299.95

Special Deals!
with purchase of any
MDS CD-ROM drive



Includes
FREE
FVB CD-ROM
Toolkit!

21823 Adobe Paint & Publish Deluxe CD (Reg. \$99.95) 34.95
21923 MDS 2X Drive & Altec Lansing ACS51 Speakers .. 219.95
21924 MDS 4X Drive & Altec Lansing ACS51 Speakers... 268.95

MORE MEMORY! You Need It! We've Got It!

The easiest, most affordable way to upgrade performance, and power up the new generation of advanced applications!

- Graphics • Multimedia • Video • Multitasking

SIMMs

\$199.95
11151 4MB (1 x 32)
11152 8MB (2 x 32) 379.95
11153 16MB (4 x 32) 679.95
1533 32MB (8 x 32) 1199.95
11492 4MB (1 x 32, 60ns) 209.95
11493 8MB (2 x 32, 60ns) 389.95
11494 16MB (4 x 32, 60ns) 689.95
14773 32MB (8 x 32, 60ns) 1249.95



VRAM/Cache/FPU

\$59.95
11215 512K VRAM
11477 256K VRAM 29.95
16677 Power Mac 256K Cache 199.95
18234 Power Mac 512K Cache 399.95
4179 33MHz FPU 49.95
18006 SIMM Extender 99.95



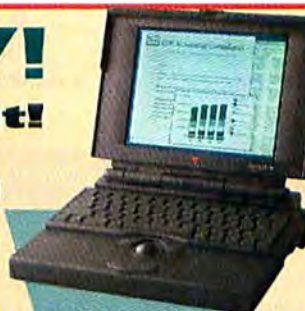
PowerBook Memory

For PowerBook
150, 210, 230, 250, 270C, 280, 280C

\$219.95
10341 4MB
10340 8MB 399.95
16680 12MB 579.95
16678 20MB 999.95
21355 36MB 1599.

For PowerBook 520, 520C, 540, 540C

\$229.95
9328 4MB
9349 8MB 419.95
9370 16MB 799.95
9419 32MB 1429.95



Questions? Call our Memory Experts 800-600-8256

OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge. • All of our products are covered by manufacturer's warranty. • We are not responsible for typographical errors.

Continental U.S.: Shipping Charges: \$5 per order up to 10 pounds. On orders weighing 10 pounds or more, shipping is \$1 per pound. Please call for weight/shipping charge information. Barring events beyond our control, all credit card orders phoned in weekdays by 3 a.m. ET will ship Airborne Express for delivery the

next business day. (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 require an extra day delivery.

AP0/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. All other areas: Call 603-446-3333 or FAX 603-446-7791 M-F 9 a.m.-5:30 p.m. ET

COMMUNICATIONS

1676 CompuServe Value Pack \$25.00
10080 Delrina Fax PRO for Macintosh \$59.95
6115 FreeSoft White Knight 12.0 \$85.00
7710 Global Village PowerPort Gold \$209.95
20545 Global Village PowerPort Platinum \$359.95
17446 Global Village TelePort Gold II \$119.95
20544 Global Village TelePort Platinum \$249.95
11419 Hayes ACCURA144+FAX144 \$124.95
18188 Hayes OPTIMA V.34+FAX144 \$469.95
8478 MDS FaxModem 14.4 \$99.95
4879 Practical Periph MC144MTII \$99.95
17968 Practical Periph MC288MTII V.34 \$229.95
20392 Prometheus ProModem 28.8 V.34 \$229.95
16770 Prometheus ProModem 144+Voice \$119.95
18792 Radish Comm. InsideLine \$109.95
7639 STF Tech. FAXstf 3.1 \$64.95
17108 Supra Express 144 Plus \$99.95
18831 Supra FaxModem V.34 \$229.95
6619 Synergy VersaTerm Pro \$169.95
11842 U.S. Robotics Sportster 14.4 Fax \$129.95
17048 U.S. Robotics Sportster V.34 Fax \$274.95
16390 Ventana Press Internet Mem. Kit \$49.95
17470 Zoom FaxModem V.34 \$199.95

INPUT/OUTPUT

15456 Adesso Extended Mac Keyboard \$69.95
16454 Agfa Studio Scan I for Mac \$669.00
2374 CoStar LabelWriter XL+ \$239.95
16084 Epson Stylus Color Inkjet \$549.00
2499 GDT PowerPrint \$99.95
21112 HP DeskWriter 660C \$499.00
20844 HP Mac ScanJet 3C \$999.00
17589 Kensington Thinking Mouse \$99.95
5438 Microtek ScanMaker II \$479.00
16212 Mouse Systems MacPoint \$29.95
16037 Relisys Aved Designer Scanner \$499.00
15345 Xerox TextBridge OCR Software \$75.95

MacConnection®

is Your Apple
Authorized
Catalog Reseller!

Call us first for all of
your computer needs!



EDUTAINMENT

18246 A.D.A.M. CD \$39.95
13509 Broderbund MYST CD \$49.95
13714 Delta Tao Eric's Ult. Solitaire \$34.95
20263 Inline Mac 9 Pack on CD \$29.95
2316 Lucas Arts Rebel Assault CD \$49.95
13818 Maxis SimCity 2000 \$39.95
3675 Starplay Crystal Caliburn \$36.95
14769 Velocity Spectre VR CD-ROM \$39.95

NETWORKING

2775 Asanté 8 Port 10BASE-T Hub \$149.00
6677 Asanté Maccon-I Nubus 10-T \$109.00
2562 DaynaPORT Ethernet LC (internal) \$89.95
11499 Farallon EtherWave PN802 Trans. \$109.00
14545 Farallon Timbuktu Pro \$135.00
16524 MDS 16 Port Hub \$299.95
15495 Sonic 5 Port Hub \$129.00
15490 Sonic 10BASE-T Transceiver \$39.95

STORAGE

20958 Apple External 730MB Drive \$489.95
17793 FVB 700MB Hammer PE Ext. \$599.95
18148 MDS Ext. 385MB Quantum HD \$279.95
15950 MDS SyQuest 200MB Drive \$399.95
20062 Pinnacle Recordable CD-ROM \$1699.00

SERVICE!

ACCESSORIES

18685	BTI Type 4 Internal Duo Battery	\$119.95
19330	Curtis Printer/Workstation Stand	49.95
1092	Kensington Notebook Travel Dlx	75.00
15422	Sony D690M Cartridges (5 Pack)	49.95
6200	Tripp Lite Isobar 6-6 Surge Supr.	49.00

BUSINESS

13510	AEC FastTrack Schedule	\$169.95
14187	BestWare Mind Your Own Busin	79.95
5862	CheckMark Payroll	79.95
12974	DeltaPoint DeltaGraph Pro III	139.95
11721	IdeaFisher for Mac	95.00
11269	Inspiration	129.95
15070	Jian Business Plan Builder	79.95
5454	Microsoft Office for Mac 4.2	479.95
2884	Microsoft Works for Mac	87.95
8010	Niles EndNote Plus	169.95
16143	Nisus Writer	279.95
18886	SoftKey BodyWorks CD	39.95
7447	SoftKey KeyCad Complete	29.95
14790	SoftKey WriteNow 4.0	44.95
16548	Symantec ACT 2.0 Upgrade	49.95
2986	Timeslips III	194.95
4711	WordPerfect 3.1 Ver. Upgrade	68.95
17237	Writeplace Writing Coach	59.95

MULTIMEDIA

16515	AlTech Multipro CTV	\$279.95
17314	Magnavox 14" Color Display	299.95
19342	NEC MultiSync XV15 Monitor	469.95
20215	NEC MultiSync XV17 Monitor	749.00
30734	Radius Precision View 17" Mon	899.00
16943	Radius Spigot Power AV	799.00
20284	Radius Spigot Pro AV	1399.00
19162	Radius Thunder 24/GT	1399.00

GRAPHICS

1736	Adobe Illustrator 5.5	\$369.95
19251	Adobe PageMaker 5.0	549.95
19257	Adobe Photoshop 3.01	569.95
16119	Corel Gallery CD	39.95
19986	Digimation Photo/Graphic Edges	149.95
16962	Fractal Design Painter 3.0	349.95
12983	FrameMaker 5.0 or 21257 CD	629.95
11724	Graphsoft MiniCad+ 5.0	599.95
19613	HSC KPT Convolver	129.95
20194	HSC Live Picture	749.95
5087	Macromedia Director 4.0	899.95
20046	Macromedia Design Studio	749.95
17341	Macromedia Fontographer 4.1	369.95
17252	Macromedia FreeHand 5.0	399.95
19379	Macromedia Multimedia Studio	1499.95
4761	RayDream Designer	249.95

UTILITIES

20092	Aladdin Desktop Tools	\$49.95
6740	Aladdin Stuffit Deluxe	74.95
17537	Central Point MacTools Pro 4.0	99.95
12093	DataViz MacLink+ Translators Pro	95.00
4803	Datawatch Virex 5.5	69.95
16857	Insignia SoftWindows Mac	279.00
4433	Insignia SoftWindows Power Mac	269.00
6925	Now Utilities	84.00
5176	Symantec Anti-Virus Mac	69.95
16133	Symantec DiskDoubler Pro 1.1	75.95
6748	Symantec Norton Utilities	99.95
3955	Symantec Suitcase	64.95

HOT NEW ZIP DRIVES!

A winning combination of price, portability, easy access, and unlimited capacity! Removable floppy-sized Zip Disks hold 100MB. One disk included with drive; additional disks available for as low as \$14.99 each!

Zip Media & Accessories!

Call for other Zip Drive accessories!

19863	100MB Zip Disk (single)	\$19.95	19864 (3)	\$56.95
19865	(5).. 87.95	19867 (10) .. 169.95	19868 (20) .. 299.95	
21028	Omega Carry Case			29.95
21037	Universal Power Supply 110-220 Volt			39.95
21035	PowerBook Adapter			19.95

Plus Big Bernoullis!

16852	230MB Bernoulli Cartridge	\$99.95
16851	230MB Bernoulli Cartridge - 5 Pack	479.95

Call our Iomega Experts at 800-600-8352

Call our Symantec Experts at
800-600-8357



Top-Notch!

Must-have utilities for any Mac user. Upgrade to the latest versions at bargain prices!

10312	SAM AntiVirus Upgrade	\$29.95
16323	Norton Utilities 3.1 Upgrade	39.95

FREE Fractal Painter 3.0, with Prism GT!
Call our RasterOps Experts at
800-600-9132



Blazing Color!

PaintBoard Prism: Accelerated 24-bit color at resolutions up to 1152 x 870.
Prism GT: Adds 3MB of VRAM plus FREE Fractal Painter 3.0, a \$499 value!

19156	PaintBoard Prism	\$699
19157	Prism GT w/ Fractal Painter 3.0	999.



Boston Computer Society
"Best All Around Company"
2 years in a row!



Berkeley Mac Users Group
"Best Mac Mail-Order Company!"

Reli 2412
\$599
20363

Single Pass Scanning at 1200 x 300 dpi!

Affordable Single-Pass Scanning!

The Reli 2412 is the fastest one-pass, 24-bit scanner in the Relisys family. Features:

- Cold cathode lamps extend scanning usage up to 35,000 hours
- All Reli scanners include FREE Photoshop (full or LE version), OmniPage Direct and Kai's Power Tools (full or LE version).

17716	Reli 2412/TE	\$799.
17718	Reli 4816/TE	899.
18777	Reli 4830/TE	1299.
11282	Reli 9624/TE	1599.

RELISYS
A subsidiary of TECO Electric & Machinery Co., Ltd.

TE scanners include transparency adapter.

Call our Relisys Experts at
800-600-8451

MacConnection®
800-800-3333
OR FAX YOUR ORDER
603-446-7791

Free Tech Support
Next Day Delivery
Custom Systems
Overnight!

Multimedia Secrets

MACWORLD'S EXPERT GUIDE TO GETTING THE MOST OUT OF YOUR AV MAC

Apple's AV Macs—the Power Mac AV models as well as the discontinued Centris/Quadra 660AV and Quadra 840AV—are ideal foundations for multimedia production. An AV Mac can record and play audio with fidelity so close to that of a compact disc that only golden ears can tell the difference. An AV Mac can also digitize QuickTime movies from a camcorder or videocassette deck, although it needs some additional hardware in order to record and play full-screen video at the 30-frames-per-second (fps) rate you see on TV. And a few mouse-clicks send an AV Mac's screen image to a television or a video recorder.

Before you start producing audio and video using your AV Mac, there is a lot to know about using the Mac as a multimedia studio. I'll cover three AV tasks

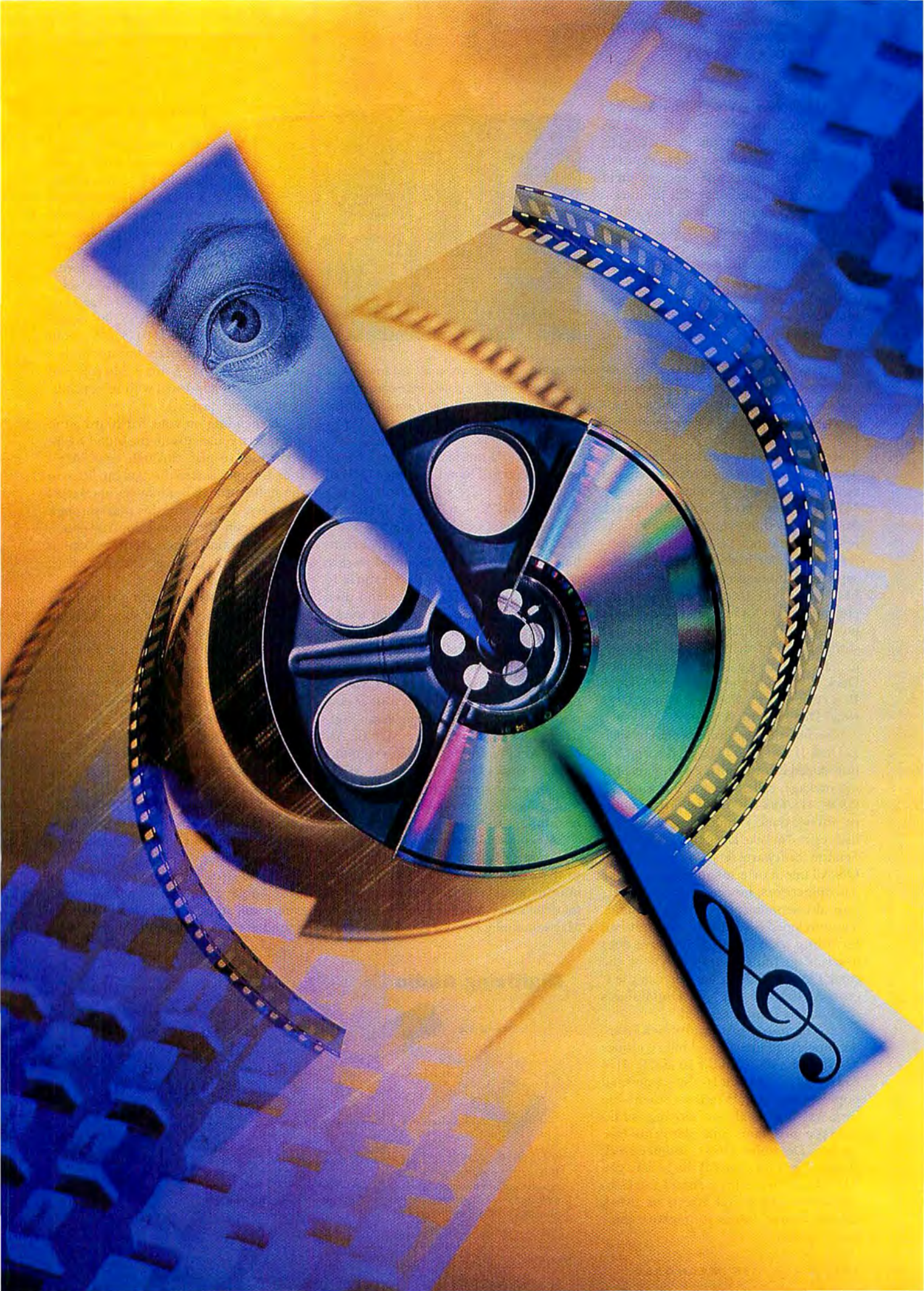
by Jim Heid

with advice on connecting the equipment, tips on techniques, and ideas for using the many third-party hardware and software products that can enhance the AV Mac's capabilities.

Whether you're working at an amateur or a professional level, taking full advantage of an AV Mac's features requires a fast hard drive whose driver software supports Apple's SCSI Manager 4.3. Apple's internal hard drives do, as do virtually all drivers supplied with third-party drives or sold separately. Macworld Lab tested nine driver packages and found that two provide better-than-average performance for AV applications. Our findings appear in "Optimizing AV Storage Performance."

Audio Recording and Playback

An AV Mac can record and play 48kHz, 16-bit sound; for that matter, so can all Power Macs (AV and non-AV) except for the 5200/75 LC. Although these specifications exceed those of audio compact discs and match those of digital audiotape (DAT) recorders, audio gurus tell me that the amplification and sound-generating audio circuitry in AV and Power Macs doesn't match the caliber found in professional audio gear. (Apple won't comment on this.) As a result, sound pros will probably need additional hardware.



Still, a stock AV or Power Mac can be adequate for producing CD-ROM sound tracks, which typically use 22kHz, 8-bit sound. Musicians making demo or rehearsal recordings will also be content with a stock machine, as will producers making corporate-training or sales audio-tapes. Many small radio stations can also use stock machines.

Several AV- and Power Mac-compatible audio programs are available. OSC's Deck II 2.2 (\$399, 415/252-0460) and Opcode Systems' DigiTrax 1.2 (\$199.95, 415/856-3333) turn an AV or



Multitrack Audio 1 OSC's Deck II is the best multitrack recording program for AV and Power Macs. From upper left: the Mixer, for adjusting record and playback levels; Tracks, for cutting and pasting portions of tracks; the Movie window, for viewing the QuickTime movie whose sound track you're working with; and Transport, with tape-deck-like buttons for recording, playing, and rewinding.

Power Mac into a multitrack recording deck, complete with on-screen mixers and volume-level controls (see the screen images "Multitrack Audio 1" and "Multitrack Audio 2"). Both let you add sound tracks to QuickTime movies. Deck II is the better program for high-end work: besides supporting more tracks than DigiTrax, it has more of the features pros need, including support for high-end digital audio boards. But DigiTrax is cleaner and more straightforward than Deck II; I recommend it to audio amateurs who don't need Deck II's laundry list of features. (Deck II is reviewed in *Macworld's* June 1994 issue; DigiTrax, in March 1995.)

Feeling the heat from programs such as Deck II and DigiTrax, Digidesign has introduced its own software-only recording package, called Session Software 2.0 (\$395, 415/688-0600). The program can record two tracks simultaneously and play back up to 16. Like Deck II and DigiTrax, Session Software lets you work with QuickTime movie sound tracks. Unlike its competitors, however, Session Software also supports plug-in software modules developed for Digidesign's high-end recording tools. Session Software does not run on the Quadra 660AV or the stock Quadra 840AV, but you can use it on the 840AV if you have Digidesign's Audiomedia II card installed.

If you don't need multitrack overdubbing capabilities, you should consider Macromedia's SoundEdit 16 (\$379, 415/252-2000). SoundEdit 16 also supports all popular Mac and Windows sound-file formats; it's ideal for moving audio between programs and platforms (see *Reviews*, December 1994). And like Deck II and DigiTrax, SoundEdit 16 lets you edit QuickTime movie sound tracks to add music and sound effects or tweak existing sound tracks to improve their sound quality.

If you're a musician who uses Musical Instrument Digital Interface (MIDI) instruments, there's Opcode System's \$995 Studio Vision Pro or Steinberg North America's Cubase Audio 3.0 (\$799, 818/993-4091), two programs that combine the MIDI and digital-audio worlds: you can use their sequencing features to record and play MIDI tracks, and then add vocal or acoustic-instrument tracks. Mark of the Unicorn's Digital Performer (\$895, 617/576-2760) provides similar features, but requires third-party audio hardware, such as Digidesign's Audiomedia II (\$1295). Digital Performer currently doesn't work with the audio digitizer built into the Power Mac or AV Macs. Another alternative is to combine Deck II with OSC's \$225 Metro MIDI sequencer program, although you may find it more convenient to do all your recording within one program.

Making Connections Connect the audio outputs from your sound source to the Mac's microphone jack. (See the informational graphic "Digitizing Audio" for details on connecting your gear to the Mac's miniplug jack.)

If you have a sound mixer connected to an amplifier and speakers, consider connecting the Mac's sound-output jack to the mixer's stereo return inputs. This will enable you to use the mixer to monitor not only your original sound sources, but also the recordings you make. (If you need a mixer, check out the Mackie Designs [206/487-4333] MicroSeries 1202 [\$399] or the larger CR-1604 [\$1099]. Both are popular among multi-

media producers; I use a MicroSeries 1202 and am impressed with its versatility and sound quality.)

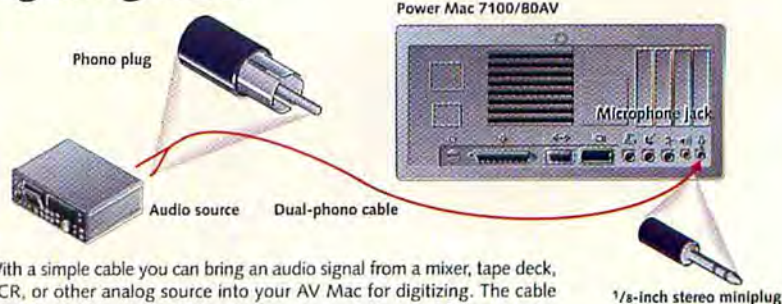
Depending on your hardware setup and needs, you may want the sound you're recording to play through your Mac's sound-output jack so that you can listen to the audio through headphones or external speakers. To activate this play-through mode, open the Sound control panel, select the Sound In item from the pop-up menu, click on Options, and then check the Playthrough box.

Top Techniques Setting record levels properly is a vital first step. To avoid a noisy recording, adjust your program's levels so that the sound signal registers as high as possible on the program's volume meters without hitting the very top meter segment. (If the volume reaches the top segment, the recording will be distorted, or, in digital-audio parlance, clipped.)

If you're using a Power Mac and Deck II, use the Audio Input Level menu (in the Options menu) to specify a level of 0. Power Macs have a low-quality audio preamplifier that can introduce noise; setting this level to 0 turns off the preamplifier.

If you're doing your audio recording with Adobe Premiere's Audio Capture command, adjust volume levels with the Sound Settings command. And if you're

Digitizing Audio



With a simple cable you can bring an audio signal from a mixer, tape deck, VCR, or other analog source into your AV Mac for digitizing. The cable needs a double phono plug on the source end and a 1/8-inch stereo miniplug for the Mac's microphone jack on the other. (Radio Shack catalog number 42-2475 does the trick.)

recording audio while also recording video—using Premiere's Movie Capture command, for example, or the Fusion Recorder application that comes with AV Macs—use the standard QuickTime Sound Settings dialog box.

If you can spare the hard disk space, always record sound using 44kHz, 16-bit settings. Even if you're recording sound destined for a CD-ROM, you'll get better sound quality by recording at 44/16 and then downsampling the audio to 22kHz and 8 bits. Unfortunately, even downsampling adversely impacts sound quality, though to a lesser degree than recording at 22kHz and 8 bits to begin with. Quiet parts of a recording—the pauses between sentences, for example—develop static-like artifacts. This is one reason it's important to record at as high a level as you can. You can also make these artifacts less apparent by combining narration with a music sound track.

Deck II, DigiTrax, and SoundEdit 16 can downsample. Deck II 2.2 does the best job of it; its Mix to Disk command lets you choose from a variety of downsampling options. (For best results, use either the Rounding or the Dithering options—each modifies the audio in ways that minimize the distortion inherent in 8-bit audio.) Adobe Premiere 4.0.1 also has an effective downsampling filter. To apply it, select an audio track in the Construction window, choose Filters from the Clip window, and double-click on the Downsample filter.

Hardware Enhancements The primary audio shortcoming of an AV or Power Mac is its lack of digital inputs and outputs (I/O). If you want to record to or from a DAT machine, you must connect its analog ins or outs to the Mac's 1/8-inch stereo miniplug jacks. Audio pros would rather keep a digital signal in the digital domain—especially considering that the Mac's analog circuits aren't up to professional audio par.

The answer: a Digidesign Audiomedia II, a NuBus board that provides digital I/O as well as digital-signal processing (DSP) circuitry. The Audiomedia II includes Digidesign's first-rate recording and editing program, Sound Designer II. Deck II also supports the Audiomedia II.

An Audiomedia II board has an additional benefit for CD-ROM producers: it enables you to use a Sound Designer II plug-in, L1 Ultramaximizer from Waves (\$650, 615/588-9307). This amazing utility makes sound tracks sparkle. Technically, its peak-limiting features boost a recording's level while minimizing digital distortion, and L1 can downsample 16-bit audio to 8-bit. Practically, if you're serious about sound, you need L1.

Digitizing Video

An AV Mac's stock video-digitizer is adequate for QuickTime tinkering (making small, somewhat jerky-looking movies from your home videos, for example), but forget about making full-screen movies at 30 fps—a quarter-screen (320 by 240 pixels), 15-fps movie is about the best a stock AV machine can do.

That's where third-party hardware such as Radius's SpigotPower AV (\$999, 408/541-6100) comes in (for more on the SpigotPower AV, see *Reviews*, June 1995). "Advanced AV Options" in the current issue covers this and other boards in detail, so I'll only say here that the SpigotPower AV is a superb enhancement—highly recommended. Unless otherwise noted, the following information applies to both the SpigotPower AV and a stock AV Mac.

Making Connections Connect your video equipment's video-out connector to

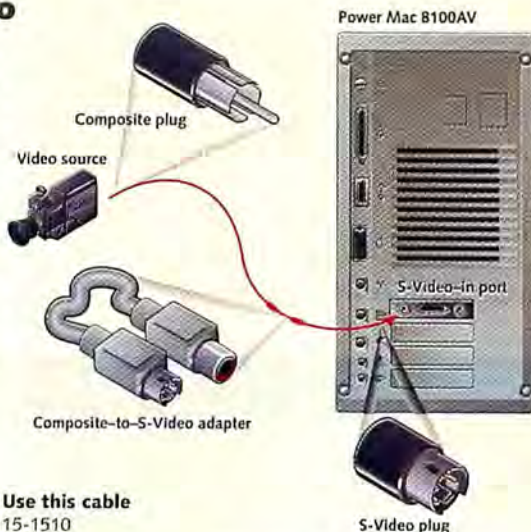
necting cables. In any case, use S-Video if your video equipment has an S-Video output because composite video is not as sharp.

Top Techniques For smoother movies, run lean when digitizing, especially if you aren't using a SpigotPower AV or other hardware enhancement. Turn off AppleTalk and disable unessential extensions. And be sure to digitize movies onto your fastest hard drive.

Before digitizing, use the Image portion of the Video Settings dialog box to adjust brightness, hue, and other settings. I sometimes find QuickTime's default brightness setting too high; I usually turn it down to avoid washing out bright areas of the image. If you're videotaping a scene prior to digitizing, consider putting a gray or colored card in the scene and shooting for a minute or two. Then, before you digitize, adjust the Image dialog box's set-

Digitizing Video

Bringing video into your AV Mac—from a VCR, camcorder, or other analog source—for digitizing can be a little more complicated than bringing in audio. AV Quadras can use a composite or S-Video cable to import video, but to import composite video to an AV Power Mac (as shown) requires a composite-to-S-Video adapter. You can bring in audio at the same time using the cable in the diagram "Digitizing Audio."



To connect

S-Video to S-Video
Composite to composite
Composite to S-Video

Use this cable

15-1510
15-1519
15-1519 and adapter (comes with AV Power Macs)
(All part numbers are from Radio Shack catalog.)

the Mac's video-in connector. The Quadra 660AV and 840AV each provides two video-in ports—one for composite video and one for S-Video. You can switch between the ports using QuickTime's standard Video Settings dialog box. Power Mac AV models have only a single S-Video input and include an adapter for a composite cable. (See the informational graphic "Digitizing Video.") In this regard, the 660AV and 840AV are more flexible than the Power Macs that replaced them. I use both composite and S-Video equipment with a Quadra 840AV and a Power Mac 7100/80AV, and I much prefer using a dialog box to switch between video sources over disconnecting and recon-

necting cables. In any case, use S-Video if your video equipment has an S-Video output because composite video is not as sharp.

While you have the Video Settings dialog box open, specify the video compressor you want to use. If you have a SpigotPower AV or other third-party board, choose its compressor. If you have a stock AV Mac, use the Video compressor. If you'll be recompressing the movie later—perhaps after editing in Adobe Premiere—consider this trick: choose the Photo-JPEG compressor and specify postcompression. In the postcompression mode, the capture program defers compression until you stop recording. This enables the Mac to devote its full attention to keeping up with the incoming

video. You'll get stuttering movie playback in your video-editing program—the Photo-JPEG compressor is too slow for smooth movie playback—but you will get excellent image quality. When you make your final movie, specify the Video or Cinepak compressor.

To use postcompression in Fusion Recorder, choose Record Preferences from the Record menu and then check the Post Compress box. In Adobe Premiere, choose Recording Settings from the Movie Capture menu and check the Post-Compress Video box.

Multitrack Audio 2 Opcode Systems' DigiTrax lacks Deck II's array of professionally oriented features, such as support for Digidesign audio cards. But DigiTrax can be easier to use and it costs less. Its windows are similar to Deck II's. Visible in the upper right: DigiTrax's Equalizer window, which lets you boost and attenuate frequencies to improve audio quality.

If you're using a board such as the SpigotPower AV, consider recording the audio at 44kHz/16-bits for best quality. (To get a reasonably fast frame rate on a stock AV Mac, you may have to settle for a lower sampling rate and 8-bit sound.) If you do opt for 44kHz audio and you're using Adobe Premiere, be sure to use version 4.0.1—versions 4.0 and earlier have a bug that results in loss of audio sync when you're sampling at 44kHz.

CD-ROM producers must compress the final movies using the Cinepak compressor; other compressors don't allow for smooth playback from CD-ROMs.



You can use any video-editing program to do your final Cinepak compression—just choose Cinepak as the compressor and specify a data rate of 250K to 280K per second, a safe upper limit for double-speed drives and QuickTime 2.0.

But you'll get better image quality if you use a funky Apple utility called MovieShop, available on AppleLink and eWorld. MovieShop has a user interface only a programmer could love, but it does a better job of compression than many video-editing programs, and it allows access to low-level Cinepak movie-quality options.

Another plus to using MovieShop is that you can batch-compress multiple movies at the end of the day. Given that a one-minute movie can take an hour or more to compress, this is a big plus. (A Power Mac, by the way, compresses much faster than a 680X0 machine, since QuickTime's compressors run in native mode on the PowerPC chips.)

Note that MovieShop has a bug that prevents it from compressing movies with 16-bit sound tracks. Be sure to downsample to 8-bit sound—for example, with Premiere's Downsample filter or, preferably, Waves' L1 utility and Sound Designer II—before compressing a movie with MovieShop.

Hardware Enhancements Besides a board such as the SpigotPower AV, the best thing you can do for an AV Mac's video-digitizing capability is to use a big, fast hard drive initialized with a SCSI Manager 4.3-compatible driver package. See the sidebar, "Optimizing AV Storage Performance," for more information.

Note that the Power Mac 7100/66AV is hampered by relatively slow NuBus transfer rates that make it less suitable than the 7100/80AV, Quadra 840AV, and 8100-series AV Power Macs for use with third-party video boards. To get 30-fps,

OPTIMIZING AV STORAGE PERFORMANCE

Sound and video demand not only plenty of storage for huge files, but data-transfer rates that can move those huge files around quickly. In the video world, a slow hard drive yields jerky-looking movies. With multitrack audio programs such as Deck II and DigiTrax, a slow hard drive can cause recording and playback errors on recordings containing numerous tracks.

Fortunately, hard drive transfer rates generally improve as capacities increase—for example, 1GB drives (the bare minimum for AV work) are faster than 500MB drives. So to start out in the fast lane, buy the highest-capacity hard drive you can afford.

The portion of the Mac OS that controls data transfers across the SCSI bus is called the SCSI Manager. The AV and Power Macs use an enhanced SCSI Manager, version 4.3, that takes better advantage of high-capacity, high-performance hard drives. Apple's own SCSI drivers—the ones that control the internal hard drives Macs ship with—support SCSI Manager 4.3. But do they all support it equally well?

Using Radius's VideoVision Studio digitizing hardware and a Power Mac 8100, Macworld Lab tested nine driver packages on a 9GB Micropolis 1991 Scorpio drive and a 4GB Seagate ST32550N Barracuda mechanism, both installed internally. All of the drivers performed well, but two yielded slightly better transfer rates with video captures: Surf City's Lido 7 (\$95, 714/289-8543) and Casa Blanca Works' Drive7 (\$89.95, 415/461-2227).

But these results come with an important caveat: Every high-capacity hard drive has its own unique array of performance-tuning settings, and a driver that performs well with one mechanism might not do as well with another. Thus, you shouldn't assume that Lido 7 and Drive7 will be the fastest driver packages available when used with mechanisms other than the two that Macworld Lab tested. Furthermore, optimizing your drive for video performance can hinder its performance on other tasks, so you may want to dedicate a disk drive for your video work.

If you're working with high-end video at a professional level, this issue is moot: high-end digital-video products such as Radius's VideoVision Telecast need better storage performance than even a fast hard drive and performance-tuned driver can provide—they simply require a dedicated SCSI-2 adapter board such as FWB's SCSI JackHammer, and can really benefit from a disk array (see "Superfast Storage," *Macworld*, July 1995). Prepare to break the bank on your storage system.

But if you're working with audio or with semipro video products such as the Radius SpigotPower AV or SpigotPro AV, a large hard drive with a fast driver is probably all you need. Keep it optimized using a disk-defragmentation utility (such as Speed Disk, included with Symantec's Norton Utilities), and remember to run lean when digitizing.

full-screen movies with a SpigotPower AV, for instance, you may have to resort to lower-quality compression settings. Adding a large cache card can also help.

Printing to Video

AV Macs also have a video-out connector to which you can attach a camcorder or videocassette recorder. This enables you to videotape the Mac's screen image—to make Mac training tapes, to record an on-screen presentation, or to tape a finished QuickTime movie. (There are also software packages, including Motion Works' \$99 CameraMan and Strata's \$149 Instant Replay, that can record screen activity as QuickTime movies, which you can then edit and integrate with other movies before saving to tape.)

Making Connections Power Mac AVs contain a single S-Video output and include an adapter cable for a composite connector. As is the case with video-in, the Quadra 660AV and 840AV models are more flexible than the Power Mac AVs, sporting both composite and S-Video outputs. The Mac's screen image is sent to both ports.

If your video recorder supports S-Video, connect the AV's output to the recorder's S-Video input. (See the informational graphic "Writing Video and Audio to Tape.") If the recorder supports only composite video, connect the AV's output to the recorder's composite input. (On Power Macs, use the output adapter cable.) To record the Mac's audio signal, too, connect the speaker jack to the recorder's audio-input jack or jacks. You can also connect a TV set to the video recorder's video-out jack so you can see the Mac's screen. With a camcorder, you can omit this step and just squint into the viewfinder, although connecting an external monitor to the camcorder will make videotaping a lot easier. (Many companies sell 4-inch color LCD monitors with composite-video inputs; they make ideal monitors for camcorders or VCRs.)

Top Techniques The key to rerouting the Mac's screen image to video is the Monitors control panel. Open it, specify the desired number of colors, and then click on the Options button. Click on the button labeled Display Video on Television. Next, in the Select Monitor Type list, choose the appropriate resolution.

For recording Mac screen activity—the menu bar, windows, and the like—choose 512 by 384; this will prevent the outer edges of the screen image from being cut off when you save the image in NTSC format. Also check the Use Flicker-Free Format box; this prevents thin horizontal lines, such as those in window title bars, from flickering. (Note that for

the flicker-free format to be available, the Monitors control panel must be set to 256 or fewer colors.)

For recording QuickTime movies, choose 640 by 480 and do not check the Flicker-Free box. Note that because TV sets overscan—they project an image slightly larger than will fit on the picture tube's surface—the outer edges of the movie will not be visible on TV sets. TV producers take overscan into account during production by ensuring that titles and essential parts of a scene fit within a safe zone—QuickTime producers should, too.

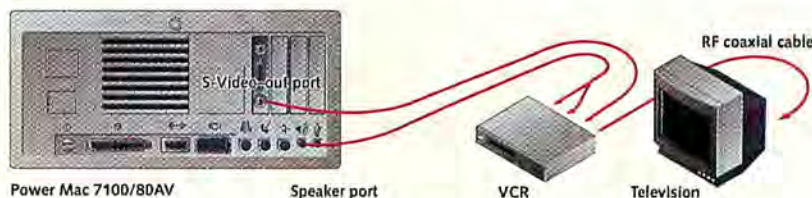
When you click on OK, a dialog box appears asking if you really want to switch the screen image. Verify that your video recorder is properly connected—if it isn't,

Hardware Enhancements For Quadra 840AV owners, a VRAM upgrade to 2MB is a must. And although the Radius SpigotPower AV provides full-screen, full-motion video, it doesn't allow you to play movies in full 24-bit color. Because of the way Apple implemented its AV architecture, the SpigotPower AV board is limited to 16-bit movie output (thousands of colors). This results in some slight color banding. For full-screen, 24-bit output, consider Radius's \$1599 SpigotPro AV, which should be shipping by the time you read this.

The Last Word

The AV Macs can't compare with a Mac decked out with a \$15,000 Radius Tele-

Writing Video and Audio to Tape



After you've created your digital multimedia production, you can save it in analog format on videotape using the same cables shown in the diagrams "Digitizing Audio" and "Digitizing Video." (If your VCR lacks an S-Video input, use the S-Video-to-composite-video adapter included with the Power Mac.) To attach a television, simply run coaxial cable from the VCR's RF output to the television's RF input.

you won't be able to see the Mac's screen image on the television when it disappears from your Mac monitor—and then click on the Switch button.

If you have a SpigotPower AV board, use its SpigotPower AV Player application to play movies created with the board. Otherwise, you can use a video-editing program or Apple's Movie Player utility to play movies that you want to videotape. With QuickTime 2.0 and the Movie Player 2.0 application, you can use the Print to Video command's zooming options to play a quarter-screen movie in full-screen mode. The relative fuzziness of television (compared with a sharp computer monitor) will smooth out most of the jaggies that you'd expect to see on the Mac's screen.

Because navigating and choosing commands can be difficult when the screen is displayed on a fuzzy TV set or in a tiny viewfinder, make an alias of the Monitors control panel and stash it on the Finder's desktop, or create a keyboard shortcut to the control panel with QuickKeys or another macro program. This will make it easier to reactivate the Mac's monitor when you finish recording.

cast video-editing system or a \$7990 Digidesign Pro Tools III audio system, but they're well equipped to handle low-budget audio- and video-production projects.

As for big-budget tasks, the Centris/Quadra 660AV and Power Mac 6100 series lack the expansion capabilities needed for serious multimedia work, and the Power Mac 7100/66AV has NuBus slot limitations that hamper its ability to handle digital video. But the 7100/80AV, the 8100 series, and the Quadra 840AV are great foundations on which to build high-end editing systems.

The AV Macs also exemplify Apple's lead over the Windows world in multimedia. While Windows users struggle to get sound boards and CD-ROM drives working on their so-called multimedia computers, AV Macintosh owners are not only enjoying hassle-free multimedia playback, but versatile multimedia production, too. **m**

Contributing editor JIM HEID has produced three CD-ROMs; the latest, Macworld Power User Clinic, will be included with his revised best-seller, *Macworld Complete Mac Handbook*, fourth edition (IDG Books Worldwide), available in August.

Advanced AV Options

**MACWORLD LAB SHOWS YOU
WHICH VIDEO-CAPTURE CARDS
BEST EXTEND THE AV MACS'
REACH**

Apple's AV technology adds another dimension to multimedia computing. Out of the box, AV-equipped machines can capture QuickTime movies with CD-quality (16-bit, 44kHz) sound from videotape or laser disc. You can then edit the movies, integrate clips into on-screen

presentations, and even record the movies back onto videotape. Depending on the video-compression settings and the hard drive speed, you can capture quarter-screen movies (320 by 240 pixels) with millions of colors, 16-bit stereo sound, and as many as 15 frames per second (fps).

You can also expand the movie during playback to full screen, 640 by 480 pixels.

But while AV Macs represent the best in preconfigured multimedia machines, even the foremost among them, the

by Deke McClelland

Power Mac 8100AV, may not be good enough. Considering that commercial film and videotape standards range between 24 and 30 fps, it's not surprising that 15 or fewer frames per second make for jerky and unnatural results. There's also the problem of frame size. Quarter-screen movies may be acceptable within multimedia presentations and CD-ROM clips, but they look pretty cheesy when they're output to videotape. Whether you set your sights on professional-level Betacam or consumer-quality VHS, or you want to distribute full-screen movies on CD-ROM, you'll need something better than Apple's stock-issue AV technology.

As I write this, three digital-video alternatives under \$5000 are available, all from Radius (408/541-6100). These are the SpigotPower AV (\$999), the Spigot II Tape (\$849), and the VideoVision Studio 2.0 (\$4849). Only the VideoVision Studio provides audio jacks; the two Spigot boards rely entirely on the computer's sound capabilities. Videowise, the Spigot II Tape provides both composite-video and S-Video input and output jacks. The VideoVision adds an extra set of input jacks along with an expansion

port. Only the SpigotPower AV is entirely without external sockets, capturing and playing video exclusively through the computer's AV ports. A fourth board, the \$1599 SpigotPro AV, should be available from Radius by the time you read this. The SpigotPro AV will work exclusively with AV Macintoshes but will provide its own composite and S-Video outputs. (At press time, RasterOps' [408/562-4200] digital-video product line was in a state of transition, and the company chose not to participate in this article.)

These boards are insufficient for on-line broadcast-quality editing, which requires sophisticated hardware that can run more than \$10,000 (see "Video-Editing Tools," *Macworld*, June 1994).

Spigot Puts the Power in AV

For owners of AV Macs, the SpigotPower AV (nicknamed the SPAV, rhymes with *have*) makes good on the promise of consumer VCR-quality digital video, boosting an AV Mac's input and output capabilities to 640 by 480 pixels at 30 fps. (This assumes you have a large, fast, defragmented hard drive, as explained in the feature "Multimedia Secrets," in this issue.) While an unaided AV Mac is sufficient only for recording small movies for inclusion in screen presentations, the SPAV is perfect for any on-screen job, as well as for comps, proposals, and in-house training movies recorded to videotape.

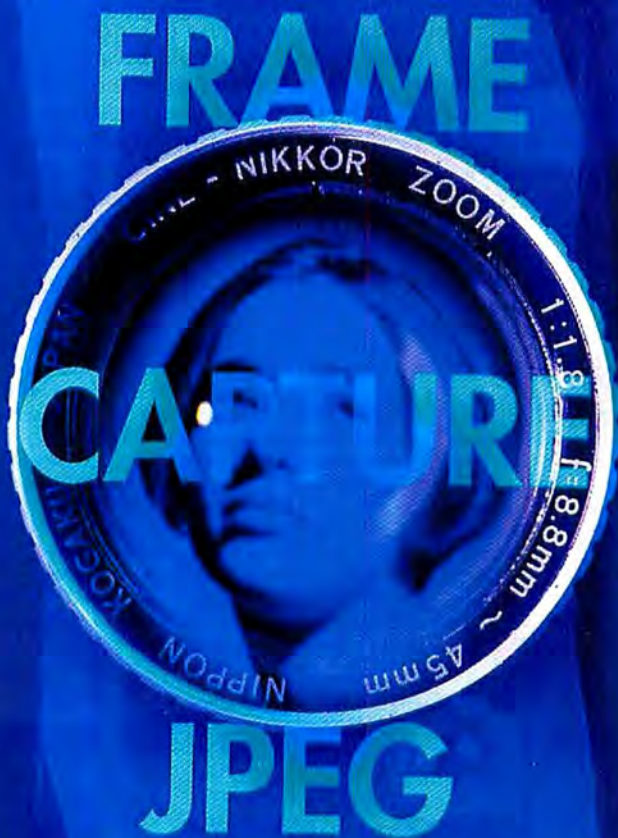
Hardware Considerations The 7-inch SPAV plugs into a NuBus slot. On

the Quadra 840AV, a digital audio/video—or DAV (pronounced *dave*)—connector at the board's base plugs into the matching slot on the logic board. Centris or Quadra 660AV owners must buy a NuBus adapter with a DAV slot. The DAV connection allows the SPAV to process data through the on-board video jacks. (Apple is revising the DAV slot specifications, and future Macs will have PCI bus slots—two strikes against SPAV compatibility. Radius plans to support the new DAV technology.)

On the AV Power Macs, rather than integrating video capabilities into the logic board, Apple supplies a separate AV Technologies board that plugs into the Power Mac's PDS. The DAV connector at the SPAV's base goes unused. Instead, a ribbon cable connects a separate DAV slot at the top of the SPAV to a corresponding slot at the top of the AV board. This prevents the SPAV from working with the Power Mac 6100AV, which can accommodate the AV board *or* a NuBus adapter, but not both.

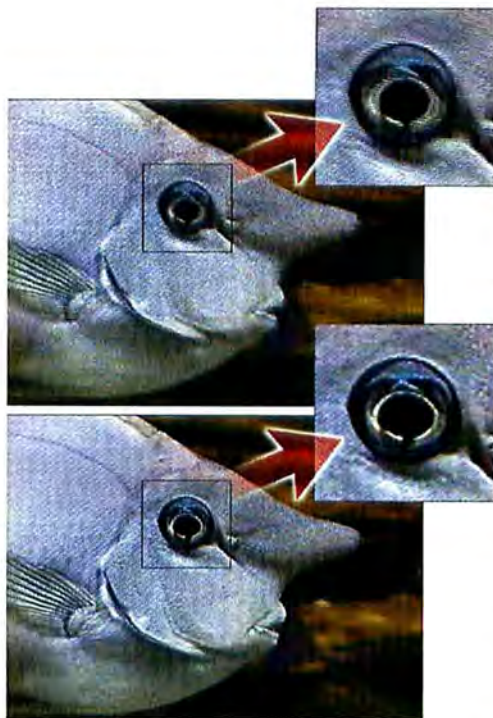
On-Board Compression The SPAV helps capture larger, faster movies by compressing frames itself, so your Mac doesn't have to. You can select one of two compression/decompression (codec) options, JPEG or interlaced JPEG (JPGI). The JPEG codec captures a single NTSC field, which translates to just 240 horizontal lines per frame. (When recording from a European PAL video deck, the JPEG codec captures 288 horizontal lines.) The SPAV hardware then doubles each line to produce the 480-pixel (or the PAL 576-pixel) frame height. Though movies compressed with this codec retain less information, they are Photo JPEG-compliant, so you can open and edit frames inside Adobe Photoshop or another image editor. The JPGI codec captures both the even and odd fields within each frame (hence Radius's claims for playback speeds of 60 NTSC or 50 PAL fields per second). Interlaced frames typically look ragged on an RGB monitor—especially when the movie contains lots of motion—but they look better played back on a television or recorded to videotape (see the screen shot "Interlace Artifacts").

Unaided AV Macs use software codecs, which are slow. To increase the frame rate or prevent frame dropping on AV Macs you can lower the compression—that is, increase the Quality setting—or turn off compression entirely. With the SPAV, compression occurs almost instantly, enabling the board to process data at about 2.2MB per second (MBps), according to Radius. So, if you're having problems capturing 30 fps because your hard drive can't process more than,



say, 1.6MBps—typical of Apple-supplied internal drives—you can increase the compression (lower the Quality setting) to eliminate dropped frames.

SPAV Performance As the first AV-compatible QuickTime compression board, the SPAV has a few kinks. It's not compatible with QuickTime 2.0, so most users will have to remove the new QuickTime—as well as all preference files associated with it—and install its predecessor, version 1.6.2, from the SPAV disks. (Radius planned to release updated software that supports QuickTime 2.0 by the time you read this.) It's also worth noting that the SPAV requires you to configure the AV port to display thousands of colors, compared with millions when you're using the AV board on its own. Though the SPAV captures 24-bit movies to disk, it can play them back with only 32,000 colors because it has to load special code



size, the Quadra 840AV never exceeded 5 fps, and the Power Mac 8100/80AV didn't exceed 13 fps. If you already own an AV Mac, the SPAV is a singularly affordable solution for multimedia and corporate video producers alike. Macworld Lab's only complaint was that we consistently encountered dropped frames at the highest Quality setting (called Most). Although we were able to eliminate this problem on the Power Mac 8100/80AV by dropping the Quality setting to High or lower, this solution may prove unsuitable for assembling training videos or professional comps. Radius also suggested that a faster hard drive—ours supported sustained write rates of 2.3 MBps—might solve the problem.

Interlace Artifacts These images compare a frame from a Hi-8 video as it appears when digitized with the SpigotPower AV's JPGI codec (top) and standard JPEG codec (bottom). JPGI retains the even and odd fields, resulting in erratic horizontal lines when the frame is viewed on an RGB screen. However, on a television, the even and odd groups of horizontal lines are played sequentially, resulting in more fluid motion. By contrast, the JPEG codec captures a single field only. JPEG movies look better on RGB monitors.

into the AV Mac's VRAM. (In contrast, an AV Mac can display only 16-bit video when recording, but can play back at full 24-bit color.) The upcoming SpigotPro AV will rectify this problem by supplying its own 24-bit encoder chip and outputting video through on-board jacks.

If you can live with old QuickTime and thousands of colors, the SPAV per-

forms remarkably well. In Macworld Lab's tests, the SPAV easily trounced unaided AV Macs. On both a Quadra 840AV and Power Mac 8100/80AV equipped with the SPAV, we consistently recorded full-screen movies at rates above 29 fps when recording 8-bit, 22kHz stereo sound. Compare this with an AV Mac on its own: for frames one-fourth the

Spigot II Tape Takes the Edge off AV Envy

The Spigot II Tape is the least capable of the three Radius products and in some areas is less capable than an unaided AV Mac. Like Apple's AV Macs, the Spigot II Tape lets you record quarter-screen movies and scale them up to 640 by 480 pixels during playback by doubling the pixels. It also accommodates both composite-video and S-Video hookups. However, the Spigot II Tape is limited to 16-bit video, compared with 24 bits for an AV Mac; it provides no RGB port, so you have to preview effects on an NTSC



How Fast Are Video-Capture Boards?

Test file is a 60-second movie. For frame-rate and data-rate tests, longer bars are better. For file-size test, smaller numbers are better, unless frames are dropped.

■ Dropped frames

When recording QuickTime movies to integrate into multimedia CD-ROM titles or interactive presentations, you need a board that can record quarter-screen (320-by-240-pixel) movies at rates of no less than 15 frames per second (fps). If you intend to record edited movies back to videotape, don't settle for anything less than full-screen (640-by-480), 30-fps recording with no dropped frames. No matter what you're doing, dropped frames are unacceptable. The movie hangs for a moment whenever a frame is dropped, creating a sudden jerk in the action.

We looked at the file sizes of the recorded movies. Better compression means smaller files, which means more files fit on

a disk; it also means less data has to be transferred to the hard drive, which ensures fewer dropped frames.

Even though the Spigot II Tape is performing at 2 MBps, it still drops frames. The SpigotPower AV and VideoVision Studio can handle lower rates because they have less data to write.

The VideoVision Studio was the best performer overall—never dropping a frame—with the SpigotPower AV a close second. The Spigot II Tape is adequate if you don't need to record more than 15 fps; at 15 fps in normal quality tests (results not shown) the board did not drop frames. Apple's unaided AV circuitry was the least consistent and slowest performer in our tests.

Average Frame Rate (in fps)

Average Data Rate (in MBps)

File Size (in MB)

WITH A QUADRA 840AV

Most quality/least compression

	without sound	with sound	without sound	with sound	without sound	with sound
Quadra 840AV (320 x 240)	4.10	3.94	0.12	0.16	7.5	9.8
Spigot II Tape (320 x 240)	13.86	13.77*	2.00	2.00*	121.8	123.3*
SpigotPower AV (640 x 480)	29.80	29.61	1.80	1.90	113.5	102.3
VideoVision Studio (640 x 480)	29.94**	29.95**	1.80	1.80	111.2	116.3

Normal quality/medium compression

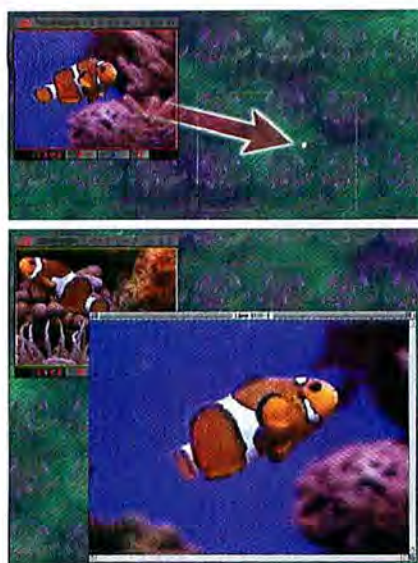
	without sound	with sound	without sound	with sound	without sound	with sound
Quadra 840AV (320 x 240)	4.51	4.32	0.10	0.14	6.1	8.3
Spigot II Tape (320 x 240)	28.92	27.71*	2.10	2.00*	128.0	123.5*
SpigotPower AV (640 x 480)	29.86	29.86	1.10	1.10	66.4	69.5
VideoVision Studio (640 x 480)	29.97	29.95	0.95	0.99	56.8	59.9

*Sound captured in 8-bit, 22kHz mono. **Most quality, adaptive compression.

monitor; and it does not support PAL or QuickTime 2.0. In fact, the Spigot II Tape's sole advantage over unaided AV is its frame rate. Radius claims most users can expect 30 fps, twice what you'd expect from an AV Mac. During lab tests, we were able to achieve the highest average frame rates—28.92 fps—when recording video without sound and with a medium Quality setting (Normal). When we maximized the Quality setting—thereby increasing the amount of data per frame that the board had to write to disk—the frame rate went down dramatically, as low as 13.77 fps on a Quadra 840AV.

Sound Reasoning The Spigot II Tape offers no audio processing capabilities, leaving you at the mercy of your Mac's sound-in port. Most Quadras and all 68030 machines allow you to capture monophonic sound only, and some older machines, such as the IICI, provide no audio inputs at all. Aside from the AV machines, only a few Macintoshes—among these the Quadra 630 and a few of the recent LCs and Performas—provide stereo input. For the price, I don't expect the Spigot II Tape to incorporate CD-quality sound, but stereo inputs would have been nice.

Regardless of your Mac's sound-handling abilities, the ScreenPlay II utility bundled with the Spigot II Tape doesn't allow you to control audio-input levels when recording, and it is limited to monophonic sound. You can get around both problems by recording inside Adobe Premiere, which offers control over



Pick a Frame, Any Frame Using the ScreenPlay II utility with the Spigot II Tape, you can capture a single frame by clicking on the frame in the video preview window (upper left) and dragging it to the desktop. The frame that the utility captures is not the one you see when you click but the video frame that's playing at the moment you drop. Also, the display inside the preview window freezes when you start dragging, but the video keeps playing. Consequently, you have to look at the NTSC monitor to decide when to release the mouse button. After you drop the frame, ScreenPlay puts it in a full-screen window (lower right).

recording levels, but according to Radius you might run into a few bugs. So while the Spigot II Tape has AV technology beat when it comes to frame rate, it simply can't match AV sound.

Frame Quality The Spigot II Tape provides on-board compression, but this is not as capable as the SPAV codecs, nor is it compatible with them. The name of the codec, Spigot II Tape Rough, tells it

all. You can change the compression setting during recording, but if you opt to recompress the image using the Save As command, you have access to just one compression option, which produces average results (despite the appearance of an inoperative Quality slider). Also, a quarter-screen movie compressed with Spigot II Tape Rough takes up more room on disk than the same movie recorded at full-screen size and compressed using the SPAV's JPGI set to the highest Quality setting. For example, a 60-second movie with sound recorded by Macworld Lab and compressed with SPAV JPGI consumed at most 114.2MB on disk. The same movie recorded and compressed with the Spigot II Tape took up at the very least 120.9MB—with a lower Quality setting. When we similarly

lowered the quality for the SPAV movie, the file size shrank to 69.3MB.

The Spigot II Tape isn't meant to compete with the SPAV; it's meant to bring medium-quality video-capture capabilities to 68040 and 030 machines. In that context, it's a fair-priced package that performs adequately despite a few vexing oddities. For example, the ScreenPlay II utility's Save As command invari-

BEHIND OUR TESTS

Macworld Lab tested the built-in AV capabilities of the Quadra 840AV and the Power Mac 8100/80AV, and compared them with three video-capture boards from Radius—the SpigotPower AV (SPAV), Spigot II Tape, and VideoVision Studio 2.0—installed in the same machines. The tests included capturing a 60-second movie without sound and then with sound (8-bit, 22kHz stereo except for Spigot II Tape). For the unaided Mac and Spigot II Tape tests, we captured the movie at 320 by 240 pixels, the best acceptable capability this hardware provides; for the SPAV and VideoVision tests, we captured the movie at 640 by 480 pixels. For all tests, we set the boards to record at 30 fps, the highest

rate QuickTime permits (we installed System 7.5 with QuickTime 1.6.2). We used Adobe Premiere 4.0.1 to measure the average data rate, the average frame rate, and the file size. We also looked at image quality by capturing the movie with minimum compression, yielding high image quality, and compared the results with the movie captured with moderate compression and image quality. To adjust the compression settings, we used the quality slider in Premiere or Radius's ScreenPlay II.

We captured the movie using Premiere 4.0.1 for all tests, except for those with the Spigot II Tape, where we used ScreenPlay II.—Macworld Lab testing supervised by Danny Lee

Average Frame Rate (in fps)

Average Data Rate (in MBps)

File Size (in MB)

WITH A POWER MAC 8100/80AV

Most quality/least compression

	without sound	with sound	without sound	with sound	without sound	with sound
Power Mac 8100/80AV (320 x 240)	10.06	9.42	0.46	0.47	27.5	28.0
Spigot II Tape (320 x 240)	14.99	14.33*	2.10	2.10*	134.6	129.3*
SpigotPower AV (640 x 480)	29.86	29.22	1.90	1.80	115.6	114.2
VideoVision Studio (640 x 480)	29.93**	29.92**	1.40	1.40	87.9	92.0

Normal quality/medium compression

	without sound	with sound	without sound	with sound	without sound	with sound
Power Mac 8100/80AV (320 x 240)	12.20	11.39	0.31	0.33	18.5	19.7
Spigot II Tape (320 x 240)	28.69	26.61*	2.10	1.90*	128.7	120.9*
SpigotPower AV (640 x 480)	29.88	29.89	1.10	1.10	66.8	69.3
VideoVision Studio (640 x 480)	29.96	29.94	0.95	0.99	57.1	59.5

ably writes individual frames to disk, which takes roughly 20 times as long as the standard Save command no matter what codec you use. And if you cancel the Save As operation, ScreenPlay II throws away the unsaved frames. However, you can capture single full-screen interlaced images by simply dragging a frame from a live video and dropping it on the desktop (see the screen shot "Pick a Frame, Any Frame"). If sound isn't important and quarter-screen movies are all



Intelligent Compression The VideoVision Studio is the only board tested that can intelligently compress frames to maintain a consistent data rate and help prevent dropped frames. After control-clicking on the Quality slider inside Premiere to bring up the special Studio Compression Options, determine the maximum data rate of your hard drive by clicking on the Find button. Then enter a slightly smaller value into the option box, to allow for a margin of error.

you need, the Spigot II Tape is a satisfactory package with modest hardware requirements and a moderate entry price.

VideoVision Studio Integrates Sound and Video

Now in its second version, the VideoVision Studio is designed for medium-quality video production, such as corporate presentations and training videos. It consists of three parts: the VideoVision NuBus board, which outputs to RGB video and handles the 24-bit decoding, encoding, and frame buffer operations; the Studio daughterboard, which provides JPEG compression; and a connector strip, which supplies the video and audio input and output jacks.

Cabling and Connectors The connector strip includes two groups of video/audio input jacks; you can record from either (but not both at the same time). A third pair of audio-only inputs—labeled Mix In—routes sound directly to the output jacks. You can't record sounds from the Mix In sockets to disk; in fact, the sockets' purpose is the opposite: to allow you to output digitized sounds. For example, to record a QuickTime movie to videotape, you must cable the Mac's onboard output jack to the Mix In connectors.

The VideoVision captures stereo sound, but it's limited to 8-bit, 22kHz input. This means AV and Power Mac owners are better off cabling sound through the microphone jacks on their motherboards. Once you capture CD-quality sound, you can play it out through the connector, but only because the VideoVision capture board is out of the loop. Frankly, the product's sound capabilities are mediocre when you consider its steep price.

Studio Options The Studio daughterboard provides the best compression options available to any board we tested. You have access to only one codec—JPEG (which is not compatible with the SPAV's)—specifically designed for recording to interlaced video. But rather than specifying a Quality setting that's carved in stone, you can activate the Adaptive Compression function, which increases compression when frame transitions become complex. As a result, the VideoVision is less likely to drop frames.

To compress the video according to the data rate of your hard drive, you can activate the Maintain Data Rate option (see the screen shot "Intelligent Compression"). This option lets you test the throughput of your hard drive and then accordingly set the rate at which it sends data to the VideoVision. The software maintains the highest Quality setting possible without exceeding this rate.

With these kinds of flexible options, it's no surprise that the VideoVision Studio performed well in Macworld Lab's tests. With adaptive compression, we were consistently able to record movies with no dropped frames at rates between 29.92 and 29.95 fps on both the Quadra and Power Mac platforms.

The Last Word

All three products come from Radius, which fared poorly in our technical-support tests. While they answered our questions accurately, support technicians demonstrated little interest in our low-level problems and were sometimes condescending. While knowledgeable users might be satisfied, inexperienced souls will need to be thick-skinned and persistent. We waited on hold for prolonged

periods of time—never less than 8 minutes—and it's a toll call.

The VideoVision provides excellent video-compression capabilities and impressive image quality, but its sound options are disappointing. Its comparatively high price warrants 16-bit, 44kHz sound, as well as sound output through the connector strip. All told, the VideoVision is not a good value, especially when compared with an AV Power Mac plus a SpigotPower AV board. Meanwhile, though the Spigot II Tape is adept at recording quarter-screen video, its unexceptional software and lack of audio support dampen my enthusiasm. Only if you own an aging Mac II or Quadra and you have no intention of upgrading to an AV Power Mac should you consider the Spigot II Tape—and be forewarned: you'll be relying on your Mac's built-in sound.

The SpigotPower AV is easily the best value of the bunch. Provided you own an AV Mac, the SPAV represents a straightforward and powerful solution, delivering full-screen, full-motion, interlaced video that can be every bit as good as movies produced with the VideoVision. Oh, the SPAV may occasionally drop frames if your system isn't up to snuff—a problem the VideoVision all but eliminates with its adaptive compression—but you may be able to correct this problem by adding a cache card or reinitializing your hard drive. The SPAV's one downside is that it can play back no more than 32,000 colors to videotape. If you require full 24-bit output, keep an eye out for the SpigotPro AV. **m**

DEKE MCCLELLAND is the author of *Mac Multimedia and CD-ROM for Dummies* (IDG Books Worldwide, 1995), which makes sense of the Mac's sound and video capabilities.

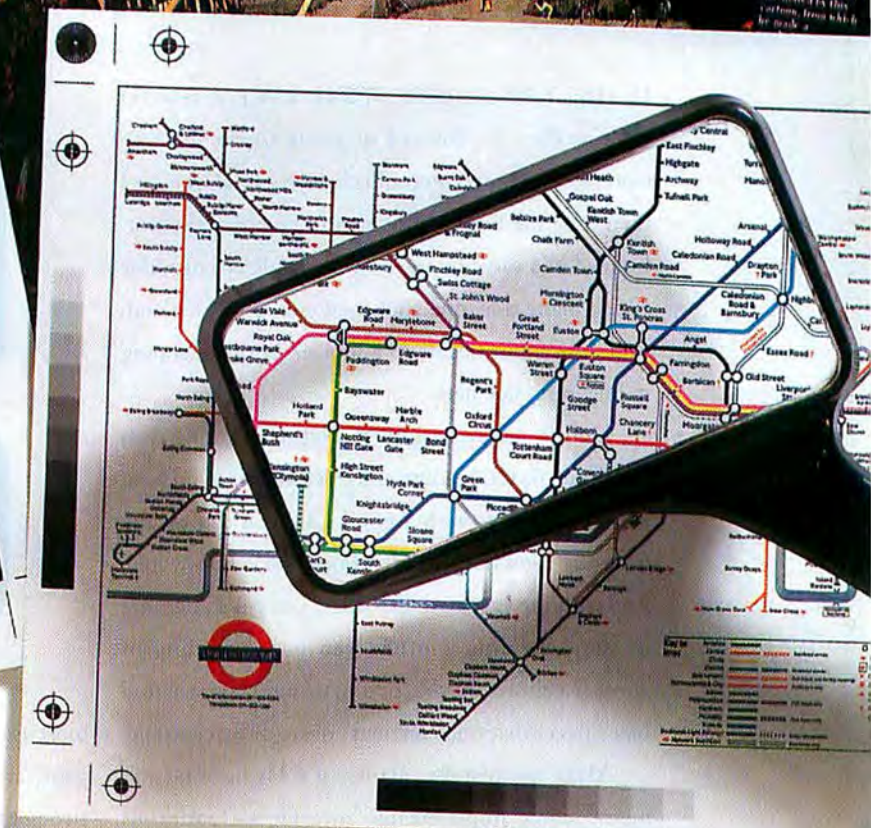
DIGITAL-VIDEO BOARDS



Frame size, average frame rate, on-board QuickTime compression, and price were factors in choosing the best video-capture and playback hardware. One of the least expensive options is also the best.

SpigotPower AV Attach this board to an AV Mac's DAV slot, and you can record, edit, and play back 640-by-480-pixel, 30-fps, interlaced video. Dropped frames are a problem, but this powerful board handles any job short of broadcast-quality video.
Company: Radius. **List price:** \$999.

Check out the elegant detail of the Knopf Travel Guide to London at your local bookseller, you'll also find Knopf Guides to other world cities.



Color is color, until you see the fine print.

Then you'll know it's Phaser Color. Eyeball it up close. Check out the spotless color of the new Phaser™ 440, the newest continuous tone color printer from Tektronix. It dots i's and crosses t's with the precision of TekColor Photofine™ and true Level 2 Adobe® PostScript.™ It outputs stunning overhead transparencies and matchless pre-film proofs. All printed to Pantone's color perfection. And it's fast, processing images at

RISC-speed, it snaps out 8.5" x 11" full bleed prints. PCs, Macs, workstations, networks: it supports them all—simultaneously. And it's from Tektronix, maker of the best and broadest line of workgroup color printers for business, graphic arts, science and engineering.



© 1996 Tektronix, Inc. All rights reserved. Knopf Travel Guide to London printed with permission. London: Walker Collection, The Gallery, National Gallery, London; Transport Pictorial; Gifford; James; New York: Rodin House.

Tektronix

Circle 143 on reader service card

Call 800-835-6100 Ext. 1007.
<http://www.tek.com/CPad?1007>

TEN CD-ROM TITLES

The Year's Best CDs

IF ONLY REAL LIFE WERE LIKE A GOOD multimedia CD. Instead of going to the grocery store, for instance, you could click on a food icon, and then drag the food you want into your refrigerator. In need of a vacation in an exotic land? No need for a long plane ride: one click, and you're in Thailand. And how about tickets to a movie? Forget standing in line; just click here.

Unfortunately, real life is a bit more taxing than a multimedia CD's point-and-click allure would have you believe. But with a good CD, you can escape from the rigors of real life, if only for a little while. And with the very best CD titles, you get something to show for your journey—an understanding of another culture, maybe, or a newfound appreciation of a subject that once seemed arcane or inaccessible.

Make no mistake, plenty of CDs have far too many icons, impenetrable interfaces, gratuitous video, and—sin of sins—lousy content. But the medium is maturing and titles are proliferating; as a result, there's an increasing number of good CDs. For this article, I picked the ten CDs of the past year with the

most useful, stimulating, or entertaining content; elegant, straightforward, or clever interface; and a strong replay factor, meaning I'd want to take the CD for a spin more than once or twice.

As with previous *Macworld* Top Ten CD lists, I focused only on titles developed for CD-ROM. Fonts, shareware, clip art, stock photos, and other matter that simply use CDs as a storage medium were not included. I didn't look at games or interactive movies, except those with significant educational advantages; games are Steven Levy's department (see "1994 Macintosh Game Hall of Fame," *Macworld*, January 1995).

So—without any further ado—here are *Macworld's* Top Ten CDs.

BY JAMES A. MARTIN



ARTS AND CULTURE

The Complete Maus

Voyager

914/591-5500, 800/446-2001

\$49.95 list price

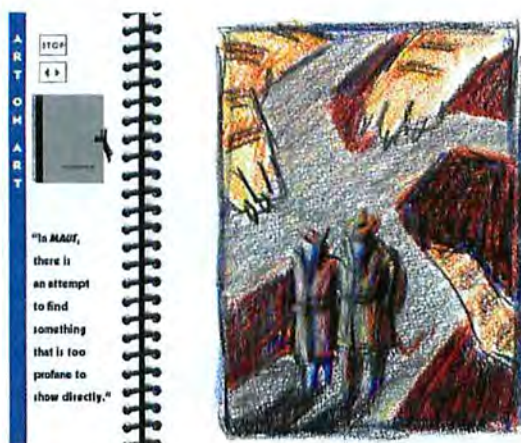
Maus, the Pulitzer Prize-winning graphic novel, is a well-crafted story of how a common, ordinary man survived the Holocaust. The Complete Maus, a multimedia CD that includes the original two-volume book as well as a wealth of supplementary materials, offers rewarding insights into how that story came to be told.

To create *Maus*, cartoonist Art Spiegelman interviewed his father, a death-camp survivor, and used the comic-book format to tell his story—using mice to represent Jews and cats to portray Nazis.

The Complete Maus CD contains audio excerpts from the tapes Spiegelman made of his interviews with his father, as well as the author's transcripts; a facsimile of the original three-page version of *Maus*; fascinating audio interviews with the author; videos that Spiegelman shot on visits to former concentration camps; a step-by-step look at how he created a single page of the book; and more. It's best to read *Maus* first in book form—that is the medium it was designed for, after all. (Plus, unless you have a 20-inch or larger monitor, the scrolling required to read the book on screen gets rather tedious.) Then explore The Complete Maus—a shining example of how a work in one medium can richly augment a work in another.

The Complete Maus

Art Spiegelman's *Maus* is in black and white, but the artist considered using color, as this unpublished sketch—one of many from the CD—illustrates.

**4 Paws of Crab**

The CD's striking design is particularly evident in the ingredients section, shown here. Icons (left) help you move quickly to other sections, adjust the volume level, get help, or exit.

**4 Paws of Crab**

Live Oak Multimedia

510/654-7480, 800/454-7557

\$44.95 list price

Most CDs offer no authorial voice, no singular vision, no intimate connection to the user—just fragmented information or amusements buried beneath icons. 4 Paws of Crab is a rare exception: it's a personal, quirky CD with a strong narrative and a visual style all its own.

Billed as a "narrative Thai cookbook," 4 Paws of Crab is really about friendship, cultural differences, and the adventure of foreign travel, with food as an interesting backdrop. The CD has two narrators: Nora, a college student who goes to Thailand to study; and Bird, a Thai restaurant owner and fellow student whom Nora befriends and who later travels to San Francisco. Along with the stories of Bird's and Nora's travels, the CD includes plenty of tantalizing Thai recipes and a gorgeously illustrated guide to their ingredients.

The real heart of the CD, however, is the section titled "Mirrors," which includes interactive, narrated photo journals of Nora's and Bird's experiences in—and their observations of—each other's countries. Their stories are often illuminating and always engaging. Nora notes that Thai people rarely use telephones; dinner with friends is usually a result of a chance encounter rather than a prearranged event. As a result, communication in Thailand can be much more direct, spontaneous, and personal than in the United States, with an emphasis on sharing stories. 4 Paws of Crab takes that time-honored tradition of storytelling and deftly reinterprets it for the information age. And that's what ultimately makes it such an intriguing and rewarding CD.

CHILDREN/YOUNG ADULTS

Harry and the Haunted House

Brøderbund Software

415/382-4700, 800/776-4724

\$39.95 list price

It's one of the oldest stories in the world: shakyn-kneed kids venture into a mysterious, dark, and scary house to retrieve a lost baseball. But in Harry and the Haunted House, one of a series of Living Books from Brøderbund, the yarn is given a fresh spin by the wonderful drawings, clever animations, and, in particular, interactive exploration.

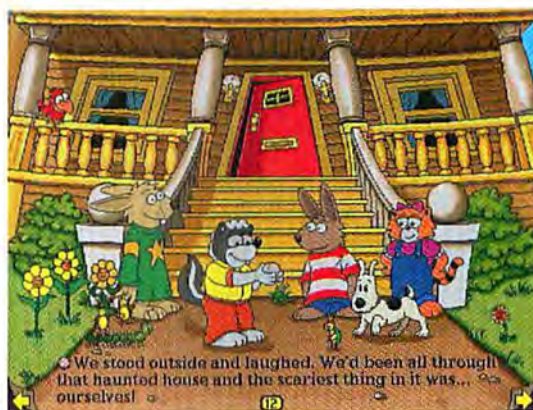
After the narrator reads the text (in either Spanish or English), you can use your mouse to click on and activate just about any object on a page. In a haunted house, you never know what mysteries you will uncover, and this disc wisely sidesteps the tired old skeleton-rattling stuff. Instead, you are treated to delightful surprises such as beetles that jump rope, form a conga line, and sing a chorus of "Blow the Man Down," accompanied by the ghost of an old sea captain. There are also nine original, and quite good, music compositions, which you can play on a stereo CD player, or on your CD-ROM drive using AppleCD Audio Player or another music utility. This CD is a joy from start to finish; even its closing credits are a hoot.

Dr. Helga Health'nstein's Body Fun

Star Press Multimedia
415/274-8383, 800/782-7944
\$29.95 list price

To many young adults and preteens, a balanced meal is a cheeseburger, a double order of fries, and a large Coke—and how about a hot apple pie for dessert? Meanwhile, exercise is what they pretend to do when the gym teacher is paying attention. Dr. Helga Health'nstein's Body Fun could change that.

This CD's games—some of them quite challenging—make you think about what you eat, how you exercise, and the consequences, both now and in the future. Four obstacle courses represent periods of life, from school to retirement. Along each course, you select available foods or pick an exercise routine. The choices you make determine your health rating. At the end of each course, you face a formidable opponent in an athletic event; whether you're nearly eaten by a crocodile in the Nile or you win the midnight marathon in Greece depends on your health score. There's also a body scanner, a video of open-heart surgery (too intense for wee ones), and a trip down Addiction Alley (my favorite part). There's no guarantee that after playing Dr. Helga Health'nstein's Body Fun your kids will turn up their nose at fast food. But who knows? Maybe they'll skip the apple pie for dessert.



Harry and the Haunted House

The book comes to life with the help of a few mouse-clicks. Click on the centipede (bottom left), for instance, and two beetles jump on for a piggy-back ride.



Dr. Helga Health'nstein's Body Fun

When you place food on a plate, the program tallies the food's fat, fiber, protein, and other contents. Pick wisely: your health rating (top left) goes up or down depending on the foods you choose.

ENTERTAINMENT

Dazzeloids

Voyager
914/591-5500, 800/446-2001
\$49.95 list price

Dazzeloids is delicious nonsense of the point-and-click variety, a wildly original, candy-colored wallow in silliness complete with songs, interactive stories, and the occasional Translumifier.

The Dazzeloids are "CD-ROM superheroes on a binge against boredom." Their members include leader Anne Dilly Whim, who dresses in corseted Elizabethan clothing and talks like Elly May Clampett from "The Beverly Hillbillies"; Titan Rose, a red wolf who spouts Shakespearean sonnets and pumps

iron; and Stinkabod Lamé, a furry creature fond of practical jokes, slam dancing, and nude gymnastics. Their archenemy is the Mediogre, a slimy CEO obsessed with controlling the world through blandness and boredom.

The CD includes four segments: Meet the Dazzeloids, where you explore each character's good and bad sides; A Child Is Bored, in which the Dazzeloids save a boy from becoming a brainwashed zombie (as a result of too much TV); Banker Spare That Petshop, where our heroes rescue a local pet store; and Dazzeloid Dreams, a collection of often hilarious mock rock videos. Created by Rodney A.

FIVE MORE FOR THE ROAD

Here are another five CDs that, while not among the top tier, are worth a look.

Comic Book Confidential (Voyager; 914/591-5500, 800/446-2001; \$49.95 list). An amusing documentary film about cartoonists is augmented with samples of their work.

Microsoft Dangerous Creatures (Microsoft Corporation; 206/882-8080, 800/426-9400; \$59.95 company's esti-

mated price). Not for the squeamish, this CD is an endlessly fascinating guide (with text, graphics, and video) to Mother Nature's less docile creations.

The Residents: Freak Show (Voyager; 914/591-5500, 800/446-2001; \$49.95 list). Eye-popping, and groundbreaking, visuals star in this bizarre interactive exploration of a circus sideshow's inhabitants. Check out Wanda the Worm Woman.

Shoot Video Like a Pro (Zelus Ventures; 415/788-0566, 800/345-6777; \$29.95 list). Here is an entertaining way to learn how to make videos—by looking through the viewfinder of a virtual camcorder.

QuickTime: The CD 1994 (Sumeria; 415/904-0800, 800/478-6374; \$49.95 list). A choice, double-CD collection containing the winning video entries of the 1994 QuickTime Film Festival.

Greenblat, whose Rodney's Wonder Window was a 1993 *Macworld* Top Ten CD, Dazzeloids is campy fun—a loopy testament to imagination and creativity, and ultimately to the potential of CD-ROM as a distinct art form.

Star Trek: The Next Generation Interactive Technical Manual

Simon & Schuster Interactive
310/793-0600, 800/545-7677
\$69.95 list price

Here's a case in which a CD's subject matter and its visual style are perfectly in accord. The subject is the starship *Enterprise*, the space vessel from "Star Trek: The Next Generation." As its title suggests, the CD offers an exhaustive, technical account of the ship's inner workings. I was relieved to learn, for instance,

Dazzeloids

You determine who rescues the Dazzeloids from the Mediogre by clicking on one of the three character panels. Hint: the Mediogre might not be the best man for this job.



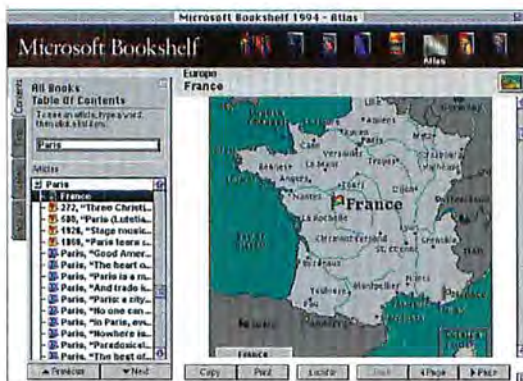
Star Trek: The Next Generation Interactive Technical Manual

QuickTime VR lets you spin 360 degrees around the starship *Enterprise*'s main bridge. You can also click on any of the orange bars (right) for information about the bridge's environment and equipment.



Microsoft Bookshelf '94

Search the contents of seven reference books at once or click on any of the book icons (top right) for more-focused research. Pictured here is a map of France from the CD's atlas.



that the famous "beam me up" transporter has built-in error-checking protocols, presumably to prevent personnel from returning with only one nostril.

The developers have given this CD a futuristic, sophisticated look and feel—right down to the persistent hum that sounds as if you're traveling on a spaceship. Best of all, though, is the visual exploration of the *Enterprise*. Thanks to Apple's hot new QuickTime VR technology (see "VR: QuickTime's New Edge," *Macworld*, July 1995), you can pan 360 degrees around a room, open drawers, even check out a personal communicator (that A-shaped brooch everyone wears) from all angles. For Trekkers, this disc should provide hours of entertainment; for the rest of the world, it's a tantalizing taste of multimedia things to come.

REFERENCE

Microsoft Bookshelf '94

Microsoft Corporation
206/882-8080, 800/426-9400
\$69.95 company's estimated price

Beside his desk, Thomas Jefferson kept a revolving bookstand, upon which he laid his five most frequently consulted reference books. With Bookshelf '94, Microsoft improves on Jefferson's concept, delivering an indispensable tool that contains the entire contents of seven reference books—including an encyclopedia, a dictionary, a thesaurus, an atlas, an almanac, and more—all hot-linked and easily accessible within applications.

When writing a report on France, for example, you can highlight the word *Paris* in your text. Then you click on the Bookshelf icon—located on the far right of the System 7 menu bar—and choose Bookshelf Contents in the pull-down menu. On the right side of the screen, Bookshelf displays a color map of France taken from the atlas. The map is augmented with original Bookshelf multimedia material, such as a flag icon that shows the French flag and plays an audio snippet of France's national anthem when you click on it. On the left side of the screen is a lengthy list of content culled from all of the seven Bookshelf titles. The list includes everything from Ernest Hemingway's "Paris is a moveable feast" quote (from *The Columbia Dictionary of Quotations*) to the number of coffeehouses found in Paris in the year 1754 (from *The People's Chronology*). You can also search each book separately.

Bookshelf's multimedia content includes some 80,000 recorded word pronunciations, as well as photos, maps, animations, and a smattering of video. But Microsoft Bookshelf '94 is, above all, a welcome reminder of what made CD-ROM so attractive in the first place—namely, the ability to offer affordable, fast access to a wealth of information.

Microsoft Cinemania '95

Microsoft Corporation
206/882-8080, 800/426-9400
\$59.95 company's estimated price

With the entire contents of *Leonard Maltin's Movie and Video Guide*, as well as excerpts from Roger Ebert's

Video Companion, Pauline Kael's *5001 Nights at the Movies*, and other reference works related to movies, this is one-stop shopping for anyone whose eyes glaze over in a video store.

For aimless, easy browsing, Cinemania uses a navigational tool that resembles a VCR remote control. It's also fun to go directly to the Gallery section and wade through its rich selection of movie stills and portraits, sound-track and dialogue excerpts, and film clips. I particularly appreciate the search function, which lets you create, save, and print highly specific lists of films, such as all British comedies from the 1940s and 1950s available on laser disc (43) or all Gina Lollobrigida films with a four-star rating (zero).

New to this edition is the Cinemania Suggests feature, which gives you movie recommendations based on your mood (anyone for a screwball comedy?) or on chance (through the spin of a roulette wheel). Cinemania '95 is one CD that's as entertaining as the subject it covers.

SCIENCE

A.D.A.M. The Inside Story

A.D.A.M. Software

404/980-0888, 800/408-2326

\$49.95 list price

Anatomy has always struck me as dull. I suppose it might be helpful at cocktail parties to know that a patella is a knee bone and not an Italian bread, but otherwise, who besides a doctor would care?

The problem, I now realize, is not with anatomy but with most anatomy guides—they're about as fascinating as a frog in formaldehyde. Happily, that's not the case with A.D.A.M. The Inside Story, a lively road map of the human body.

A.D.A.M.'s nicely designed, flexible interface lets you explore the architecture of the human body in a number of ways. You can quickly locate the latissimus dorsi muscle, for instance, by choosing it from a pop-up menu. You can view the full anatomy or specific body systems (muscles, nerves, and so on) from a frontal or rear view; choose the sex and skin color of the figure; and when modesty prevails, select the fig-leaf option.

Best of all are the informative animations, which offer easy-to-understand explanations as well as some mischievous humor—an animation showing how taste buds work, for instance, climaxes with bird droppings landing on a lollipop. The disc also includes puzzles and a dictionary of terms.

Leonardo The Inventor

Future Vision Multimedia

914/426-0400, 800/472-8777

\$49.95 list price

Everyone knows that Leonardo da Vinci painted the *Mona Lisa*, but until I clicked my way through Leonardo The Inventor, I had no idea he also invented the snorkel, the skin-diving suit, the helicopter, and the paddleboat, among other things. Talk about your Renaissance man.

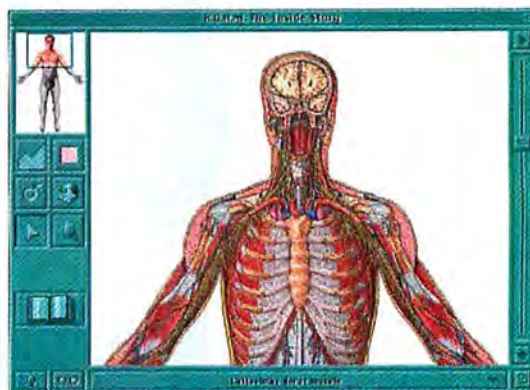
OK, so Leonardo didn't really *invent* those things. But he did sketch conceptual designs that



Microsoft

Cinemania '95

The main navigational buttons (left) look like a VCR remote control. The control's icons offer background on a movie; click on the sealed envelope, for instance, to find out what awards a film received.



A.D.A.M. The Inside Story

The controls (top left) let you reposition or enlarge the figure, change its color or sex, and explore it with a magnifying glass.



Leonardo The Inventor

Leonardo da Vinci sketched ideas for musical instruments, among other things. Here you can interactively explore three instruments and find out about the Renaissance man's bell-tower invention.

closely foreshadowed—and often influenced—the inventions that followed. Those designs provide the jumping-off point for this marvelously compelling CD. In Leonardo The Inventor you can, for example, don a pair of 3-D glasses (included) for a well-rounded perspective on da Vinci's cannon, tank, and other designs; watch video clips of modern-day equivalents of his inventions; play a few musical instruments; and test your Leonardo knowledge in three games. There's a 19-page biography, with selected terms hot-linked to graphics; a bibliography; a time line; and other features. This CD vividly brings its subject to life, and along with 4 Paws of Crab, it's one of the best-looking titles of the year. **m**

JAMES A. MARTIN, formerly editor of Macworld's Graphics section, writes about CD-ROM hardware and software for Macworld, PC World, and other publications.

No matter how fast can't outrun a power

New Back-UPS: reliable power for your Mac

Just don't have the time for power problems on your Mac? Don't worry. They'll always make the time for you. It's not if a power problem will occur, but when. Due to household appliances, poor wiring, bad weather or even other office equipment, power problems are as inevitable as death and taxes. You can't run, but you can hide, behind APC protection.

**IN THE NEXT THREE MONTHS,
MORE THAN 30,000,000 PCs WILL BE HIT
BY POWER PROBLEMS...**

Who needs power protection? If you use a computer, you do. A study in a recent *PCWeek* showed that the largest single cause of data loss is bad power, accounting for almost as much data loss as all other causes combined. Every Mac plugged into an outlet is vulnerable. In fact, you have better odds of winning the lottery than of escaping the sting of power problems. One study found a typical computer is hit 100 times a month, causing keyboard lockups, drive damage, or worse.

Simply put, if power problems are the least of your troubles, you've got one chance to keep it that way. You insure your car and home with the best policy you can afford. It just doesn't make sense to



Source: Contingency Planning



Source: Bell Laboratories

Power problems are the leading cause of computer data loss, while the most frequent type of power problems are undervoltages and blackouts, which surge suppressors alone are powerless to protect against.

leave your Mac (which is at far greater risk) vulnerable to loss or damage.

WHY A \$119 APC UPS COSTS LESS THAN A \$9.99 "SURGE PROTECTOR"...

Contrary to most people's belief, a Mac alone has more protection built into it than a low-end "surge suppressor," which is usually nothing more than a well-packaged extension cord. In other words, going without protection is as good as under-spending on one of the most important computer decisions you'll make.

And since sags and blackouts represent more than 90% of power problems likely to hit your Mac, even quality, high-performance surge suppressors are literally powerless to protect your Mac from data loss.

That's why you need instantaneous battery backup power from an APC Uninterruptible Power Supply to prevent keyboard lockups, data loss, and crashes. With an APC UPS, you get six times the

**For extended
brownout protection
for advanced Mac
workstations call
about APC's New
Back-UPS Pro!**

More than 3,000,000 satisfied customers count on APC reliability



Modern Press President Stephen Hopkins explains, "I protect my Mac Performa with a Back-UPS 400 and the unit works great. The Mac handles all bookkeeping, administrative and estimating functions for the company. It is a critical piece of my business. Unfortunately, we are located in an industrial park... a nice way of saying that our power fluctuates a great deal. After five years of reliable performance from my Back-UPS, power problems are no longer my concern. I can focus my energy on my business instead."



At Cellophane Square, Seattle's best known independent and alternative rock record store, Steve Marcus, Product Buyer, counts on APC to keep his Mac II SL and POS terminals running reliably. "The building where we started out was ancient and full of power problems. I lost lots of purchasing and product related information... until we invested in APC. I chose APC because they offer the most reliable product. I haven't been proven wrong yet. Problems continued in the building, but they were no longer a problem for us."



"We have over 30 APC units on our Macs," says Tim Girvin, principal of Tim Girvin Design, Seattle, WA. "Why do we protect every computer in the firm with an APC? As design consultants working on projects throughout the United States and Asia, 100% productivity is critical to project management. We cannot afford lost files due to power outages because of the complexity of many of the design programs we manage. Lost projects due to unprotected files is simply irresponsible. With APC in place, power problems are not even an issue, we are protected."

protection of a high-end surge protector for little more than twice the price. And \$119 is much less expensive than false peace of mind.

APC UPSs carry up to a \$25,000 lifetime guarantee against surge damage to your properly connected equipment,



and can suit any application, from servers and PCs, to fax and satellite systems.

your Mac is, it problem

starting at \$119

PROTECT YOURSELF OR KICK YOURSELF...

It's been said that there are two types of computer users: those who have lost data, and those who are about to. Prevent the single largest cause of computer problems and join a fast-growing third category: those who protect their PCs with the most reliable protection they can buy: APC UPSs. So ask for APC at your favorite reseller. At just \$119, an APC UPS is serious protection no Mac user should be without.

MacWEEK "Ultimately, it's more a question of when - and not if - you should buy a UPS... UPS power protection has never been cheaper or more convenient"

MacUser "If you have a server and don't have a UPS, you're playing with fire."

"★★★★★...should be standard on every desktop... effective, affordable, designed to last..." --PC Computing



Back-UPS FEATURES

- ▶ Unmatched surge/lightning protection for maximum hardware safety
- ▶ Site diagnostics automatically spot missing ground and reversed polarity
- ▶ LAN signaling allows simple shutdown with interface kits (400 and above)
- ▶ User replaceable, hot swappable batteries insure uptime safe disposal
- ▶ \$25,000 lifetime Equipment Protection
- ▶ 10 minute runtime with specified applications. For longer runtimes choose next largest unit.

Model	Application	Sugg. List
200	Desktop systems	\$119
280	Desktop systems	\$139
400	MultiMedia	\$199
450	Quadra	\$254
600	PowerMacs	\$359
900	Longer runtime applications	\$529
1250	Multiple systems	\$689



APC products have won more awards for reliability than all other UPS vendors combined



Visit APC's
NEW
PowerPage[®] on
the Internet

www.apcc.com

APC[®]

AMERICAN POWER CONVERSION

Call 800-800-4APC

Dept. D7

132 Fairgrounds Rd. W. Kingston, RI 02893

Tel: (401)789-5735

Fax: (401)789-3710

CompuServe: GO APCSUPPORT

Internet: apctech@apcc.com

Circle 72 on reader service card

QuarkXPress 4.0 Emphasizes Workgroups, Books

Another change that should appeal to business, catalog, and brochure designers alike is an increase in the number of



Another set of enhancements focuses on workgroup usage, something Quark has been pushing with its Quark Publishing System, a set of publishing-management tools used by several major magazines and newspapers. While Gill would not go into detail on the workgroup features planned for QuarkXPress 4.0, he did announce several related features, includ-

—GALEN GRUMAN WITH JAMES A. MARTIN,
STEVE ROTH, AND JEFF SENNA

Drum Scans for Less

MOST DRUM SCANNERS COST FROM \$30,000 to more than \$35,000, placing them out of reach for most in-house graphics departments and small businesses. Meanwhile, high-resolution flatbed scanners typically cost \$4000 or

negatives and reflective artwork up to 8.5 by 11.5 inches, at speeds up to 1200 rpm. It can perform batch-scanning through a dedicated Adobe Photoshop plug-in (the scanner ships with another Photoshop plug-in that handles routine scanning jobs). The drum is not removable, though.

The new versions of ScanView's scanning software are available for both Power Macs and 680X0 systems. Color-Quartet RGB 3.2 (\$1100) and CMYK 3.2 (\$1650) let you automatically apply previous scan settings to new scan jobs, and both packages add support for SWOP, Euro-scale, and TOYO color-separation tables.

The Mirror DS4000 Drum Scanner, which is made by the German firm Opto-Tech, captures 36-bit color images at up to 4000 dpi, with a dynamic range of 4. According to Mirror, the three-pass DS4000 scans negatives and reflective artwork up to 8.5 by 11.7 inches at speeds up to

1200 rpm and has a removable drum (a second drum is \$1699). Mirror plans to add batch-scanning capability later this year.—JAMES A. MARTIN

Digital Pens with Ink



NOW YOU CAN SKETCH ON PAPER placed over a digitizer while simultaneously capturing your illustrations electronically—with one of Wacom's two new inking pens (360/750-8882). The Widebody UltraPen with Ink (UP-401) uses a ballpoint-pen cartridge and comes with three ink cartridges—red, blue, and black. Also included are two nylon tips, which you can use instead of a cartridge for strictly digital drawing. Like the orig-

IN BRIEF

Automating 3-D Effects

Besides native-Power Mac support, a wire-frame mode for faster screen redraw, and support for Illustrator 5, AddDepth 2.0 from Ray Dream (415/960-0768; price reduced to \$99; upgrade \$39 through August) will include the AddDepth Wizard, an interactive tutorial that either guides users through the design process or lets them choose from over a hundred 3-D graphics templates included with the program. Due in June, AddDepth 2.0 will ship on CD-ROM along with 30 display typefaces and 300 clip-art objects.

Tint, Trap, Strip, and Separate

CoddBarrett Associates (401/247-2171) has released a version of its TintPrep System that runs on a NuBus Mac equipped with an Orange Micro PC card (\$6995 with the OrangePC 290 NuBus card; \$2995 for the proofing software only). The new version adds color and traps, strips up pages, and generates PostScript separations. It handles spot and process colors and continuous-tone images, and it provides trapping controls by object and color with on-screen proofing of traps. You can import Photoshop files into TintPrep as four-color TIFF or EPS files, and you can export files colored and trapped in TintPrep in DCS format to QuarkXPress.

xRes Gets Aggressive

Fauve Software (415/543-7178), maker of the image editor that debuted at Macworld Expo last January, is making a strong bid to lure users of its competitors, Adobe Photoshop, HSC's Live Picture, and Fractal Design Painter. Through August, registered users of these programs can purchase the \$799 xRes 1.1.1 for \$199.



Drum scanners like the ScanMate 3000 and the Mirror DS4000 (above), each selling for about \$20,000, may convince many publishers to bring high-resolution scanning in house.

less but don't offer the high-resolution scanning quality many publishers require. With these considerations in mind, ScanView A/S (415/378-6360) and Mirror Technologies (612/830-1549) are hoping their new photomultiplier-tube-based drum scanners, each priced just under \$20,000, will fill the void.

According to ScanView and Mirror, their new drum scanners will reduce service bureau costs for anyone with medium to heavy scanning needs and will significantly reduce turnaround time, while still delivering high-quality images. If you send out 275 to 300 images a year to a service bureau for high-resolution scanning, for instance, you're already spending at least \$20,000, as most bureaus charge \$75 per scan (without a proof). What's more, a service bureau typically delivers the scan in 48 hours; a rush job is double the cost. (If you bring drum scanning in house, however, you'll need to add supplemental materials and labor costs to the drum scanner's \$20,000 price tag.)

The ScanMate 3000 (\$19,995), available now, is a single-pass drum scanner that captures 36-bit color images at up to 3000 dpi. However, like Mirror's DS4000 Drum Scanner (\$19,900), the ScanMate 3000 automatically downsamples those images to 24-bit color. The scanner has a dynamic range of 3.6 and can digitize

inal (and thinner) UltraPen, the Widebody offers 256 pressure levels and a programmable side switch.

The Widebody UltraPen with SmoothStroke (UP-421) has the same features as the UP-401 but adds a flexible pen tip that feels more like a felt tip. Both cordless pens work without batteries and are available now for \$125.—C.A.



YOU'VE
BEEN
LOOKING
FOR IT.

THE
LATEST.

THE
BEST.

THE
CONNECTION.

THE
NETWORK.

THE
KNOWLEDGE.

THE
FUTURE.

THE
POWER.

Attending made easy



U.S. Attendees: Badges will be mailed on or about July 24. Be sure to check box indicating where badge should be sent.

International Attendees: International Badges (including Canadian) will be held for pick-up at the International Pre-registration counter at Bayside Expo Center. Badge pick-up hours are: August 7, 11:00 a.m. - 3:00 p.m.; August 8-10, 9:00 a.m. - 6:00 p.m.; August 11, 9:00 a.m. - 4:00 p.m. For Federal Express service, check the appropriate box on the pre-registration form and add \$45 to your pre-registration fee. Fill in your exact street address (no P.O. boxes) and include your telephone number and country code. We will Federal Express your badge directly to you.



Hotel	Single/Double	Telephone
57 Park Plaza 200 Stuart St., Boston, MA 02116	\$120/130	617-482-1800
Back Bay Hilton 40 Dalton St., Boston, MA 02115	\$155/175	617-236-1100
Boston Marriott Copley 110 Huntington Ave., Boston, MA 02116	\$179/179	617-236-5800
Boston Marriott Long Wharf 296 State St., Boston, MA 02109	\$239/259	617-227-0800
Boston Park Plaza 64 Arlington St., Boston, MA 02116	\$138/159	617-426-2000
Colonnade Hotel 120 Huntington Ave., Boston, MA 02116	\$180/200	617-424-7000
Copley Plaza 138 St. James Ave., Boston, MA 02116	\$188/208	617-267-5300
Four Seasons Hotel 200 Boylston St., Boston, MA 02116	\$266/290	617-338-4400
Guest Quarters Hotel 400 Soldiers Field Road, Boston, MA 02134	\$163/173	617-783-0090
Harborside Hyatt 101 Harborside Drive, Boston, MA 02128	\$175/195	617-568-1234
Hilton at Dedham Place 95 Dedham Place, Dedham, MA 02026	\$135/135	617-329-7900
Holiday Inn Government Center 5 Blossom St., Boston, MA 02114	\$153/169	617-742-7630
Hyatt Regency Cambridge 575 Memorial Drive, Cambridge, MA 02139	\$165/185	617-492-1234
Le Meridien Hotel 250 Franklin St., Boston, MA 02110	\$215/215	617-451-1900
Lenox Hotel 710 Boylston St., Boston, MA 02116	\$150/170	617-536-5300
Logan Airport Hilton Logan International Airport, E. Boston, MA 02128	\$140/160	617-569-9300
Omni Parker House 60 School St., Boston, MA 02108	\$150/170	617-227-8600
Ritz-Carlton Hotel 15 Arlington St., Boston, MA 02117	\$225/250	617-536-5700
Royal Sonesta 5 Cambridge Parkway, Cambridge, MA 02142	\$150/150	617-491-3600
Sheraton Boston Hotel & Towers 39 Dalton St., Boston, MA 02199	\$160/175	617-236-2000
Sheraton Tara Braintree 37 Forbes Road, Braintree, MA 02184	\$125/125	617-848-0600
Swissôtel One Ave. de Lafayette, Boston, MA 02111	\$165/175	617-451-2600
Tremont House 275 Tremont St., Boston, MA 02116	\$119/129	617-426-1400
Westin Copley 10 Huntington Ave., Boston, MA 02116	\$189/209	617-262-9600



Fly American Airlines and Save

Enjoy savings on applicable fares when you fly American Airlines, the official airline of MACWORLD Expo. American is offering attendees discounts of 5-10% on most fares. Dial 800-433-1790 to speak with an American Airlines reservationist and reference Star File #S1085AL. Savings are on applicable fares only.

Car Rental Discounts from Alamo



Alamo Rent a Car is pleased to offer discounted rates to MACWORLD Expo attendees. To receive preferred rental rates, please contact Alamo directly at 800-732-3232 and reference Group ID #378360, Rate Code "GR" and "1G". Advance reservations are required.

Hotel Accommodations

MACWORLD Expo has grown over the years and the demand for hotel rooms has grown too. With this in mind, we want to ensure your room is waiting for you. Attendees must make a *non-refundable deposit* for the first and last night at the time you make your reservation. If you are reserving 10 or more rooms, you must supply the hotel with a rooming list by June 26. Participating hotels in the Boston area are offering MACWORLD Expo discounts. To receive the preferred rate, call one of the hotels listed and mention you'll be attending MACWORLD Expo. There are only a limited number of rooms at the preferred rate and they sell-out quickly. Make your reservations by July 10 for the best selections (rates and availability cannot be guaranteed).

Services for the Physically Challenged

We're committed to ensuring that our physically challenged attendees receive all the services they need to make their visit enjoyable. We offer services such as wheelchairs and interpreters for the hearing impaired. Call us at 800-945-3313 for details.

Getting There, Once You're Here

Taking public transportation once you're in the city is highly recommended. Take the Red Line to the JFK/UMass stop, Bayside Expo will be within walking distance, or take the Red Line to South Station where you can take the free shuttle to the World Trade Center. The Complimentary MACWORLD Expo shuttle will connect you with both Expo locations.

For more information call the MACWORLD Expo Information Hotline at 800-645-EXPO, 24 hours a day, seven days a week.

MACWORLD EXPOSITION

WORLD TRADE CENTER • BAYSIDE EXPO CENTER

EXHIBITS HOURS: AUG. 8-10: 10:00 A.M. - 6:00 P.M.
AUG. 11: 10:00 A.M. - 4:00 P.M.

CONFERENCE HOURS: AUG. 8: 9:30 A.M. - 5:15 P.M.
AUG. 9-10: 11:30 A.M. - 5:15 P.M.
AUG. 11: 11:30 A.M. - 2:15 P.M.

Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: Gary F. Clark is an artist who works in both traditional and digital media; a professor of art at Bloomsburg University of Pennsylvania, he also teaches both. His digital work has appeared in such publications as *Computer Artist*, *PC Today*, and *AV Video*.

How It Was Done: Clark used KPT Bryce, HSC Software's landscape-generating program, to create the central element of this fine-art piece, titled *Form, Falls, Function*. He began by opening a new Bryce file and setting the view to Top, then clicking on the Terrain Object icon to create a wire-frame grid of mountainous terrain.

After blending together two gray-scale PICT images, he merged them with the wire frame to further define the terrain. Next, in the Terrain Editor he boosted the landscape's resolution and added fractal noise.

In the Edit Palette, Clark enlarged the terrain's height, width, and depth and moved the point of view nearer ground level and closer to the mountains. Next he applied a texture to the landscape.

He created the sky in the Sky & Fog Palette, then rendered the scene, saving it first as a Bryce Scene and then as a PICT file for importing into Photoshop. Dissatisfied with the original sky, he generated a new one in a separate PICT file.

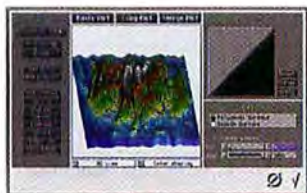
After importing both PICT files into Photoshop, Clark removed the original sky and pasted in the new one. To intensify the reds and oranges, he used Color Balance and Brightness/Contrast.

Bringing the landscape into Painter, he painted in the waterfall with the chalk, airbrush, liquid, and pencil variants, then added some finishing details with KPT Convolver.

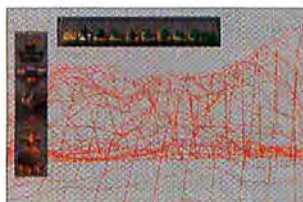
Clark scanned the camera and tripod and applied Painter's water variants set to Just Add Water. In Photoshop he dropped out the midtones and pasted the image into the landscape in Luminosity mode for a transparent effect. The lenses were spherized with KPT's Lens Bright filter. **m**



1 Clark merged two gray-scale PICT images from the KPT Bryce CD-ROM with the original wire frame to modify its height information (the darkest areas are mapped to the lowest points, and the lightest areas are mapped to the highest points). Using Blend mode, he combined the two maps to create the third.



2 In the Terrain Editor dialog box, Clark set the landscape to the highest possible resolution, which bumped up the rendering time considerably but also provided a high degree of detail. He then applied the Fractalize command to make the terrain bumpier.



3 The terrain in wire-frame mode after Clark enlarged the terrain's height, width, and depth using the Resize Controls (Edit Palette) and used the Camera Controls to position the view nearer to ground level and closer to the mountains.

THE TOOLS

Hardware: Mac Quadra 950 with 24MB of RAM and a 400MB internal hard drive; FWB Hammer 1GB external hard drive; RasterOps 24XLTV 24-bit-color video-capture card; Apple Multiple Scan 20 Display; MDS 44MB SyQuest removable-cartridge drive; Umax UC1200SE color scanner with transparency adapter.

Software: KPT Bryce 1.0; Fractal Design Painter 3.0; Adobe Photoshop 2.5; KPT Convolver 1.0.

8 After selecting the waterfall and feathering it, Clark applied the KPT Convolver plug-in filter, using it in Tweak mode to sharpen the waterfall, and added a 3-D effect by increasing the Relief Amount.

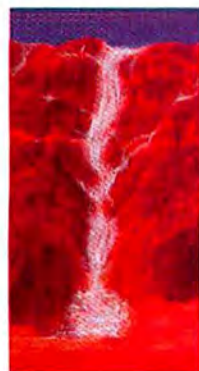
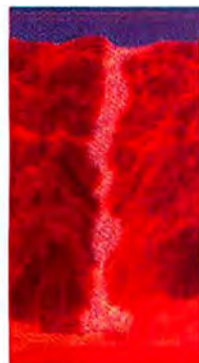


4 In the Materials Editor, he selected Sun7 (one of the procedural textures included with Bryce), changed its Diffuse and Specular colors to a dark red and an orange, and applied it to the landscape.



5 Clark moved the Light Source Sphere so the light would shine from above and clicked on the sun icon (for daylight). He deepened the shadows by dragging inside the shadow icon.

6 The new sky Clark generated in Bryce for compositing with the landscape. After manipulating all the controls—fog, haze, clouds, shadows, amplitude, frequency, sun, and ambient light—he saved the result as a PICT file he could open in Photoshop.



7 In Painter, Clark used chalk variants set to Artist's Pastel Chalk to paint in the waterfall (top). Then he used the airbrush set to the Fat Stroke variant at 60 percent opacity to give the water a mistlike quality. Using a small brush set to liquid variants with Coarse Smeary Bristles, he painted the rest of the waterfall, adding tiny water droplets with the pencil variants set to Single Pixel Scribbler.

TIRED.



WIRED.



Warranted for life, DynaMO 230MB disks provide an absolutely reliable, inexpensive and high performance way to store and transfer files.

Tired of space limitations? Lost data? Expensive cartridges? The old storage technology is just that. Old.

Get wired! With the Fujitsu DynaMO™ optical drive, the new

DynaMO₂₃₀

standard in high-capacity

data storage, you can reliably store and transport all kinds of large files. Even the most demanding graphics and multimedia applications.

DynaMO's industry-standard, 3.5" 230MB cartridges provide greater storage capacity for about 17¢ per megabyte. So you

can save larger files while you save money.

DynaMO also protects your data better. Since it uses magneto-optical media, DynaMO is immune to the problems that plague removable magnetic media. It's simply the most stable medium you can buy for transporting files or storing them.

That's why DynaMO disks come with an exclusive lifetime

warranty from Fujitsu, the world's second largest computer company.

And no matter what your application, from color separations to multimedia to backing up, DynaMO is faster than ever before. Up to 60% faster in the Mac version equipped with Turbo MO software.

No wonder

DynaMO outsells all other optical drives. Highest performance, lowest cost, unmatched reliability. Get DynaMO and you've got it wired.

1-800-898-1302

FUJITSU

COMPUTERS, COMMUNICATIONS,
MICROELECTRONICS



DYNA MO SPECIFICATIONS

CAPACITY	128-230MB
DATA TRANSFER RATE	2.1 MB/SEC.
AVERAGE SEEK TIME	30 MS
ROTATIONAL SPEED	3,600 RPM
DISK WARRANTY	LIFETIME
WEIGHT	2 LBS.

EDITED BY CAMERON CROTTY

At Work

THE LATEST TOOLS FOR BUSINESS COMPUTING

Apple's New Business Model

AFTER YEARS OF FRUITLESS HAMMERING at the walls of business, Apple announced on April 5 that it was reorganizing—returning to its roots in graphics, publishing, multimedia, and the SOHO and consumer markets. The shake-up has raised questions about which way the winds are blowing for the Macintosh in the corporate or enterprise market.

At first blush, the signs aren't good: the largely ineffective but high-profile Apple Business Systems division is gone, replaced by a division within a division—a marketing arm stripped of its hardware- and software-development resources. But Apple is simply changing tactics. The shift is twofold: internally, Apple has created an organization that has the potential to make more-efficient use of resources; externally, the company is looking to work more closely with strategic allies, particularly companies that can help Apple patch its tattered enterprise reputation.

A New Look . . . Really

In the new structure, Don Strickland (previously in charge of Apple's OS licensing efforts) will be vice president of the Business and Government Markets group within the larger Worldwide Marketing and Customer Solutions division headed by Dan Eilers, senior vice president. Strickland says his group's charter is to "drive product and marketing plans to increase Apple's share in the information systems and government market, the publishing and media market, the technical and scientific market, and the mobile-computing market."

So far, some in the industry are optimistic about the company's new tack. According to Pieter Hartsook, editor of the *Hartsook Letter*, Apple's latest incarnation leverages the company's resources in

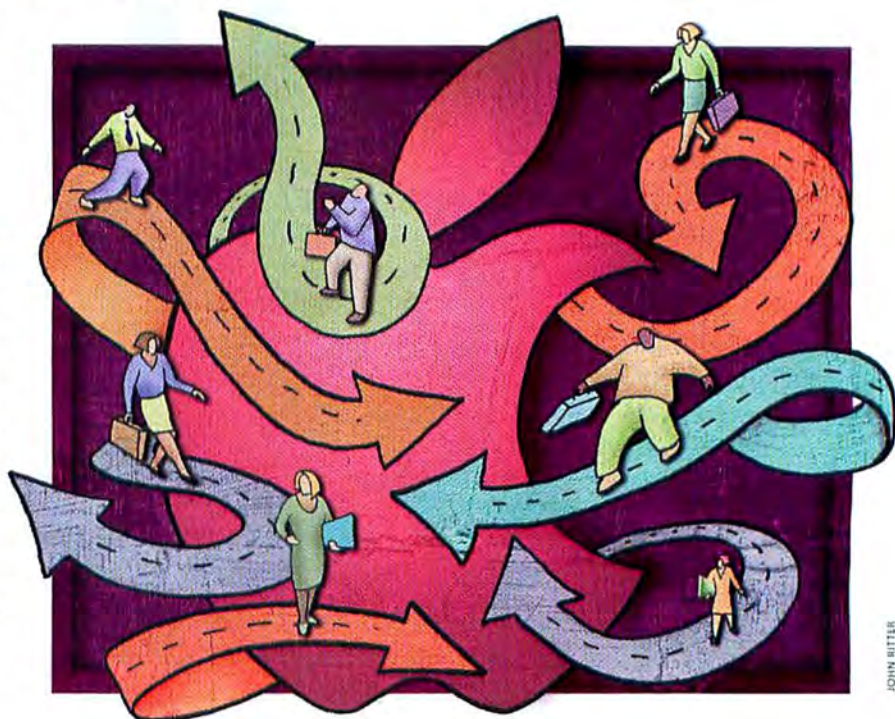
a way that wasn't possible before. "Having products that work in an enterprise market is necessary for [Apple's] overall success, but it's not necessary to have a specific R&D division aimed at that," Hartsook says. He contends that the groups in the Worldwide Marketing division can concentrate on researching and selling solutions rather than on developing hardware and software. In turn, the products that come out of R&D should be less specialized, and they will have a better chance of integrating smoothly with each other.

This type of organization, with distinct marketing and engineering departments, is closer to a standard business model than Apple has been before. The marketers under Strickland may not show any more savvy about the enterprise arena

than those in previous business-oriented divisions at Apple have shown, but at least they'll have fewer distractions.

Help from Their Friends

Strickland says that Apple—long known for keeping outsiders at arm's length—is now "planning to partner with ISVs, VARs, and SIs to bring better-integrated solutions to customers." While the details remain vague, some key industry players confirm that Apple seems serious. Bob King is Macintosh product manager at Attachmate, a leading vendor of host-connectivity software that gives users access to large corporate databases residing on VAXs, AS/400s, and the like. According to King, working strategically with Apple was "impossible" in previous years because the support structure didn't



JOHN BITTLER

exist. But King says that based on recent conversations "at the highest levels," Apple is recognizing the importance of partners that are strong in the enterprise market. "They're saying, 'Let's find someone who's good at this and partner with them.'"

Brinton Baker, senior director of marketing for Oracle's Desktop Product Division, agrees with King's assessment, saying, "Apple is now really willing to work with third parties." When asked about specific ways that Apple and Oracle might work together, Baker pointed to Apple's success in selling Performas with software bundles to the consumer market, and hinted that a similar approach might work at the enterprise level.

Try a Little Tenderness

But what about those who buy the systems—the front-line folks grinding away in the IS trenches? Strickland admits, "We need to do a better job understanding and addressing the needs of the CIO, and more generally of the information-management organizations. We will be expanding current initiatives such as the Apple Corporate Alliance, customer summits, and our ongoing relationship with the MacIS organization."

MacIS (Managing Apple Computers in Information Systems) is an association for organizations that have 100 or more Apple computers, and is considered a leading light in the enterprise market. William Monteith, executive director of

MacIS, confirms that Apple has significantly increased support for his group over the past year, and he expects good things from the reorganization. "Apple has said that they're going to support us and let us be their arm to the enterprise," says Monteith.

Despite these positive signs, some feel that Apple executives are merely paying lip service to the enterprise market. "Strategic retreats are always hidden by delaying actions," says Peter Kastner, an analyst for the Aberdeen Group, the organization that produced a white paper for VITAL, Apple and DEC's all-but-defunct enterprisewide information systems architecture. According to Kastner, "Apple has lost the battle for the enterprise desktop."

Even some key Apple employees agree with this sentiment. One system software product manager recently admitted that the Macintosh probably won't displace Windows as the business standard in the United States. This may sound akin to confirming that the sun will come up in the morning, but it's in sharp contrast to Apple's heretofore stubborn insistence that every middle manager in America would eventually be reading "Welcome to Macintosh" over morning coffee.

Sour notes aside, Apple is swinging away at a market that has eluded it for years. Whether or not the company has figured out how to connect with that market remains to be seen.—C.C.

ClarisWorks 4.0 Streamlines Tasks

IN A LAND OF BLOATED PRODUCTIVITY suites, Claris (408/727-8227) wants ClarisWorks 4.0 to be more like Muhammad Ali: float like a butterfly, sting like a bee. Toward that end, the latest version of the integrated software package features tools for oft-repeated tasks and offers tweaks to the most heavily used word processing and database modules. Claris worked to ensure that new features didn't carry program size or speed penalties.

ReadyArt Libraries, new to version 4.0, store frequently used text and graphics; users can drag and drop clips to and from documents. To further ease cumbersome tasks, ClarisWorks 4.0 comes with three new Assistants that help users create mailing labels, print certificates,

and set up a home-finance spreadsheet.

The word processing module now supports multiple headers and footers and has the ability to divide documents into sections. Express-Styles can be applied to outlines, tables, and graphics as well as to word processed text. Inveterate organizers will appreciate the fact that outlining is now treated as a style, so you can drop an outline anywhere in a document—even right in the middle of a paragraph.

Claris has added value lists to the database module so users can create fields with predefined choices; there are also new field types to take advantage of this, including radio buttons, check boxes, and pop-up menus. Users can now save database searches and sorts as custom reports,



ELLEN PROCHNIK

IN BRIEF

■ OpenMind Open to Web

Version 2.0 of OpenMind, Attachmate's (206/644-4010) client-server groupware package, connects its users to the Internet. Within OpenMind's architecture, clients can browse the Web, download software with FTP, and participate in Usenet newsgroups. OpenMind now also supports HTML documents with hyperlinks to other sections of the OpenMind database. OpenMind clients now retail for \$195 each.

■ Client-Server Jam

JYACC (212/267-7722) has brought its cross-platform, client-server application-development tools to the Macintosh with JYACC Application Manager (JAM). JAM (\$2000) supports DRDA and ODBC; drivers for Oracle, Sybase, and Informix are currently available (with others to follow).

■ Now's Quick PIM Revision

Hard on the heels of its long-awaited 3.0 release of Now Contact and Now Up-to-Date, Now Software (503/274-2800) has released version 3.5 of the tag-team PIM combo (\$149). Topping the list of improvements is the QuickPad, with which users can quickly create Up-to-Date notes and to-dos from any application. Now has also added a free-form comments field to Contact records, enhanced drag-and-drop support in Contact, and increased data compatibility with the Windows versions.

■ ArcView 2.1 Located

on Power Mac ESRI (909/793-2853) has announced that it will be bringing its popular desktop Geographic Information Services software to both the 680X0 and Power Macintoshes. ArcView helps users display, query, and analyze geographically based data, and version 2.1 includes Avenue, an object-oriented scripting language. ArcView for the Macintosh is expected to ship in July for \$995.

and there is an automatic, spreadsheet-like list view so that users can easily see and edit several records at once.

ClarisWorks 4.0 is available now, for a company-estimated price of \$129.—C.C.

DV EXPO

DV EXPO AND CONFERENCE

- For Advertising Agencies, Production Houses or any organization or individual who wants to get involved in Digital Technology and needs to know what all the components are and how to put them all together.
- Plan your strategy based on first-hand information from industry leaders.
- See the hottest digital video tools on the exhibit floor and learn how to use them.
- From hands-on workshops to in-depth discussions of technical issues and industry standards, the conference program will cover the tools, the content and the delivery of digital video by the professionals using it successfully today.

DV
EXPO

sponsored by

DV



TWO GREAT EVENTS IN ONE NEW LOCATION!

NEW EVENT DV Expo and CD-ROM Expo

NEW DATES
Exhibits: November 29-30, 1995
Conferences: November 28-30, 1995

NEW LOCATION
New York Hilton Hotel & Towers
New York, New York

FOR MORE INFORMATION CALL 1-800-945-3313

Send me more information on DV Expo and CD-ROM Expo.

I am interested in: ☐ Attending ☐ Exhibiting

Name _____ Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

Mail to: Mitch Hall Associates, 260 Milton St., Dedham, MA 02026
Or Fax to: 617-361-3389 Phone: 617-361-8000

MACWORLD

CD-ROM EXPO

CD-ROM EXPO AND CONFERENCE

- For Publishers, Marketing Directors, New Product Developers, or anyone seriously pursuing CD-ROM as a distribution medium.
- Find out answers to critical issues such as: What programs are most suitable for CD-ROM distribution? How can you maximize your CD-ROM product's marketability? What are the steps and costs involved in publishing a top-quality CD-ROM?
- Explore the nation's most comprehensive Expo dedicated to CD-ROM technology—save months of research time.
- Learn firsthand from leading industry experts about a wide variety of CD-ROM applications, including training, sales, marketing, advertising, technical support and documentation, archiving and much, much more!

CD-ROM
EXPO

sponsored by

CD-ROM

There's no fork in the road. Macworld gives you the
There's just one clear path
to knowing your Mac. information you need (and more

Take the right road.

Macworld is the direct route to knowing
your Mac. You'll never be lost. You'll never
have to ask directions. And you'll never
need to get a second opinion. Because

of it than the other publications) to make

intelligent decisions and

stay informed. And with

Star Ratings, Editors'

Choice and Macworld

Online, you'll always know

the best way to go. So take the

only road that leads to greatness.

Macworld. It's all you need to know.



Macworld
THE MACINTOSH® AUTHORITY

AGFA COLOR
SCANNERS

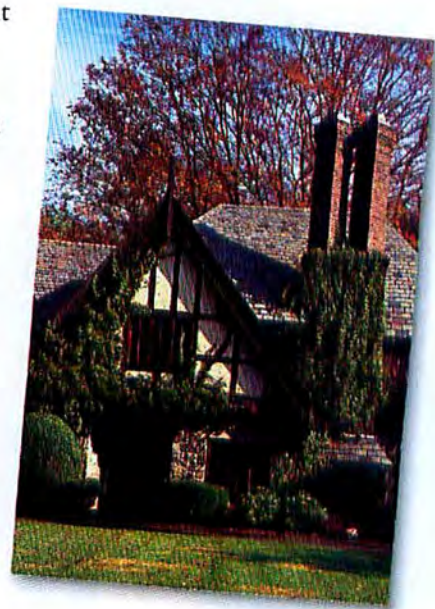


In school, you and your friends
talked about the ideal man.
Tall, muscular. And if he could
fly, so much the better. So when

you put together the reunion invitation on your computer, you know just the picture to use.

To make sure their hearts go pitter-pat, you scan it in with your Agfa scanner. After all,

you want the colors to be perfect. And you don't want
to lose the lovely details. Exactly why you use it to scan
in the photos for sell sheets at your real estate office.
Maybe you're not a superhero. But with such great-
looking sales tools, you can sure move houses.



*The new
StudioScan IIsi.*



Because every scan is important.
Comes complete with Adobe
Photoshop® J.F., OmniPage Direct®
OCR Software and Agfa FotoFlavor™
and color management software on
CD-ROM. For the dealer nearest
you, call 1-800-685-4271 ext. 3043.

AGFA and the Agfa logo are registered
trademarks of Agfa-Gevaert AG. OmniPage Direct
is a registered trademark of Corel Corporation.

Circle 158 on reader service card

AGFA 

The complete picture.™



BY JIM HEID

Working Smart

Dealing with DOS Disks

IF YOUR MAC WAS BUILT AFTER AUGUST 1989, it doesn't have a floppy drive, it has a SuperDrive. This term, straight from Apple's hardworking, intercapitalizing NounFactory, refers to a floppy drive that reads not only standard 3.5-inch Mac disks, but also floppies initialized in a variety of other operating system formats—including the DOS format used in the Windows world.

In this day of SoftWindows and DOS/Windows coprocessor boards, we tend to take for granted the ability to read and write DOS disks. But initially, the only way you could access DOS disks with a SuperDrive was with the unruly Apple File Exchange utility—you couldn't actually access them in the Macintosh Finder. Soon, however, Dayna Communications shipped DOS Mounter Plus (now \$95 from Software Architects, 206/487-0122), and Insignia Solutions developed AccessPC (\$129, 415/335-7100), two utilities that let DOS disks appear on the Mac's desktop. Apple then showed the sincerest form of flattery by developing its PC Exchange utility, included with System 7.5.

These utilities make working with DOS disks almost as easy as working with Mac disks. Better still in this era of huge files, these utilities' talents extend beyond floppy disks to encompass high-capacity removable-media devices. This month, I examine the issues and hassles behind accessing DOS media on the Mac. For details on other ways to move files between platforms, see Cary Lu's *PowerBook Notes* column in this issue.

Floppy Follies

When you insert a floppy on a Mac running AccessPC, DOS Mounter Plus, or PC Exchange, the floppy appears in the Finder as if it were a Mac disk. Files appear with icons (albeit generic ones), and subdirectories—the DOS equivalent of the Mac's folders—appear as folders. You can drag files and folders to and from the disk and also access the disk within a program's Open and Save dialog boxes.

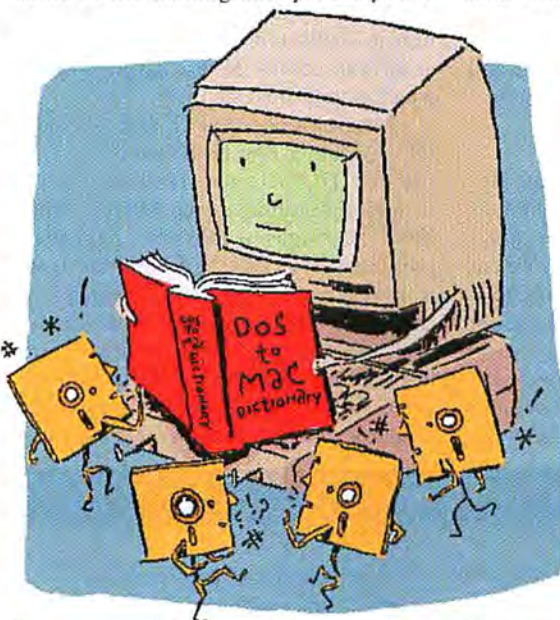
To actually open the files on a DOS disk—or to save Mac files so a DOS machine can read them—you might need to run the file-translation gantlet. Most leading Macintosh programs have Windows equivalents that use identical document formats. For example, Microsoft Word and Excel for the Mac can swap documents with their Windows counterparts, as can WordPerfect, ClarisWorks, FileMaker Pro, Adobe Photoshop, and PageMaker.

This issue's *PowerBook Notes* describes some of the naming annoyances you'll

double-click on the file. In the Macintosh world, this association is performed by an invisible file signature, a code embedded in the file: when you double-click on a document, the Finder checks the signature to determine which program to use to open the document.

DOS documents lack file signatures. To enable the Finder to start a program when you double-click on a DOS file, PC Exchange and similar utilities use a technique called extension mapping, which associates three-character DOS extensions with Mac file signatures. An extension map is a list of extensions and corresponding signatures that essentially tells the Finder, "When someone double-clicks on a file with the extension *WKS*, start up Excel. If the extension is *PM5*, start PageMaker. If it's *TIF*, start Photoshop." And so on.

All DOS media-access utilities let you tweak their extension maps to reflect the programs you use. This is handy if, for instance, you want the Finder to start WordPerfect instead of Word when you double-click on a file that ends in *DOC*. AccessPC comes configured with extension maps for numerous popular programs.



have to contend with when moving Mac files to DOS disks, where file names are limited to eight characters plus a three-character extension (for example, BUDGETS1.DOC). A related wrinkle concerns associating a DOS file with a particular Mac program so you can open the file by simply double-clicking on its icon, instead of having to launch an appropriate program and use its Open command.

In the DOS/Windows world, a file's three-character extension allows Windows to open the right program when you

Format Foibles

Extension mapping is helpful, but it doesn't address the file-swapper's worst-case scenario: having a DOS document whose format can't be read directly by any program on your Mac. To help you leap this hurdle, there are file-translation utilities such as the MacLinkPlus series from DataViz (203/268-0030).

The smoothest road to file transfers involves combining MacLinkPlus/Easy Open Translators (\$109), a library of file-translation modules, with Macintosh Easy *continues*

Open (MEO), an Apple extension that's included with System 7.5. MEO enables the Mac OS to ferret out a program that can read a file you're trying to open. When you double-click on a document created in an application you don't have, MEO displays a list of programs it thinks can open the file. MacLinkPlus/Easy Open Translators plugs into MEO, so when you double-click on a foreign file, MEO works together with the translators to convert the file into a format that can be opened by a program you have.

Insignia's AccessPC utility includes Macintosh Easy Open as well as a version of Mastersoft's Word for Word translators, which can convert between all popular DOS/Windows and Macintosh word processors. (Word for Word provides the largest selection of word processor translators, but no translators for other types of files.)

Most file-translation packages concentrate on text-oriented files: word processor, database, and spreadsheet documents. If you need to move graphics between programs, it's hard to beat DeBabelizer (\$399) and DeBabelizer Lite (\$129) from Equilibrium Technologies (415/332-4343). Both translate all major graphics file formats and even perform complex color-palette manipulation to accommodate differences in the Mac and DOS/Windows graphics architectures.

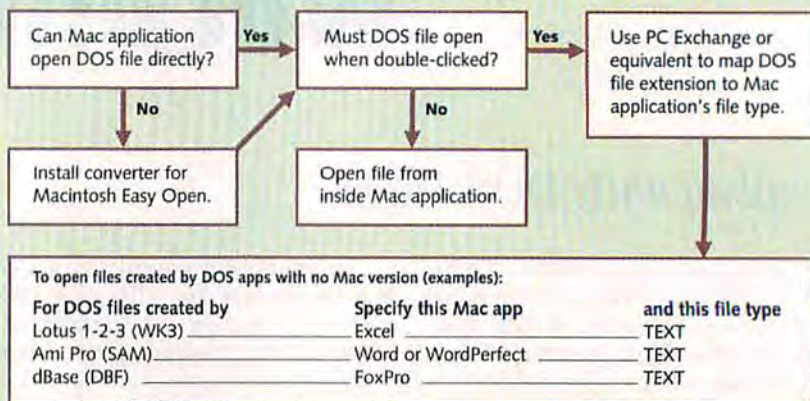
More Media

Everything I've discussed so far also applies to high-capacity media such as Bernoulli and SyQuest cartridges, magneto-optical drives, and to some extent even CD-ROMs. PC Exchange, AccessPC, and DOS Mounter Plus all mount DOS-format cartridges.

To mount DOS cartridges with PC Exchange, you need version 2.0.2 or later. (Version 2.0.3 is the latest at this writ-

Opening DOS and Windows Files on a Mac

The Mac version of a DOS or Windows application can usually convert the application's DOS files automatically or open them without conversion. With no Mac version, you may need to install a translator from DataViz or another vendor, map the DOS file's extension to a Mac file type with PC Exchange or another utility, and configure Macintosh Easy Open to use the correct application.



ing.) There's no need to install any additional software, but you do need to perform a couple of special steps. Open the PC Exchange control panel and click on Options; a list of your Mac's SCSI devices appears. Click on the entry for your cartridge drive and a check mark appears next to it; this tells the Mac to load driver software for the drive when you restart, which is your final step.

Insignia's AccessPC and Dayna's DOS Mounter Plus both include a driver file for DOS-format removable cartridges. Both utilities even let you format DOS cartridges; Apple's PC Exchange requires you to use the formatting software that came with the DOS version of the drive—that is, you must attach the drive to an Intel-based PC. AccessPC also has the unique ability to access the hard drive files created by Insignia's SoftWindows program, a utility that emulates

a Windows machine on the Macintosh.

As for CD-ROMs, Apple's CD-ROM drives include an extension called Foreign File Access that, together with additional files, enables DOS-format CDs to appear on the desktop. You can access files on these CDs using the same translation tools and techniques I've described above. You can also use Windows CDs within SoftWindows, although the current version doesn't support multimedia CDs very well. A better way to run DOS multimedia titles is using Apple's Power Macintosh DOS Compatibility Card, which emulates the SoundBlaster sound-output circuitry most such titles require.

And what of those truly floppy 5.25-inch disks that were the standard back when the SuperDrive debuted? Dayna Communications (801/269-7200) still offers its DaynaFile II series of DOS floppy drives, which connect to the Mac's SCSI port and include DOS Mounter Plus. A single-drive DaynaFile II costs \$525 and is available with one 360K or 1.2MB 5.25-inch drive or with one 1.4MB 3.5-inch drive (the latter might be handy if you have a pre-SuperDrive Mac). A dual-drive DaynaFile II costs \$785 and is available with 360K and 1.2MB drives, with 360K and 1.4MB drives, or with 1.2MB and 1.4MB drives.

With a configuration like that, if you can't find a way to access a DOS floppy, you just aren't trying. **m**

TIPS FOR PC EXCHANGE

- **Leave at least 5K free on a DOS disk.** The Mac needs space to store information about the appearance and position of the file and folder icons on the disk.
- **Don't delete any directories named RESOURCE.FRK.** If you work with a DOS disk on the Mac and then mount the disk on a DOS machine, you might see this directory. It contains information from the Mac-format documents.
- **Standardize on a PC Exchange Preferences file.** This file, located in the System Folder's Preferences folder, stores your extension-mapping settings. It's a good idea to give everyone in the office the same Preferences file.
- **Drag DOS-format cartridges to the Trash to eject them.** The Finder's Eject Disk command isn't available for DOS-format removable-media cartridges.
- **Eject DOS-format cartridges before turning on file sharing.** You can't turn on System 7's file sharing with a removable DOS cartridge mounted.
- **Eject DOS-format cartridges before restarting or shutting down.** Otherwise, you're likely to see a sad-Mac icon when you restart.

Next month: Environmentally friendly computing

Contributing editor JIM HEID is the author/producer of the BMUG Choice-award-winning *Macworld Complete Mac Handbook Plus Interactive CD*, third edition (IDG Books Worldwide, 1994).



Helpful advice.

STOCKS			
Current Market Snapshot			
Index	High	Low	
Dow Jones	3577.23	3597.2	
S&P 500 Index	447.07	441.3	
NASDAQ Composite	731.28	719.0	
London Gold Fix			
Country	U.S. \$ Equiv		
Van	0.0095		
Deutsche Mark	0.507		

Stock updates.



Hourly weather updates.



Consumer Reports online.



A friendly interface.

WHY JOHN NAGY'S MAC LOVES COMPUSERVE.

From: John Nagy
To: Bruce Car
Subject: Changes

John:
How are you doing
now I'm afraid to
think about this

E-mail.



Shopping.



Gardening Forum.



Airline reservations.

Mac Community Clubs
Mac Developers/Programmers
Mac Entertainment Forum
Mac Hardware Forum
Mac Multimedia Forum
Mac New Users/Help Forum
Mac Scripting/HyperCard
Mac System Forum
Newton/PIE Forum
Newton Developers Forum

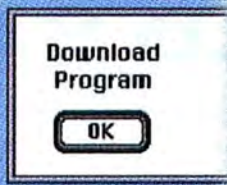
Over 20 Mac forums.



Virus updates.



*Science Fiction and
Fantasy Forum.*



Downloadable programs.



*Desktop publishing
assistance.*

It's because CompuServe makes John's life so exciting. John talks with friends all over the world. He meets far more, and far more interesting, people. He shops, 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. And, as we all know, a busy Mac is a happy Mac.

Free Membership Kit*

Join CompuServe now. Just call 1 800 881-8961 and you'll receive:

- 1) A free membership kit. CompuServe Information Manager software for Macintosh, DOS, Windows, or OS/2.
- 2) One free month of over 120 popular services, a \$9.95 value.
- 3) A \$25.00 usage credit to explore other extended services.
- 4) Three free hours of Internet access - every month!

*New members only, please. All names listed are proprietary trademarks of their respective corporations. Become a CompuServe member via the Internet at <http://compuserve.com>



The information service you won't outgrow.

Circle 66 on reader service card



REGULAR



EXTRA BOLD



ITALIC



SCRIPT



EXTENDED



CONDENSED

SEE ALL TYPES AT SEYBOLD SAN FRANCISCO.

Any way you look at it, Seybold San Francisco will show you all types of ways to help you succeed. Like the top graphics and publishing technologies, software, online publishing innovations, multimedia tools, color output

devices, prepress products and more. Along with all types of leading industry suppliers that will demonstrate first-hand how these solutions can improve the way you do business. We'll even have all types of show floor activities and events so you can see how products are being applied in a variety of industries. And if you really yearn to learn, our educational program offers all types of courses, seminars and conference sessions to update you on the latest tools and technologies.

So, with all the amazing ideas to be found at Seybold, doesn't it sound like just the type of event for you?

EXPOSITION
SEPT. 27-29

CONFERENCE
SEPT. 26-28

SAN FRANCISCO
CALIFORNIA

MOSCONE
CENTER



SEYBOLD
SAN FRANCISCO

FREE VIP EXPO PASS!

SAVE \$50!

Name _____

SW220

Company _____

Address _____

City, State, Zip _____

Phone/Fax _____

Mail: SSF 95, P.O. Box 5856, San Mateo, CA 94402-0856 • Fax: 415-525-0199

For conference information via the web, access <http://www.sbexpos.com>

QUESTIONS? CALL 800-488-2883

FOR GREAT DEALS ON TRAVEL, CALL 800-421-3976

Presented by Seybold Seminars. ©1995 SCFIBANK, Exposition and Conference Company. No one under 16 admitted.



BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

IF YOU EVER NEED TO REPLACE YOUR ADB keyboard cable but can't find one at the local computer shop, William H. Waits III, of Norcross, Georgia, suggests you head to a store that sells video gear and instead buy an S-Video cable of the desired length. You can get a cable that's longer than the original, but Apple recommends that ADB cables be no longer than 5 meters. If your monitor cable needs an extension, Waits says you can use an IBM PC Joystick Extender cable, which you should be able to pick up at a computer store for about \$5. The cable works with a regular display but not with Apple's AudioVision monitor, which uses a completely different type of connector.

Start-up Trouble

Q. It takes two attempts to start up my SE/30 ever since I made the mistake of upgrading it with the System 7.1.2 disks that came with my Power Mac 6100. The first start-up attempt results in a sad-Mac icon, a black screen with a beep, a flickering Welcome to Macintosh box, or some other indication of trouble. The second attempt works normally. Installing System 7.5 did not cure the problem.

*Stuart C. Keen, Jr.
Nairobi, Kenya*

A. Try restarting the SE/30 with a Disk Tools disk (the one that came with the computer or with System 7.5) or another start-up floppy disk. If that works properly, the computer probably has a garbled System Folder, and the surest fix is a clean installation of the system software. With System 7.5, you accomplish this by running the Installer and pressing \mathbb{A} -shift-K when the main installation window appears. With older system software, drag the System file from the System Folder to any other folder, rename the System Folder, restart from a floppy,

and install. For good measure, update your hard disk driver software with Apple HD SC Setup version 7.3.2 on System 7.5's Disk Tools disk. (If you have a non-Apple hard drive, use the drive maker's latest software instead.)

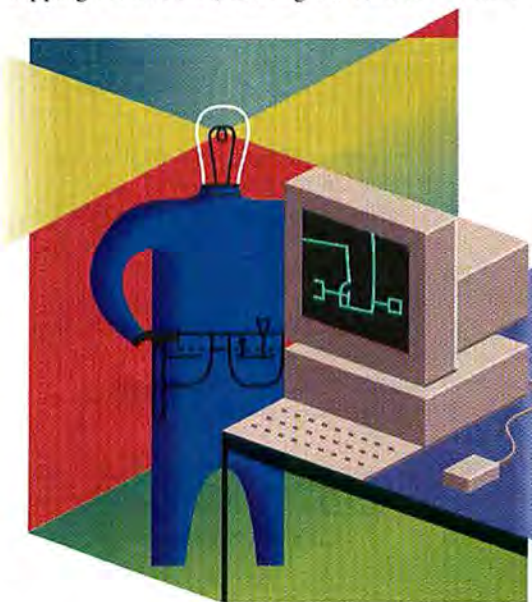
If the computer won't start up after a clean install but will from a floppy, you have a hardware problem. Turn off all power, disconnect external SCSI devices, and restart. If the problem persists, try zapping the PRAM (resetting the control

ence start-up trouble later. Start with the items least likely to cause start-up problems—fonts, preference files and folders, Apple-menu items, and start-up items—in one batch. Restart to make sure the added items don't cause problems. Then move your extensions and control panels, being careful not to replace clean ones with items from the old System Folder, and don't add old items to the clean System Folder unless you're sure you need them. Try doing without; you can always add them later. If start-up trouble develops after you move old items to the clean System Folder, some of those items must be conflicting with others. Find them by trial and error, or save time by using Conflict Catcher II or Now Utilities.

Choosing a Style

Q. Is there any difference between using the bold command in a word processor and directly applying the bold version of a font? Which piece of software determines what the corresponding bold will be for a regular font?

*Frederick Charette
Montreal, Quebec, Canada*



panel settings in the battery-powered memory) by holding down \mathbb{A} -P-R while starting up; release the keys after you hear the normal start-up sound repeat. If that doesn't work, head for the repair shop.

After confirming that the computer starts up properly, move your personal items from the old System Folder to the newly created clean one. Before moving the items, you may want to assign them a label from the Label menu so they'll be easy to locate and remove if you experi-

A. Most companies that make fonts link the bold, italic (or oblique), bold italic (or bold oblique), and plain styles of a particular font in a family, so that choosing the plain font from an application's Font menu and a style from the Style menu has the same effect as choosing the equivalent styled font from the Font menu. Either way, the styled font is used for display and printing if it's

continues

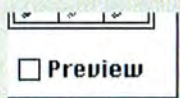
HIGHLIGHT AND SHADOW DOTS

Before sending gray-scale images to a commercial printer for halftoning, you should adjust the amount of black in the brightest highlight dots and in the darkest shadow dots according to the commercial printer's guidelines. For example, a printer might recommend 2 to 3 percent black in the highlights and 90 percent in the shadows for printing with a particular press on newsprint. If you don't adjust the image, the shadows or highlights may lose detail or contrast in the printed halftone. Here's a quick-and-dirty method that Mike Rhodes, of Chandler, Arizona, has used with Photoshop versions 2.0, 2.5.1 (but not 2.5), and 3.0 to adjust as many as 30 images in half an hour.



Original Image

1. Open the image and show the Info and Picker palettes. In the Info palette, make sure one of the color readouts is set to Grayscale or Actual Color. Open the Levels dialog box and make sure the Preview option is off.



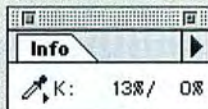
2. To identify the lightest areas of the image quickly, hold down the option key while clicking and holding the rightmost Input Level slider. The image goes black, but white areas (highlights) begin to appear if you option-drag the slider to the left. Look for a printable highlight area in the image—one that contains some detail—not a pure white specular high-



light. For example, in this image we picked the spot of white fur on the dog's neck as a printable highlight and considered the glare on the wall behind the

woman's elbow to be a specular highlight. Mentally note the position of the printable highlight area, and release the mouse button and the option key.

3. Place the eyedropper over the printable highlight you identified in step 2 and move the eyedropper a bit while watching the K (that is, black) values in the Info palette's gray-scale readout. Click a spot whose right-hand K value is 0 percent.



4. In the Levels dialog box, drag the rightmost Input Level slider back to the right side while watching the K value displayed in the Picker palette.



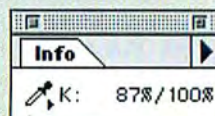
Stop dragging and release the mouse button when the K value reaches the percentage your printer specifies for highlights.

5. Identify the shadows by option-dragging the leftmost Input Level slider to the right in the Levels dialog box. Initially the image goes white, but black areas appear as you drag, revealing the shadows. Mentally note where a shadow is (in this

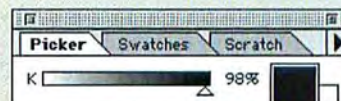


image, we picked a spot under the woman's chin) and release the option key and mouse button.

6. While watching the K values in the Info palette's gray-scale readout, move the eyedropper around inside the shadow area that you picked in step 5. Click a spot whose right-hand K value is 100 percent.



7. In the Levels dialog box, drag the leftmost Input Level slider back to the left while watching the K value in the Picker palette. Stop dragging and release the mouse button when the K value reaches the percentage your printer specifies for shadows. If you move



the slider all the way to the left and the K value is still too high, you can lower it further by dragging the leftmost Output Level slider to the right.

8. Click OK in the Levels dialog box to accept the adjustments.



Final Image

No Smoke, No Mirrors, Just...



Introducing XANTÉ's **NEW** LaserPress 1800

No hocus-pocus. Nothing up our sleeves. At XANTÉ® we're creating technology so advanced—it's truly magical. XANTÉ's NEW LaserPress 1800 produces camera-ready output so vivid and sharp, *you won't believe your eyes*. Text is rendered in exceptional detail, graphics look sharp, and halftones appear photo-realistic. You'll be spellbound by the quality of 1800 x 1800 dpi printing. No smoke, no mirrors, just:

- ★ **Adobe® PostScript™ Level 2** Guarantees quality, performance, and software compatibility
- ★ **High Resolution** 1800 x 1800 dpi provides imagesetter-quality printing on plain paper
- ★ **Higher Line Screens** Print halftones at 133 lpi and higher
- ★ **Oversized Format** Print full-bleed 11" x 17" documents with room for crop marks and registration marks
- ★ **Halftone Calibration Technology** Brings out a greater range of

midtones at high line screens and extra detail for more brilliant halftone images

- ★ **High Speed Controller** Get extraordinary performance from the 33 MHz AMD 29030 RISC processor

Also, XANTÉ reduces the price of its LaserPress 1200...

That's right, for **\$5,995** you can get 1200 x 1200 dpi now and upgrade to 1800 x 1800 dpi later. What a deal!

Now, clear the smoke and begin to experience true reflections of quality with XANTÉ's LaserPress 1800. Call now and *experience the magic of great technology.*

1-800-926-8839 (ext. 2119) Dealers call ext. 2120 Fax 334-476-9421



Colors and services provided by XANTÉ
in partnership with Olivetti America
olivetti

XANTÉ
Innovations In Output

* Additional memory is required to print 11" x 17" pages @ 1800 x 1800 dpi
MASTERCARD/VISA/AMERICAN EXPRESS


Adobe PostScript

©1995 XANTÉ Corporation. XANTÉ is a registered trademark of XANTÉ Corporation. Adobe, PostScript and the PostScript logo are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTÉ Corporation: 2559 Emogene St., Mobile, AL 36606, Post Office Box 16526, Mobile, AL 36616-0526 USA, Tel.: 334-476-8139.

Circle 112 on reader service card

HEADS, IT'S REAL. TAILS, IT'S FAKE.

It's your choice. A little more than 50 percent of all business software in use today is pirated. If you buy it, you could end up with virus-ridden, phony software that has no documentation or product support.

Selling or copying pirated software without authorization is against the law, with severe criminal and civil penalties including imprisonment of up to five years, fines of up to \$250,000, or both. If you suspect the sale or use of pirated software, call the BSA Anti-Piracy hotline:

(800) 688-BSA1 (2721)



© 1993 Business Software Alliance. All rights reserved.

AT WORK: QUICK TIPS

available. If no bitmap (fixed-size) or TrueType font is available for a chosen style, the system software's Font Manager derives the style from the plain bitmap or TrueType font. If no styled PostScript font is available, a PostScript printer simply prints the plain style.

Applying a style has two advantages over choosing a styled font. For one, text styled with the Style menu will display correctly even if someone views it on a Mac that lacks the styled screen font. (Text that has been set to a styled font that's unavailable displays in the application's default font—usually Geneva.) The other advantage is that you can change the font of a large block of text without affecting scattered instances of styled text.

Additional styles beyond the basic four, such as light, extra bold, and black, can't be linked to a font family through the Styles menu. The Mac OS considers those styled fonts to be separate font families and doesn't recognize their relationship to the larger family.

Overprinting Black Type

TIP In my experience printing many PageMaker 5.0 jobs, black text doesn't always overprint a colored screen background as it's supposed to do by default. To make sure that black text always overprints, use the Define Colors command to create a new black color whose Overprint option is turned on (see "A Black That Overprints"). Then select the text and rules inside screened areas and set them to the new overprinting black.

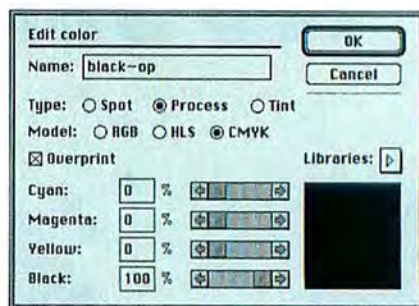
Gisele Poirier

Kanata, Ontario, Canada

Netscape Bookmarks

TIP Rearranging the Bookmarks menu in Netscape 1.0N and 1.1B is extremely cumbersome. Moving a bookmark from the bottom of a long menu (where the Add Bookmark command puts new bookmarks by default) to the top of the menu (where you might want it for quicker access) can take a long time, because you can only move menu items one position at a time, and Netscape rebuilds the Bookmarks menu after each move.

You can make a long Bookmarks menu easier to manage and use by organizing it topically with submenus. Begin by choosing View Bookmarks from the Bookmarks menu to open the Bookmark List window. Create a new header at the bottom of the Bookmark List by selecting the last item on the list and clicking the New Header button. Begin moving the header up the list by clicking the large up arrow below the list. When the header passes an item that belongs under that header, select that item and click the up



A Black That Overprints In PageMaker 5.0, you can make sure black text overprints a colored screen background by defining a new black color, as shown in this Edit Color dialog box.

arrow to make that item subordinate to the header. If you reselect the header and move it some more, its subordinate items go with it. Moving a header with its subordinate items is much more efficient than moving each item individually.

In the future you can save yourself the work of rearranging the Bookmarks menu by adding new bookmarks exactly where you want them. Instead of choosing Add Bookmark from the Bookmarks menu, open the Bookmarks List window, highlight the item in the list after which you want the new bookmark to appear, and click the Add Bookmark button. Taking the trouble to put a new bookmark in the right spot from the start saves you a lot of tedious menu-rearranging later.

Dominik Hoffmann
via the Internet

Preferences Shortcut

TIP Ever need quick access to your ClarisWorks 3.0 preferences? Just option-click the page indicator at the bottom of the document window. (If you don't see the page indicator, choose Page View from the Views menu.) This shortcut displays the Preferences dialog box with the relevant section (such as text or spreadsheet) already scrolled into view. I find this useful for turning fractional character widths on and off.

Bob Clingan
via America Online

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 System 7.5 Bible*, third edition (IDG Books Worldwide, 1994).

The most POWERFUL tools for CREATION

VISION^{3d}

CREATE A WORLD
of your own with
Vision 3d, by Strata.
Open your mind to the
endless possibilities
placed in your hands to
produce stunning
3-D

images
for your
brochures,
package designs,
logos and illustrations.
Shape your destiny with
Vision's familiar desktop
tools which give you the
ability to model 3-D
images from within the
program or from
imported Illustrator,
Photoshop, and
Freehand files. Within
minutes you can give life
to objects and shapes,
then quickly apply

sophisticated textures and dramatic lighting
for amazing 3-D effects. **A**nimate your design
through Vision's ability to utilize video and
digital media. **E**very Macintosh designer
should possess the tools of creation;
Vision 3d gives you the power!

STRATA

1-800-STRATA3D

For Academic Pricing, call:
1-800-531-3227

Circle 114 on reader service card

3-D Illustration by George Chang



KEY FEATURES

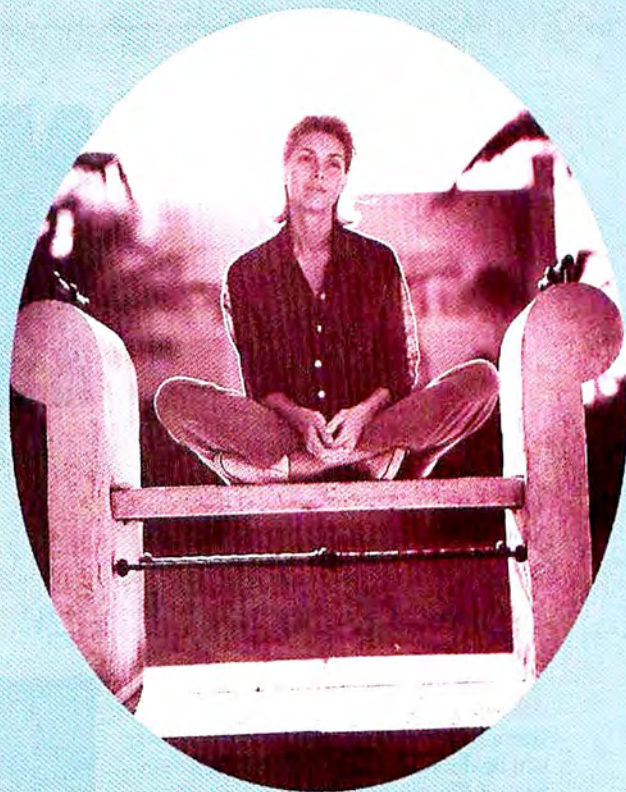
- Bézier Spline Modeling
- Polygonal-based Modeling
- Advanced Boolean Modeling
- 2-D and 3-D Sculptors
- Volumetric Mapping
- A Complete Shapes Library
- Raytracing
- Photorealistic Rendering
- PostScript-style Renderer
- Anti-aliasing
- Alpha Channel Functionality
- Event-based Animation Capabilities for use in Video and Digital Media



Vision 3d is a trademark of Strata, Inc. All other trademarks are the property of their respective holders.

in
here
mistakes
a r e
forgiven

Y You are on
 O Your Power Mac.[™]
 H You are in
 A Microsoft® Word 6.0.1.
 V Your mind
 E Is racing.
 A Your fingers
 J Are racing
 O To keep up
 B With your thoughts.
 T
 O
 D
 O



Y You begin
 O A new sentence
 U With
 W A lowercase letter.
 R This mistake is corrected
 I Automatically.
 T
 E

Y Knowing there are
 O 100 levels
 U Of Undo.
 R And 100 levels
 E Of Redo.
 V Just in case.
 I
 S
 E

Y You begin a new
 O Sentence with
 U An abbreviation
 W You created.
 R It becomes
 I An entire phrase.
 T Automatically.
 E

Y In
 O Print preview
 U You change
 R Margins
 E Typefaces
 V And words.
 I
 S
 E

Y Until you have finished.
 O You click AutoFormat.
 U And the block of words
 W Can become
 R A letter.
 I A proposal.
 T A story.
 E Automatically.
 E You write. Because you can.



Microsoft

WHERE DO YOU WANT TO GO TODAY?™

Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

Network Tools Change Hands

DISCOVERING THAT YOUR FAVORITE network-management software is being sold and supported by a new vendor can be disconcerting. Sometimes, however, a different owner brings a fresh perspective to the product, which translates into adding and enhancing features. That's what appears to be happening with several network-management products that changed hands recently, including GraceLAN Network Manager, which Saber Software acquired late last year; GraceLAN Server Manager, which returned to its original developer, Santorini Consulting and Design; and netOctopus, which Datawatch now sells in the United States.

- Saber Software (214/361-8086) is upgrading Saber LAN Workstation for Macintosh, which combined several GraceLAN applications—GraceLAN Network Manager, an SNMP add-on module, and Update Manager—that it purchased from TechWorks, a company that sells mostly hardware. The acquisition and the hiring of GraceLAN technical staff allowed Saber, which already marketed PC-based network-management software, to expand into the Mac market. Saber provides tech support to existing GraceLAN customers.

The version 2.0 upgrade, which should be shipping by the time you read this, features a completely redesigned version of Update Manager, a software-distribution application. A new scripting tool lets an administrator set up user access to applications and other network resources through a desktop folder; the folder and accompanying access privileges can change based on variables such as user ID, or hardware or software configuration. Saber LAN Workstation for Macintosh costs \$199, plus \$49 per workstation.

- Santorini (415/563-6398) has taken over the development and sale of Grace-



LAN Server Manager 3.0 from TechWorks. Santorini, the original developer, says it will continue upgrading and adding new features to the product, which it has renamed Santorini Server Manager. (However, existing customers should contact TechWorks for technical support.)

Server Manager lets network managers monitor and control multiple AppleShare servers simultaneously from their desks. A single-server license costs \$395; five-server (\$695) and ten-server (\$995) licenses are also available. Server Manager comes bundled with Apple Workgroup Servers 6150/66, 8150/110, and 9150/120. Santorini has also enhanced its Server Tools, a suite of server-management utilities (one-server license \$295; five-server \$695).

- Datawatch (508/988-9700), which sells Virex antivirus software, recently

obtained U.S. marketing rights to netOctopus, a network- and system-administration package developed by Germany-based Pole Position Software. Like Saber LAN Workstation, netOctopus can be used to distribute software electronically. Datawatch is supporting existing netOctopus customers, and the company promises a major revision of netOctopus later this year. An interim release, due in July, will allow remote users to run database updates, virus scans, software inventories, and similar functions automatically when they log on. netOctopus costs between \$30 and \$47 per workstation.

Tip: If you discover that software you own is being sold by a new company, contact that company so it can send you product updates and information. You can also clarify which company is supporting the product.—MARTHA STRIZICH

NSI 1.5 User Bruiser

APPLÉ RECENTLY SHIPPED ITS Network Software Installer (NSI) 1.5, which unlike previous versions doesn't support third-party Ethernet cards. NSI 1.5 works only with cards that have Ethernet media access control (MAC) addresses identifying Apple Computer as the card maker. MAC addresses are unique for each manufacturer and are burned into the LAN cards' ROMs.

Apple says already-installed third-party Ethernet cards will continue to operate using the installed driver. Now installing third-party cards that use Apple's drivers requires a user to either reinstall the driver portion of an earlier NSI release or install a third party's driver. For example, Asanté and Farallon Comput-

ing ship their own drivers with their Ethernet cards.

To determine if the NSI 1.5 driver is causing a problem, open the Network control panel. If the EtherTalk icon is highlighted, then a usable Ethernet driver is installed; if clicking on the EtherTalk icon yields an error message, you must install a driver, using either the Easy Install procedure from an earlier version of NSI (preferably NSI 1.46) or a third-party driver-installation disk.

Spokespeople for Asanté and Farallon, two of the largest third-party Macintosh Ethernet card makers, expressed frustration at Apple's policy change. "With Windows 95 coming out touting third-party product plug-and-play, and Mac users already accustomed to third-party compatibility, this seems like an odd thing for Apple to do," says Georganne Benesch, Farallon's director of network product marketing.—MEL BECKMAN

E-Mail Options Add Up

WHILE LOTUS, MICROSOFT, AND CE Software continue to dominate the Mac E-mail market, Qualcomm, SoftArc, and Banyan offer alternatives with added features and expanded platform support.

- Qualcomm (619/587-1121) has renamed, repriced, and retooled Eudora,

the most popular Internet-based E-mail client. The freeware version is now called Eudora Light. The commercial version, dubbed Eudora Pro, includes TCP/IP access software for Macintosh and Windows, as well as a built-in spelling checker, at \$89 for a single-user license. (Volume pricing ranges from \$357.50 for 5 users to \$11,250 for 250.) Eudora Pro has Power Mac and 680X0 editions. Eudora is popular with Internet users because it supports Internet standards like MIME for multimedia E-mail. Eudora Pro owners can get the spelling checker free via anonymous FTP to [ftp.qualcomm.com](ftp://ftp.qualcomm.com).

- SoftArc (905/415-7000) is positioning FirstClass—often thought of as BBS software—as a corporate groupware and E-mail system, and it's making inroads into this application area. SoftArc plans to ship a Windows server to

Internet via ARA

WHILE INTERNET SERVICE PROVIDERS struggle to guide new users through messy SLIP and PPP connection setups, Open Door Networks (503/488-4127) in Ashland, Oregon, is using Apple Remote Access (ARA) to make getting Internet access easier.

Members' Macs become nodes on Open Door's AppleShare network by calling in with an ARA 2.0 client. Once signed on, users can browse local servers or run Internet applications on their Macs. MacTCP is required. (It ships with System 7.5, or Open Door sells it for \$10.) If you agree to spend \$20 a month in connect-time charges (at 10¢ per minute), Open Door will maintain an E-mail account and a Web page for you.

So far, Open Door has only a local Oregon number, so long-distance callers must pay toll charges. But the company is actively licensing the technology, so stay tuned for an ARA Internet node near you. To sign up, dial 503/482-3181 with ARA client software, and connect as a guest.

—CAMERON CROTTY



IN BRIEF

- **Security Truce** The battle between Secure HTTP (sHTTP) and Secure Socket Layers (SSL) appears to be over. Netscape, AOL, Prodigy, EIT, IBM, RSA, and CompuServe have all agreed to let Terisa Systems (415/617-1836; E-mail info@Terisa.com) integrate the two security standards. Terisa's SecureWeb Client and Server development tool kits will help developers build transaction-security functions into their applications that work with both standards. (SSL support will be available in the third quarter of 1995.)

- **ISDN Route** A switching router from Symplex (313/995-1555) connects remote Ethernet networks by building and tearing down ISDN connections as needed. The DirectRoute Remote RO-1 (\$1399), which supports AppleTalk, TCP/IP, and IPX, uses spoofing to filter out protocol traffic that it can handle locally, thus reducing WAN traffic. The RO-1 has one Basic Rate ISDN 128-Kbps line. It can dial up to 12 sites; 2 sites can be connected at the same time. Each site needs a DirectRoute; in addition to the Remote RO-1, Symplex sells routers (\$2999 to \$7999) for 8, 64, or 160 sites.

complement its existing Mac server in late June. FirstClass gives users of Macs, Windows, and OS/2 access to E-mail and group conferencing. Gateways are available to connect FirstClass to the Internet via UUCP. FirstClass pricing starts at about \$80 per user (plus server costs).

- BeyondMail, an E-mail and workflow package from Banyan Systems (508/898-1000), now has client software for Mac and Unix users. Macintosh users still have to connect to a PC server that's running VINES (Banyan's network operating system), but they get the full suite of BeyondMail features, including BeyondRules, a scripting language that lets users create automated document-management and workflow systems; and MailMinders, which are rule-based message-handling agents. BeyondMail uses VINES's Pricing for directory services; Banyan plans to add support for NetWare MHS soon. Pricing for BeyondMail for Macintosh starts at about \$100 per user (plus server costs).—JOEL SNYDER

Only one company could take all there is to know about global technology markets and put it in this convenient kit.

The IDG Global Marketing Kit provides technology market profiles of countries in four regions (North America, Europe, Asia/Pacific, and Latin America). This detailed information is available both in bound collections and on a searchable



CD-ROM (which also contains abstracts of IDC worldwide research, as well as in-depth profiles of IDC publications read all over the world). Also included is an informational video featuring interviews with key industry leaders.

Historically, targeting the right customers throughout the world has required an uncanny combination of experience, timing, money, and luck.

We at IDG, however, believe there is a better way.

One you can use to your advantage right now.

You see, when it comes to experience in the global technology market, no other company compares with IDG. Today, we have more than 200 publications in more than 60 countries—plus research facilities

and capabilities that are the envy of the industry.

And now, we've taken that breadth of experience and knowledge and packaged it into a comprehensive global technology marketing kit designed to do one thing: make your global marketing efforts easier and more effective.

The kit is only \$495 and is available for immediate delivery.

Call 1-800-IDG-IS IT and order yours today. IDG. It's in a world of its own.

IDG
INTERNATIONAL DATA GROUP



BY CARY LU

PowerBook Notes

In a DOS and Windows World

SINCE POWERBOOK USERS TEND TO BE mobile and often need to connect temporarily to other kinds of systems, they are more likely than desktop Macintosh users to be confronted with a DOS/Windows environment. So what's the minimum equipment you need for exchanging information with a DOS/Windows PC? The obvious answer is a floppy drive, but suppose one or both computers lack one? You may have a Duo or a PowerBook 100, or the PC may be a subnotebook without a floppy drive, or even be an older model with 5.25-inch floppy drives.

Direct Modem Connection

If both computers have a modem, you can just connect the two modems. All you need is a simple RJ-11 phone cord—the kind that connects a modem to a wall jack—and a communications program on each computer. On the PC, the Terminal program that comes with Windows 3.1 (in the Accessories program group) or HyperTerminal in Windows 95 will do. On the PowerBook, you need a communications program that supports at least the Xmodem protocol. In addition to the many commercial programs available, there are several free programs, such as Term 2.0 and FreeTerm, as well as the \$30 shareware ZTerm by David Alverson.

Start both communications programs. On either computer, type **ATA** for (answer), and then immediately type **ADA** for (dial) on the other computer. After handshaking, the modems will connect. You may have to fuss with the settings; 9600 bps or slower ones work more reliably. Turn the modems off and on or restart the computers if necessary.

Once the computers are connected, you can easily exchange text files using both communications programs' send and receive text commands. To send files from either computer, you must set the same binary file-transfer protocol on both. The Windows 3.1 Terminal program supports both Xmodem and Kermit, but neither automatically creates file

names on the receiving side. The Windows 95 HyperTerminal program adds several more protocols, including Zmodem, which can create file names automatically if it's on both computers. However, unless the PC runs Windows 95, you should use only short (8-character) file names. Before moving a file from a Mac to a PC, turn off MacBinary format-



ting on the Mac. To do this in ZTerm, for example, go to the File menu and select Transfer Convert and Binary Data. If you're sending files from a PC to a Mac, you can ignore the MacBinary settings.

Null Modem Connection

Although a direct modem connection eliminates the need for phone lines and a null modem cable (which connects two computers via serial ports without using modems), a null modem cable connection is easier to establish. The \$199 MacLinkPlus/PC Connect from DataViz (203/268-0030) includes a null modem cable, connection software for the Mac and PC, and MacLinkPlus/Easy Open Translators (see *Working Smart* in this issue for details on Mac/PC file-format conversion). DataViz also sells just

a Mac-to-PC null modem cable for \$20.

If the two computers are in different locations, you can call one from the other using a conventional modem connection and any communications program, subject to the same file-transfer conditions already described. MacLinkPlus/PC Connect supports dial-up—but not direct modem—connections.

The E-Mail Connection

Another way to transfer data between your PowerBook and a PC is via an online service. Simply attach the file to electronic mail. Both the Mac and PC must have software for the online service and a valid account. If you don't have a separate account for each computer, you can send files to yourself. Note, however, that many systems will not let two computers with the same account connect simultaneously. File transfers by E-mail typically support only the data fork (data portion) of Mac files, which is all you usually need to send to a PC.

Networks can also transfer data; see *PowerBook Notes*, August 1993 and November 1994, for more information.

The Disk Exchange

If both the PowerBook and the PC have 3.5-inch floppy drives, the simplest way to exchange information is on disk.

System 7.5 includes the necessary software (PC Exchange) to do the floppy disk format conversion on the Mac. With the right software, a PC can read a Mac disk (high-density 1.4MB format only); the most comprehensive such program is the \$149 TransferPro for Windows from Digital Instrumentation Technology (505/662-1459, 800/467-1459).

Since many nonstandard computing devices—such as dedicated word processors and instrumentation equipment—use the 3.5-inch DOS floppy format, you can exchange files with them as well. PC Exchange also reads and writes 3.5-inch floppies in the Apple II ProDOS format.

continues

MAY THE SOURCE BE WITH YOU

Don't let the dark forces of ignorance defeat you. Right in this galaxy, you can tap into the source -- the free Consumer Information Catalog. It lists free and low-cost government publications on cosmic topics such as federal benefits, jobs, health, housing,



educating your children, cars, and much, much more. So dispel the darkness and send for the source. Write today to Pueblo, Colorado for the free Consumer Information Catalog. Just send your name and address to:

Consumer Information Center
Department Source
Pueblo, Colorado 81009

Files too large to fit on a floppy can be compressed. Three popular compression formats work on both PCs and Macs.

- LHA for DOS (by Haruyasu Yoshizaki) and MacLHA (by Kazuaki Ishizaki) are freeware available from online services and user groups. Each program can compress and expand files created by the other program.

- StuffIt Lite (\$30 shareware) or StuffIt Deluxe (\$129.95, Aladdin Systems, 408/761-6200) can compress and expand StuffIt files on the Mac. DOS freeware UNSTUFF.EXE can expand StuffIt files on a PC, but no program can create a compressed StuffIt file on a PC.

- ZIP: The ZIP format is an open standard supported by products from several companies and individuals. On the Mac, the \$15 shareware ZipIt by Tommy Brown is the best choice. PKWare (414/354-8699), the originator of the ZIP format, sells PKZIP for DOS and OS/2 (\$47 each). For Windows, try the \$29 shareware WinZip from Nico Mak Computer. Ascent Solutions (513/885-2031) licenses PKZIP software from PKWare and sells PKZip Mac (\$54.95), PKZip AS/400 (for IBM minicomputers), PKZip MVS (for IBM mainframes), and several Unix variants. All these programs can compress and expand ZIP files. The freeware UnZip by A. P. Maika can expand ZIP files (but can't create them) on the Mac.

One practical solution is to mix the compression formats; use StuffIt on a Mac for files to be moved to a PC, and ZIP on a PC for files to be moved to a Mac.

Large files that won't fit on one floppy must be compressed in ZIP format; only ZIP files can be segmented—split across multiple floppies—and rejoined on both the Mac (with ZipIt) and the PC. Ascent Solutions says the next version of PKZip Mac will be able to segment and join ZIP files. You cannot currently join a segmented StuffIt file on a PC.

The DOS compression programs are quite difficult to use, even for those familiar with DOS. Everything is done through a cryptic command-line switch.

Infrared Data Transfer

The Power Mac PowerBooks that are due later this summer will have an infrared transceiver that could make some of the current data-transfer methods seem old-fashioned. Several laptops and printers already have an industry-standard IrDA (Infrared Data Association) interface. Infrared-equipped computing devices constantly check for the presence of a device sending data. Two devices initially connect at 9600 bps and then negotiate a higher speed if possible; the IrDA specification calls for speeds up to 115 Kbps

at a distance of 3 feet with a low-power 40-milliwatt (mw) transceiver, and up to 10 feet with a 500mw transceiver. The infrared transceivers have to be pointing at each other and protected from sunlight or bright incandescent lights. The IrDA interface does not replace networks; it is designed for point-to-point data transfer—from one computer to another or from a computer to a printer.

The IrDA interface works at the physical layer—as a replacement for cables. However, an infrared connection requires several layers of software protocols that are not yet completely standardized. As a result, the IrDA interface on many DOS/Windows laptop models can communicate only with an identical laptop model. Engineers estimate that these compatibility problems will take some 18 to 24 months to iron out.

Within the next two to three years, expect the IrDA interface to be built into more printers and other peripherals. Hewlett-Packard is already shipping its LaserJet 5p laser printer with IrDA. An infrared-equipped telephone could be controlled by a laptop, for voice and data links. A public telephone with IrDA would be especially handy; you could sit near such a phone and retrieve your E-mail. Although the Newton's infrared transceiver predates IrDA, it can communicate with IrDA equipment. For existing computers, an IrDA transceiver that connects via a serial port should be available soon for about \$100. Eventually, infrared will be built into desktop computers, perhaps into monitors or keyboards because the main computer box is so often stowed under tables or in other locations awkward to reach by infrared.

Infrared works best for spontaneous connections to perform such tasks as exchanging business cards and files and printing memos, which should be easy once the protocol issues are resolved. More-sophisticated infrared systems have been proposed, including high-power diffuse infrared that works as a local-area network over an entire room, with speeds of up to 50 Mbps. Such features would use more power than is practical for laptops, although repeaters and signal amplifiers could overcome these problems. In these applications, packet radio systems offer some advantages; see *PowerBook Notes*, January 1995. And though an IrDA interface costs manufacturers only a few dollars for the components, a sophisticated infrared system could add \$100 or more to the final price. **m**

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.



A BIGGER

Let's face it. We're all out here to win. And the bigger the idea, the better.
Except when there's not enough page to put it on. Until now.

SHEET MEANS

The QMS® 1660E Hammerhead Print System gives you room for even
your biggest ideas. 11" x 17" full bleed and 1200 x 1200 dpi.

BETTER

And, at \$5,999,* it's a better price than
you can get anywhere else.

PERFORMANCE.

For big sheet, high quality printing at a small price, call **800 392-7559**
Dept. **5058** today for the QMS reseller nearest you.



Outperform The Very Best.



For service on QMS or other products, call 800 762-8894 (U.S.) • Q-Fax 800 633-7213 • Canada 800 991-2000

*QMS Reference Price (U.S.) • QMS, Hammerhead and the QMS logo are trademarks or registered trademarks of QMS, Inc. One Magnan Pass, Mobile, AL 36618, 334 623-4300.

Circle 288 on reader service card

AGFA COLOR
SCANNERS



It faithfully took you to
the mall, the drive-in and
the office. But now it's

time to part. And the sooner you can sell, the sooner you can buy. So you post an ad
with a picture file on the Internet. **To make sure everyone can see how beautiful your**

baby is, you scan the photo with your Agfa scanner. It captures the color perfectly and

the detail impeccably. Which is why you also use it to scan in the map that's going to

make your international sales report look

like gangbusters. Who knows? It could

help you get one of those executive

parking spaces for your new baby.



*The new
StudioScan Hsi.*



Because every scan is important.
Comes complete with Adobe
Photoshop™ 1.1, OmniPage Direct®
OCR Software and Agfa FotoPlacer™
and color management software on
CD-ROM. For the dealer nearest
you, call 1-800-688-4271 ext. 3043.

Hi-Fi and the Agfa branding are registered
trademarks of Agfa. OmniPage Direct
is a registered trademark of Eastman Kodak.

Circle 43 on reader service card

AGFA 

The complete picture.™



Look, Mac—No Hands!

One man's quest to eliminate the keyboard

ECAUTION: THIS ISN'T AN ORDINARY *Desktop Critic* column. Then again, this hasn't been an ordinary experience. One fine night, I was the guest at an America Online live chat session: two hours, no breaks, typing furiously, spurred to ever tenser keyboarding by the unhappy comments of people whose questions still hadn't been addressed. When I awoke the next day, my right wrist screamed in pain. I limped through the day, desperately avoiding such troublemakers as doorknobs, shirt buttons, and dental floss.

When the pain didn't subside after several days, a doctor checked me out. The diagnosis: acute tendinitis.

A repetitive strain injury? Me? It didn't make sense. I mean, I'd been typing 15 hours a day, with no breaks and not-so-hot posture, for *ten years*. Why should my wrist act up now? It wasn't like I was under unusual stress, or anything—I mean, other than buying a first house, moving to a new state, and getting married.

But the doctor had good news. "I expect you'll recover fully in several weeks. You just have to make one small change: don't use your hand."

Sure, I could change. I could slurp food through straws. I could dress in Velcro-lined jumpsuits. I could junk my piano, my pencils, and my floss.

But stop using the *Mac*? That was like telling a flutist to stop breathing for a few weeks. Alas, my new, rigid, elbow-to-finger splint sentenced me to obeying the doctor's orders. The timing stank, though; book and article deadlines loomed all around me.

Then it hit me: I could lick this thing. Hadn't the Macintosh solved all my other problems? Filled with quiet resolve, I vowed to use brains, high technology, and the invincible Macintosh to outsmart my injury. The adventure had begun.

Half-Qwerty 1.2

With my right hand out of commission, I suddenly remembered my left. If only there were some way to type all the let-

ters of the keyboard with one hand.

There is. It's an extension called Half-Qwerty (\$395; Matias, 416/749-3124). When you press the spacebar, Half-Qwerty turns the left half of the keyboard into the right half—and vice versa. For example, if you press the *W* key while the spacebar is down, the letter *O* appears. Getting your brain to flip-flop its instructions to your hands really isn't as much of a challenge as you might think. Using my left hand alone, I was soon tapping along at 25 words per minute. Better than nothing, right?

Wrong. Unfortunately, I was no smarter about taking breaks with one hand than I'd been with two. Within days, I succeeded in trashing the tendons in my *left* wrist, too. Now both hands were killing me, and both were ensplinted.



Clearly, I was going to have to eliminate the keyboard altogether. I decided to call in reinforcements.

MacTemps

OK, I couldn't type. But I could still *think*, couldn't I? I called MacTemps (800/622-8367), a national Macintosh temp agency. I asked them to send over somebody to help me write.

The young man who showed up was a model worker: friendly, Mac savvy, and even more eager to work than I was. The

writing proved to be no problem—I sat just behind him, dictating; he typed, handled disks, and managed the files.

Yes, the writing went fine; the editing is where everything fell apart. "Let's scroll up," I would say. "More, more—no, not that much. OK, see that word in the first paragraph? No, down a little—over, over . . ." It drove me (and probably the MacTemp) crazy.

There were other signs that a personal typist was not going to be my long-term solution. The schedule was one: as a card-carrying workaholic, I generally don't observe nights or weekends. I couldn't abide the thought of working only during working hours. The second problem was the cost: at \$25 per hour, taking bathroom, phone, and meal breaks became a

stressful luxury. (Pricing varies by city and skills.) Completing my book was beginning to look like a money-losing proposition. It was time to consider higher-tech solutions.

Power Secretary 2.0

By weight, Power Secretary (Articulate Systems, 617/935-5656) is probably one of the most expensive programs alive: \$2495 for ten floppies and a microphone. But it actually does what it promises: it takes dictation. As you speak into the headset microphone, separating—your—words—like—this, the text magically appears in what-

ever program you're using (unless it's Word 5.1, which is incompatible).

This science-fictionish feat of voice recognition comes at a price, however; not just in dollars, but in disk space (15MB), memory (12MB), and equipment (16-bit sound required, provided in my Quadra's case by my \$50 MediaVision sound card). There's also a considerable investment of time required. You spend one hour training the program by uttering prepared sentences; it then takes

continues



Take a (cough) Letter Power Secretary logs each word you say in a word list at the right side of your screen. To prevent my coughs and sneezes from being transcribed, I recorded each as a “dummy” word (one that types nothing). That solution worked well, although it produced a fascinating written record of my flu’s progress.

about a week of full-time usage before the program's dictation accuracy improves to tolerable levels.

Whenever Power Secretary gets a word wrong, you say "correct word." A tiny window instantly appears, listing the program's next nine guesses. You can select one of those choices vocally. Or, if the incorrect word was a term the program doesn't know, you can spell it out using the pilot's alphabet ("Alpha, Bravo, Charlie . . ."). Over time, after you've made enough of these corrections, you and the software come to know each other. Its accuracy—and your speed—improve dramatically. For a temporarily handless guy like me, it looked like the next few weeks might not be so unproductive after all.

There were still obstacles to utter Mac bliss, however. My noisy Manhattan environment was one. Power Secretary would thoughtfully attempt to transcribe every car horn, dog bark, or gunshot ricochet it could hear from the street, littering my writing with randomly inserted short words. Furthermore, homonyms freaked it out every time; eventually, I taught the program to distinguish, for example, *to* from *too* by pronouncing the latter in two syllables.

And Power Secretary handled only the typing. What about pointing, clicking, dragging? The doctor had said that as far as my inflamed tendons were concerned, tapping a mouse button all day was just as murderous as typing. The challenge now was to devise a means of manipulating the mouse, without a mouse.

Wacom ArtPad

My bright idea: a digitizing tablet. My brighter one: the Wacom ArtPad (\$199; Wacom Technology, 360/750-8882). I had it in my head that these drawing tablets cost hundreds of dollars—but for

some reason this particular model cost only \$130 by mail order. It's a hard plastic board, 7 inches square. It comes with a lightweight (no batteries required), cordless pen, which I could clutch even in my splint. You simply brush the pen across the tablet to move the cursor; bearing down slightly is the same as pressing the mouse button. I especially loved the accompanying control panel; it lets you adjust the added pressure necessary to trigger a click. For the sake of my hands, I set the slider almost to zero; thereafter, it seemed that merely *thinking* about the mouse button produced an actual click.

For several days, I used miraculous software (Power Secretary) to do my typing, and terrifically engineered hardware (the ArtPad) for clicking, dragging, and operating menus. Intellectually, I believed my problem was solved.

My wrists, however, disagreed. The pain in my right hand changed somewhat, but didn't go away. I was bewildered—I mean, I was no longer typing, no longer clicking. In fact, I wasn't using my right hand for anything anymore. Except holding the Wacom pen, of course.

The pen! I cursed my foolishness. No wonder my situation wasn't improving. All day long, even when not using it, I was holding that pen, squeezing it tightly against my splint. I had replaced the occasional muscular stress of using the mouse with a full-time clenching. Clearly, my technological journey wasn't over yet.

QuicKeys 3.01

Finally, in the middle of the night, I recalled reading something in the Power Secretary manual. Something about using QuickKeys, the macro program (\$119; CE Software, 515/221-1801), in conjunction with the dictation software.

Sure enough, if you teach Power Secretary the names of your macros, you can trigger them by voice. Within an hour, I had set everything up so I could launch programs, manipulate menus, and close windows by voice command. And more to the point, I created a QuicKey to generate a mouse-click whenever I spoke the words *click here*. For editing and selecting text, I also taught Power Secretary to understand utterances like *page up*, *double-click*, and *shift-click*.

At last I had achieved the seemingly impossible: I could now write, edit, and maneuver on the Mac completely hands-free. OK, not *completely*; I still used my

right hand, in its splint, to nudge the mouse into position before clicking it verbally. But in general I was able to carry on happily, my hands resting at my sides. I thought I'd beaten the system.

I was wrong.

Drixoral Cold & Flu

Just as I started getting cocky, it hit me like a locomotive: a flu virus that made the one in the movie *Outbreak* look like the sniffles. I woke up one day sounding like Darth Vader with phlegm. You can probably guess the punch line: my voice-recognition software no longer recognized my voice. My attempts at writing came out looking like the raving of an incoherent madman. Even more than usual, I mean.

Fortunately, I wasn't forced to sit out the three-week ordeal this flu turned out to be. An Articulate Systems representative suggested that I duplicate my 3MB Power Secretary voice file, in which the program stores the sound of my voice. He proposed that I work with the duplicate during my illness, in effect increasing the program's understanding of the *sick* me. (When I was well again, I could switch back to my original voice file with no retraining penalty.)

Sure enough, within a day or two, Power Secretary had caught on. It adjusted its conception of my voice patterns, and the two of us got back to work.

The Upshot

I'm happy to report that, after 11 weeks, the pain in my wrists began to subside. Hand therapy helped a lot; the gradual passing of major life stresses helped too. But I'm convinced that, by allowing my hands to rest at last, my voice and macro software turned the tide and allowed my healing to begin.

At this writing, I still don't use the keyboard; I wrote this column, as I did the last several, entirely by speech dictation. By trading up to a Power Mac and a native-mode word processor, I've goosed up the speed considerably, too—I can now dictate nearly as fast as I used to type. An added bonus: while Power Secretary may get an occasional word wrong, it never makes a spelling mistake.

All of which leaves my rapidly healing hands free for more important tasks, like buttoning shirts, flipping pages, and turning doorknobs. Oh, yeah—and don't forget flossing. **m**

Contributing editor DAVID POGUE's latest book is *Mac FAQs [Frequently Asked Questions]* (IDG Books Worldwide, 1995). May this column serve as an explanation to his neighbors as to why he spends all day talking to himself.

SIGHT AND SOUND EXPLOSION

Experience the ultimate in multimedia... the **ViewSonic 15GA** and **17GA PerfectSound™** multimedia monitors. Be prepared for a blast of sight and sound that engulfs you with rich, lifelike tones directed towards YOU. Plus, since you don't need separate speakers, you'll save valuable desk space.

The explosion from ViewSonic's multimedia monitors will revolutionize the industry... especially business, entertainment and teleconferencing applications. With the latest dome speaker technology and microhole speaker grills integrated into the monitor bezel you'll hear full high fidelity stereo sound. We thought of everything — even a built-in microphone, headphone jack and external microphone port. And, when the phone rings, you can mute the sound with the touch of a button.

In addition to the terrific sound, these new 15" and 17" CRTs (14.0" and 16.0" diagonal viewable areas respectively) both feature a Super Contrast screen, 0.27mm dot pitch, resolutions up to 1,280 x 1,024, and an ultra high refresh rate of 86Hz at 1,024 x 768. You'll be proud of the beautiful, brilliant, photo-quality screen images. Our OnView™ controls allow you to make image *and* audio adjustments right on the screen. Plus, these monitors are *Plug & Play*™ for Windows'95, which automatically provide the utmost in screen image capabilities.

In keeping with today's concerns for radiation, safety and the environment, these monitors not only exceed MPR-II and EPA Energy Star™ requirements but have also adopted the most stringent Swedish TCO standards for reduction of heat emissions and exposure to electromagnetic fields.



ViewSonic multimedia monitors... a sound investment.

ViewSonic®
See The Difference!™
and Hear

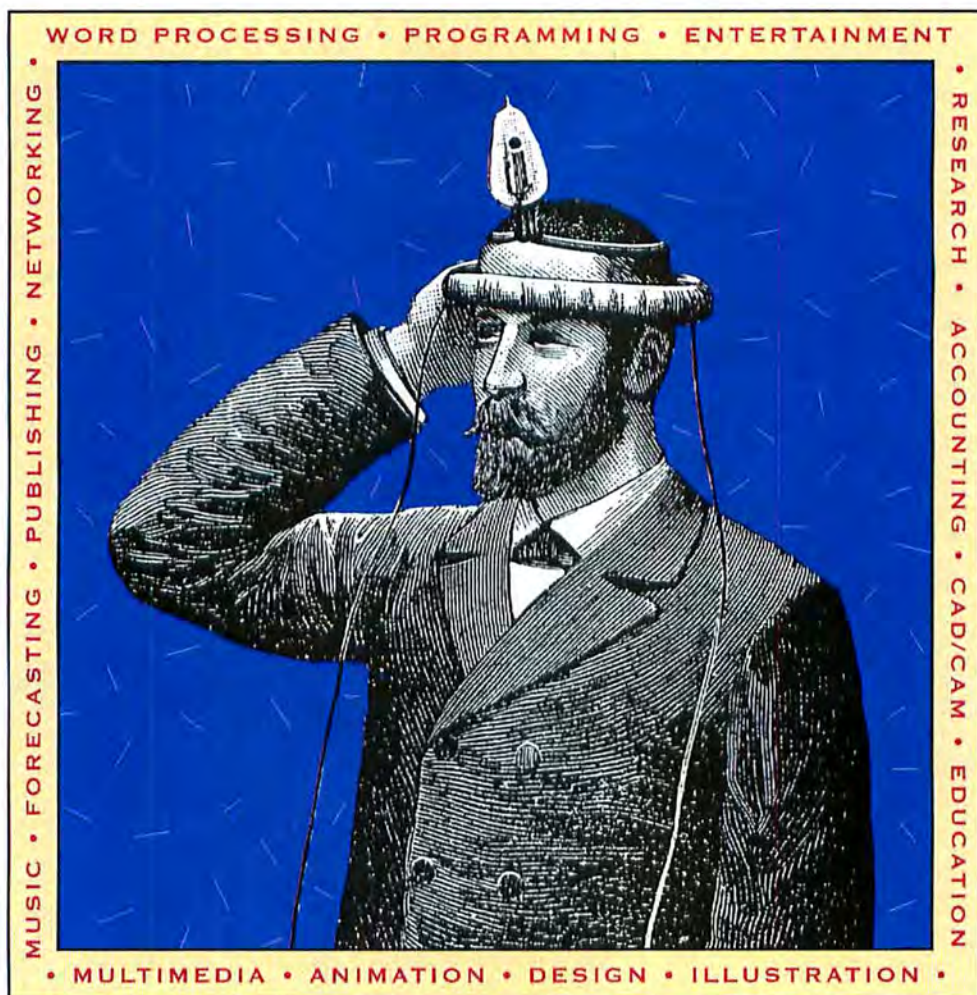
Tel: (800) 888-8583 Ext. #304
or (909) 869-7976 Fax: (909) 869-7958
Call FaxSonic at (909) 869-7318 (fax-on-demand)
Request Doc. 143 (15GA), 150 (17GA)
Applelink: VIEWSONIC Compuserve: 73374, 514

*Requires a DOS compatible video card.
All products and trademarks are brand names of their respective companies.
The above text is a registered trademark of ViewSonic Corporation.
Specifications subject to change without notice.

Circle 59 on reader service card



Before you upgrade your system, how about upgrading your brain?



MACWORLD EXPOSITION

Sure, you could use more computer power. But don't forget that knowledge is power too.

Maybe you should come to MACWORLD Expo for a chance to pick up some new applications, or to invest in new hardware at the bargain prices you'll find there.

Or, maybe not.

Maybe you should just come to experience the new and to learn.

You'll have plenty of opportunity to find out everything you ever

Please send me more information on MACWORLD Expo.

I am interested in: ☐ Exhibiting ☐ Attending

☐ Boston ☐ San Francisco

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

Mail to: Mitch Hall Associates,
260 Milton Street, Dedham, MA 02026

Or Fax to: 617-361-3389 Phone: 617-361-8000

Macworld

wanted to know about the state of Macintosh technology, and what you can do with it. Hundreds of exhibiting companies, thousands of experts and dozens of conferences and seminars will fill your head with wild ideas – and the skills to make them happen.

MACWORLD Expo is coming to San Francisco and Boston. That's two opportunities for an upgrade. So think about it. Then plan on attending now.

A man in a brown suit and tie stands with his hands in his pockets, smiling, in front of a modern building at night. The building has a distinctive curved facade with horizontal bands of light and dark sections. The sky is a deep blue.

What's a little Competition?

NO CONTEST WITH Macworld on your side.

IN 1987

SCOTT BLUM

CO-FOUNDED PINNACLE MICRO.

HE PLACED HIS FAITH IN AN

EMERGING TECHNOLOGY AND

HIS FIRST AD IN MACWORLD.

EIGHT YEARS LATER, WITH

THE OPTICAL STORAGE MARKET

MORE COMPETITIVE THAN EVER,

PINNACLE MICRO IS LEADING

THE OPTICAL REVOLUTION

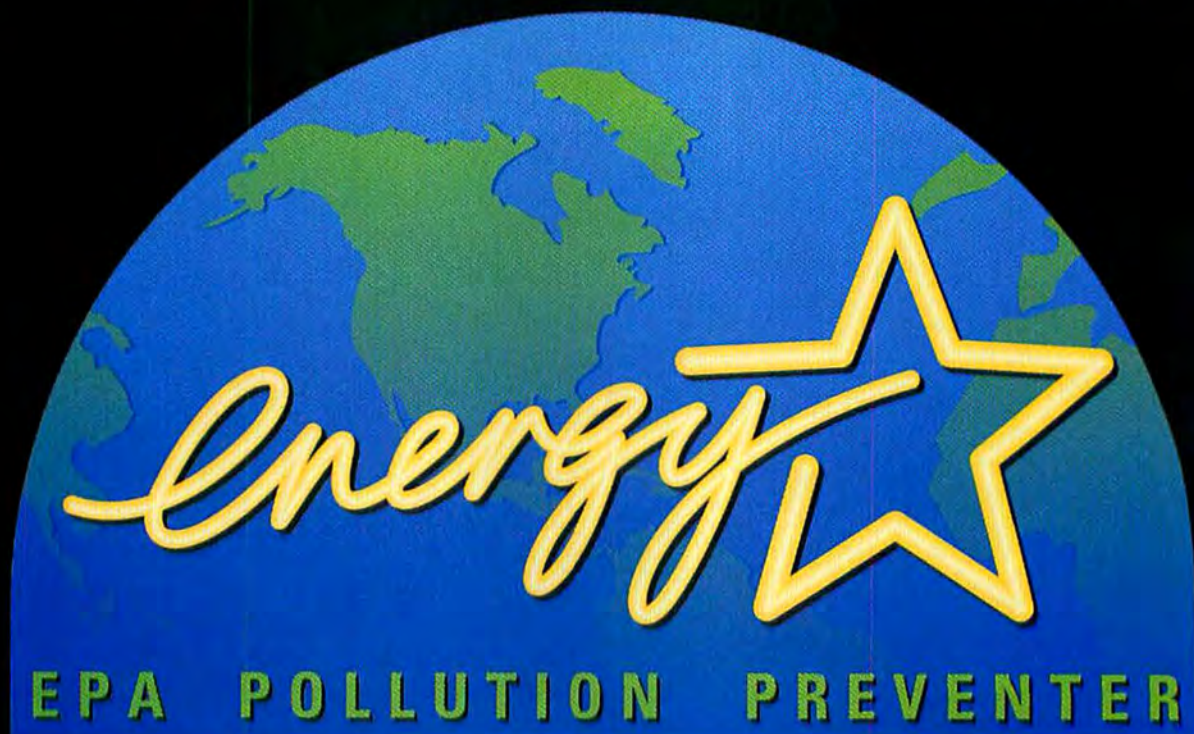
AND MACWORLD IS TELLING

READERS WITH OPTICAL STORAGE

NEEDS ABOUT PINNACLE MICRO.

Macworld
THE MACINTOSH® AUTHORITY

Pollution Solution.



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

Over 2000 computers, monitors and printers have earned the right to bear the Environmental Protection Agency's Energy StarSM logo. These computers are so smart, they go to sleep when not in use and wake up with a simple touch of the keyboard or mouse. Energy StarSM Computers don't cost

any extra, will save money on your energy bill, and prevent pollution from electricity generation. Be part of the solution and look for this logo when you make your next computer purchase. To receive a list of available products call the Energy StarSM Hotline at 202 775-6650.



Buy It And Save.



Pet Peeves

Where vendors and readers go wrong

OUT IN THE MARKETPLACE, things can get ugly. And when they do, I get letters from irate readers asking for help. Over the more than six years I have been writing this column, *Macworld* has forwarded thousands of reader complaints to companies and asked officials to respond. *Macworld* acts as a neutral party; the sheer volume makes it impossible for us to investigate all complaints and judge the validity of a reader's position. Even so, this process has produced results that a majority of readers seem to find satisfactory.

After reading these complaints and the responses, I've developed a few pet peeves about vendors' behavior toward their customers—and vice versa. My advice to these sometimes warring factions may seem obvious, but it's clear from my in-basket that a few folks just don't get it. (Oh, not you, of course—those other folks.)

Advice to Vendors

1. People deserve what they've paid for. Speaking of obvious, it seems clear that if, say, Apple promises on-site warranty service to its customers, on-site service should be available. But that's not necessarily the case, according to one reader who was told she could not get her Macintosh repaired at home, despite the existence of two Apple service centers in her Columbus, Ohio, suburb.

Her complaint is small potatoes compared with that of Ron Kihara, a California Mac owner who bought a defective Apple monitor in January 1994 and returned it four times for repair. Finally Apple promised a replacement, which failed to materialize. Then Kihara was promised a refund and told the check was in the mail. Only it never arrived either. After *Macworld* contacted Apple, Kihara finally received his overdue refund—a mere 15 months later.

Many of Apple's customers are very happy with its service, and Apple is hardly the only company guilty of the occasional customer-service nightmare.

Still, customers should not have to fight to get what they are owed.

2. Don't promise what you can't deliver. It's no news that software buyers often need technical support. And yet, for the past three years or so, Intuit customers have clogged online services, fax lines, and telephones complaining of their inability to get an upgrade, locate a bugfix, or find technical support as the tax deadline loomed. Complaints include promised upgrades that never appeared and significant software flaws that affected the tax returns. This annual ordeal has generated enormous resentment among some Intuit customers, an ongoing burden the company can't afford and needs to resolve once and for all.

3. Cheapskates are the norm. After I wrote about buying a new Mac (April

4. The market is changing. As Intel discovered last year, today's customers don't have the patience of the early computer hobbyists, who were willing to deal with unstable software or cryptic DIP switches or cumbersome installation procedures because they were so excited about the technology itself. As Microsoft discovered with the flawed Word 6.0 release, Macintosh users aren't willing to trade features for speed. People want tools that work, right out of the box, as advertised or expected. A big name won't save you if you produce junk.

5. Be nice. I'm always profoundly alarmed when a vendor calls me in response to a complaint and confides that the customer in question is a total jerk who can't be trusted and is obviously trying to ruin the business. While such conversations are rare, the owners of small companies in particular seem to have a difficult time learning not to be defensive or to feel personally attacked when they receive complaints. But professionals can't afford to get defensive, even if they believe a complaint is unwarranted or inaccurate. Thankfully, most companies understand this.



1995), an outraged computer salesman sent me an E-mail complaining bitterly that, in essence, cheapskates are putting companies like his out of business. Other vendors complain that some customers are horrible, while company officials are expected to be calm and professional at all times. That may not be fair, but business is a struggle, and nobody forcibly dragged you into this rat race. Quit whining; if you can't compete, consider taking up another line of work.

Advice to Readers

1. Don't be greedy.

Recently I got a complaint from a reader who was outraged that a company refused to send him a ten-pack of SyQuest cartridges for \$62 as advertised. The reader realized the advertisement was a misprint but insisted he was entitled to purchase the product as advertised because the ad had no disclaimer regarding typos. Should there have been a disclaimer? Absolutely. Is this guy being unreasonable? You bet. Companies have no obligation to go into bankruptcy just to make good on a typo.

People who buy based on price alone often get burned. I once interviewed a

continues

Keep the Flame Alive

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

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

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

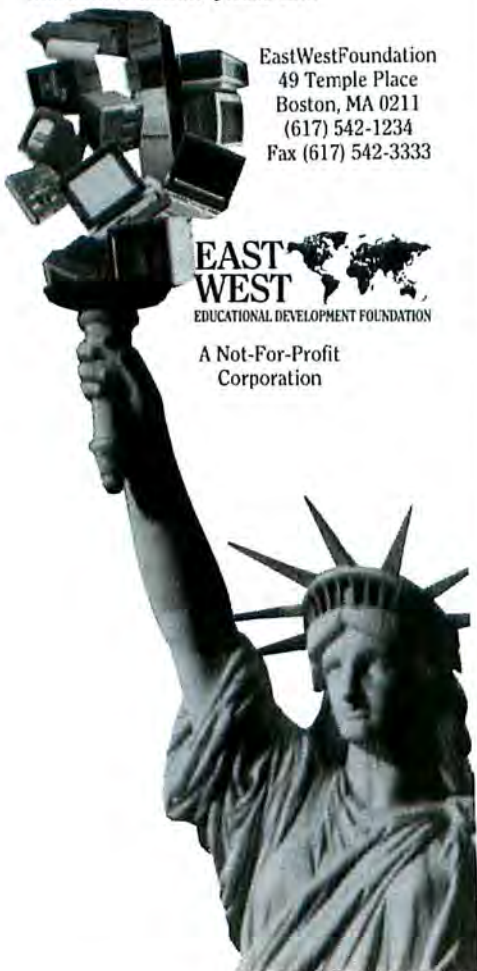
Donating used or overstock computer equipment to the East West Foundation can make a difference to you, too—at the bottom line. Because all donations are tax-deductible. And all types of computer equipment are welcome.

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

EastWestFoundation
49 Temple Place
Boston, MA 0211
(617) 542-1234
Fax (617) 542-3333

EAST WEST
EDUCATIONAL DEVELOPMENT FOUNDATION

A Not-For-Profit
Corporation



man who had taken out a large loan to launch a design business. Since money was so tight, he placed an order and mailed off a check to a small company that advertised the lowest prices imaginable. Apparently the prices were too low to sustain the company, because it went under—without sending the man his equipment. Now he has no Macintosh and a big loan to pay off. His understandable passion to save money cost him a small fortune.

2. You're on your own. Despite the many established governmental institutions that we fund with our tax dollars, you cannot expect to be rescued if you have serious problems with a vendor. A case in point: several readers who lost thousands of dollars doing business with Data Link Resources.

The Texas State Attorney General's office received copies of the complaints *Macworld* forwarded to the company, but it has not investigated the Austin-based mail-order firm, despite the sums of money involved. A spokeswoman for the attorney general says the office must concentrate its limited resources on people who cannot protect themselves, such as the elderly and children. Unfortunately, some of the readers who say they were burned by Data Link live abroad and have virtually no way to fight for refunds. Meanwhile, the company's phone has been disconnected. Buyer Beware is still an excellent motto to shop by.

3. Follow the rules. Some readers express indignation that a company will not refund a purchase returned after a 30-day or 60-day period, or that warranty service is not offered after 12 months. Companies have to establish ground rules to remain profitable. The cost for the return of a single monitor, for example, may be more than the profit a mail-order company made on the sale. While some companies may go the extra mile in accepting late returns or providing other service, you can't count on that. So make sure you return items or register your problems within the time allowed.

And whenever you're in doubt about a mail-order purchase, promptly file a dispute with your credit card company and do not pay the disputed amount until the situation has been resolved. If you've already paid, you should still register the dispute promptly. Too many readers don't file disputes within the period allowed because the nice folks on the phone from the mail-order firm claim they will fix the problem—and then they don't. By the time that's clear, it's too late to get help from the credit card company.

4. Be nice. Does it seem strange to you that companies rarely respond well

to profanities, defamatory language, or threatening missives that claim *Macworld* will write an exposé of the company if it doesn't cough up a refund fast? The best way to get a favorable response is to treat the company with courtesy and respect, assuming that officials want to rectify whatever wrong you've suffered, once they understand its nature. A calmly written fax, letter, or E-mail that clearly and politely explains the problem and the resolution you expect is much more effective than angry ranting. (Ranting can be healthy—just try venting on your potted palm instead.)

5. Reward good companies. Sing their praises to the sky, copy the companies on flattering letters sent to columnists, and offer them repeat business. Companies are like laboratory mice; reward them for good behavior, and they're likely to do it again and again.

Thanks and Good-bye

Despite the annoyance of receiving a complaint from *Macworld*, most companies welcome the opportunity to resolve a dispute or explain a policy a customer may have misunderstood. During my tenure as the *Conspicuous Consumer*, very rarely has a vendor insisted that it is the target of malicious customers, or suggested that *Macworld* was a pitiful pawn being manipulated by rogue readers. True, a few threatened to cancel their advertising. But most company execs say they appreciate the service. My deepest thanks to the many fine professionals who are truly dedicated to serving their customers.

This is my last column for *Macworld*. After eight years at this magazine, I'm moving on to broaden my journalistic horizons, although I'll continue to write about computers and consumer issues. I'd like to thank my excellent editor, Marjorie Baer, as well as the support folks, copy editors, and design staff who made writing this column such a pleasure. I also owe an enormous debt to the many readers who ranted, raved, inspired, praised, and damned me. I learned something from every one. Thanks for reading, and keep those complaints coming in! Although I'm moving on, *Macworld's* interest in your problems continues unabated. **m**

Freelance writer and editor DEBORAH BRANSCUM heads Red Pencil Productions in Emeryville, California. You can write to her at branscum@aol.com.

You can write to *Macworld's* Conspicuous Consumer department at *Macworld*, 501 Second St., San Francisco, CA 94107. Send us your nominees for sainthood, to *Service Heroes*, or drop us a line if a company is ignoring you.




America Online: It's So Good, It's Free.

Send For Your TEN-HOUR FREE Trial Today!

We're so sure you'll love America Online, we'll let you try it absolutely **FREE!** All you need is a computer and a modem; we'll send you the America Online software and **TEN FREE HOURS** to check it out for yourself.

Featuring Macworld Online.

Catching up on the latest feature articles and columns from MACWORLD is easy with America Online. You'll have instant access to the current issue, plus features that can be found only in MACWORLD Online:

-  Macworld Live brings editors and writers, artists and visionaries directly to your desktop.
-  Macworld Star Ratings allow you to compare Macintosh products through authoritative reviews from the past year.
-  Macworld's Shareware Library has all new and exciting files, plus you can request special files you're looking for!

**Try
Macworld Online
Today!**

Don't take our word for it. Find out for yourself. Mail this card, or fax it to 1-800-827-4595. Why not? It's **FREE!**



Download feature graphics from Macworld Magazine

To order by phone, call
1-800-249-9300
Offer #12840

Yes! I'd like to try America Online—FREE.

Send me the free software and trial membership. I understand there's no risk— if I'm not completely satisfied, I may cancel without further obligation.



NAME _____
ADDRESS _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____
() HOME PHONE _____

SELECT DISK TYPE AND SIZE —

Windows*: ☐ 3.5
Apple*: ☐ Macintosh*
DOS: ☐ 3.5 ☐ 5.25 ☐ High Density ☐ Low Density
CD ROM: ☐ Macintosh* ☐ Windows*

*To use America Online for Windows, you must have a 386 PC or higher, 4MB of RAM, a VGA monitor (256 color support recommended), a mouse, a modem, and a working copy of Windows 3.1. Use of America Online requires a major credit card or checking account. One free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners. P0895A

12839

Try America Online For Ten Hours, FREE!

America Online is so easy to use and even easier to try. And if you decide to subscribe, you'll appreciate our simple pricing with no hidden charges. There's no extra charge for Internet access, higher baud rates, or so-called "premium" services. And there's no limit to what you can do on America Online. Just point and click to:



Send and receive e-mail around the world.



Build your own software library of the coolest shareware and freeware.



Participate in lively discussions on just about any topic.



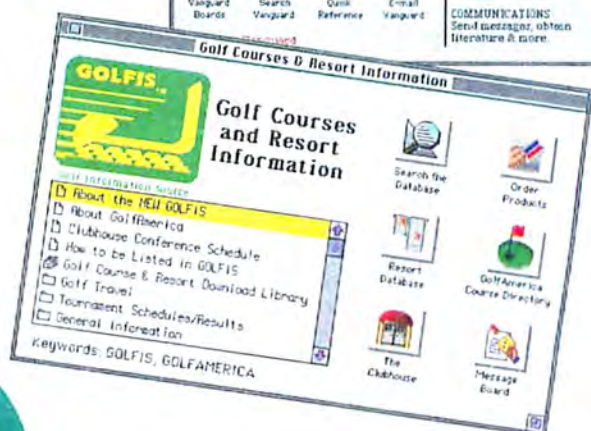
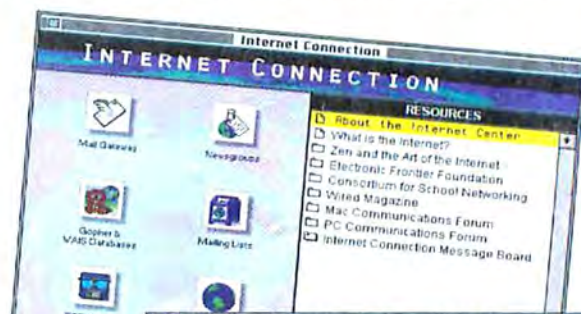
Manage your portfolio and personal finances with advice from the experts.



Make new friends, share interests, exchange ideas, and...



Have fun!



Mail this card, or fax it to
1-800-827-4595.



BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 8567 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

A M E R I C A

Online

8619 Westwood Center Drive
Vienna, VA 22182-9806

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Fun. Friendly. Free.

Send for your America Online software today and see for yourself. Why not? It's FREE!

To order by phone, call
1-800-249-9300
Offer #12840

A M E R I C A
Online





Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Patricia Carberry-Harris

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in *Macworld's* comparative articles. A ♦ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

Hardware

MONITORS

SMALL COLOR MONITORS, Jan 94

14-inch display: ♦ Sony CPD 1430; Sony Corp. of America, 800/222-7669; \$779.95.

♦ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; \$799.

15-inch display: NEC MultiSync 4FG; NEC Technologies, 708/860-9500; company's estimated price \$755.

TWO-PAGE COLOR MONITORS, Nov 94

PressView 21 Display System; SuperMac Technology, 408/541-6100; \$3999.

NETWORK HARDWARE

REMOTE-ACCESS SERVERS, Oct 94

Mixed networks: NetConnect Remote Access Server; Asanté Technologies, 408/435-8401; \$3899 for eight ports.

AppleTalk networks: ARA Multiport Server; Apple Computer, 408/996-1010; four ports \$1799, eight ports \$3298.

PRESENTATION HARDWARE

PORTABLE PRESENTERS, Jan 95

Z115; nView, 804/873-1354; \$5495.

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; company's estimated price \$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 94

Ink-Jet: DeskWriter 520; Hewlett-Packard, 800/752-0900; \$365.

Laser—\$1000 to \$1600: microLaser Pro 600; Texas Instruments, 214/995-6611; \$1599.

WORKGROUP PRINTERS, Jun 95

Tabloid-size printers: LaserJet 4MV; Hewlett-Packard, 208/323-2551; \$3549.

Legal-size printers: ♦ Optra Lx; Lexmark, 606/232-2000; \$3298.

♦ LaserWriter 16/600 PS; Apple Computer, 408/996-1010; company's estimated price \$2299.

SCANNERS/IMAGE CAPTURE

ELECTRONIC CAMERAS, Sep 94

Apple QuickTake 100; Apple Computer, 408/996-1010; \$749. ◀

HIGH-BIT FLATBED COLOR SCANNERS, Mar 95

♦ Arcus II; Agfa, 508/658-5600; \$3495.

♦ PowerLook; Umax, 510/651-8883; \$3495.

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

1.3GB OPTICAL STORAGE, Dec 94

Best low-cost solution: 1.3Gig MO; Club Mac, 714/768-8130; \$2099.

Best overall performance: Genesis 1300; Microtech, 203/468-6223; \$2899.

HIGH-PERFORMANCE DRIVE SYSTEMS, Jul 95

Accelerator card: SiliconExpress IV; Atto Technology, 716/691-1999; \$995.

Drive mechanism: IBM UltraStar series; IBM (available from several resellers), prices vary by reseller.

QUAD-SPEED CD-ROM DRIVES, Jun 95

APS T3501; APS Technologies, 816/483-6100; \$299.95.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: ♦ Nova XL 2700; Microtech, 203/468-6223; \$2999. ♦ Vista 3.5GB; Relax, 510/471-6112; \$3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; \$499.

PC COPROCESSING, Oct 94

OrangePC Model 210; Orange Micro, 714/779-2772; \$1283.

RAID STORAGE SYSTEMS, Apr 95

RAID 3 or 5: MR/5 RAID; MegaDrive Systems, 310/247-0006; \$18,840.

RAID 0: ♦ Joule RAID; La Cie, 503/520-9000; \$2999.

♦ Diskovery 8200W; Optima Technology, 714/476-0515; \$7790. ♦ SledgeHammer 2000FMF; FWB, 415/474-8055; \$2359.

SYSTEM UPGRADES, Feb 95

Upgrade for Macintosh Quadra 650, 800, or 950:

Power Macintosh Upgrade Card; Apple Computer, 408/996-1010; \$699.

Upgrade for other 680X0 Macs: Replace with Power Macintosh 6100/60 with CPU booster and cache card. Power Macintosh 6100/60; Apple Computer, 408/996-1010; \$1819 (base system with 8MB of RAM). PowerClip (CPU booster); Newer Technology, 316/685-4904; \$245. 256K cache card; various companies, roughly \$200.

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.

DIGITAL-VIDEO BOARDS, Aug 95

SpigotPower AV; Radius, 408/434-1010; \$999.

HIGH-END VIDEO EDITING, Jun 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.

Corporate video (online): VideoCube; ImMix, 916/272-9800; \$40,500.

continues

Editors' Choice

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.; Best Ware, 201/586-2200; \$199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9527; \$119.95.

BUSINESS TOOLS

PORTABLE-DOCUMENT SOFTWARE, Apr 95
Document Distribution: Common Ground 1.1; No Hands Software, 415/802-5800; \$189.95.

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.

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.

DOS WINDOWS EMULATION, Oct 94
Timbuktu Pro 1.0.3 for Macintosh, Timbuktu 1.1 for Windows; Farallon Computing, 510/814-5000; \$199 each.

NETWORK CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; \$495 for 5-user license to \$2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek; AG Group, 510/937-7900; \$795.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; \$149.

GRAPHICS

3-D MODELING, Dec 94
Stand-alone modeler: formZ; Autodesk, 614/488-9777; \$1495.
Integrated-modeling package: Strata StudioPro; Strata, 801/628-5218; \$1495.
Entry-level modeler: Infini-D; Specular International, 413/253-3100; \$695.

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.
❖ Images with Impact series; 3G Graphics, 800/456-0234; \$99.95 to \$129.95 per volume, CD-ROM \$499.
❖ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; \$74.95 per volume, CD-ROM \$149.95.
❖ Typographers' Ornaments; Underground Grammarian, 609/589-6477; \$25 per volume; ten TIFF albums \$200; EPS volumes \$50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
Budget draw: Expert Draw; Expert Software, 305/567-9990; \$49.95.
Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; \$79.
Beginners' program: Aldus SuperPaint; Aldus Consumer Division, 619/558-6000; \$149.95.
Overall: Canvas; Deneba Software, 305/596-5644; \$399.

FONT BUYERS' GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400; \$99 (this price includes the ability to unlock two families from preselected packages); an additional \$25 enables you to unlock individual faces, or \$69 to \$179 for unlocking families.
Display/decorative-face collection: Fontek; Letra-set, 201/845-6100; \$39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; \$89 for 57 fonts.

IMAGE DATABASES, Oct 93
❖ Aldus Fetch 1.0; Adobe Systems, 206/628-5739; \$295.
❖ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; \$249.

IMAGE EDITORS, Feb 95
Adobe Photoshop 3.0; Adobe Systems, 415/961-4400; \$895.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks; Claris Corporation, 408/727-8227; \$299.

ONLINE SERVICES

ONLINE SERVICES, Aug 94
E-mail: America Online; America Online, 703/893-6288; basic monthly fee \$9.95.

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.

Reference: CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee \$8.95.

ORGANIZATION/PRODUCTIVITY

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; \$195.

SALES-AUTOMATION SOFTWARE, Oct 93
❖ Contact Ease; WestWare, 619/274-5053; one user \$395, five users \$1495.
❖ CBS; Colleague Business Software, 512/345-9964; \$495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; \$129.
Multuser system: Personal Librarian; Personal Library Software, 301/990-1155; \$995.

PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Adobe Systems, 206/622-5500; \$495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/598-3821; \$189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; \$84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 604/291-9121; \$149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; Datawatch, 919/549-0711; \$99.95.
Free software: Disinfectant; free from various online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
Virtual memory software: Virtual 3.0; Connectix Corp., 415/571-5100; \$99.
Memory-boosting software: RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; \$99.

WORD PROCESSORS


HIGH-END WORD PROCESSOR (for fast 68040 Macs and Power Macs), Mar 95
Microsoft Word 6.0; Microsoft Corporation, 206/882-8080; \$325.

LOW-COST WORD PROCESSOR, Mar 95
MacWrite Pro; Claris Corporation, 408/727-8227; \$99.

Star Ratings

HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

Macworld Star Ratings lets you compare Macintosh products by providing summaries of *Macworld's* authoritative product reviews from the past year. The number of stars 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.

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 94102 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

★★★★ **AccuZip6 1.8.7**, Software Publishers, 800/233-0555, \$689. Bulk-mail software has informative progress indicators, batch and individual processing, low rates, and flexible parsing during import, but the interface is incomprehensible. Sep 94

★★ **Adobe Acrobat 2.0**, Adobe Systems, 415/961-4400, \$195. The font fidelity of this portable-document software is uneven, and the software demands too much in resources compared with other options. Mar 95

★★★★ **Adobe Acrobat for Workgroups 2.0**, Adobe Systems, 415/961-4400, \$1595. As a collaboration tool, this software is inexpensive and offers well-done annotation tools. However, it's resource-intensive, and creating hypertext documents with it isn't easy. Mar 95


★★★★ **BizPlan Builder 5.0**, Jian, 415/254-5600, \$129. To create a comprehensive business plan, just fill in the blanks in this easy-to-use spreadsheet/word processor template. Jun 95

★★ **Bulk Mailer CASS 1.00d (1.3)**, Satori Software, 206/443-0765, \$150. Unattended operation is possible with this bulk-mail software, but batch processing is slow and the program has coding problems. Sep 94


★★★★ **Business Plan Writer 6.0**, Graphite Software, 301/984-1100, \$99. This proposal-writing template can help entrepreneurs create a detailed business plan, but—unlike the competition—it won't help them format an attractive presentation. Jun 95

★★★★ **CA-Cricket Graph III 1.52 (1.53)**, Computer Associates International, 516/342-5224, \$129. Graphing software's features are just right for charts in the physical and social sciences, but lack pizzazz. The program is easy to learn and use, and includes math features for

data transformations and curve fitting. Dec 94 

★★★★ **ClarisWorks 3.0**, Claris Corp., 408/727-8227, \$129. Inexpensive, easy to use, and powerful integrated software is the best package available. It's far better in terms of features, speed, integration, and use of system resources than its competition. Feb 95 

★★★★ **Crystal Ball 3.0 (3.0.1)**, Decisioneering, 303/449-5177, \$295. Compact business-simulation software is fast enough for complex projects and can pay for itself in disaster-avoidance in a variety of business tasks. Oct 94


★★★★ **Decision Analysis 2.5**, TreeAge, 617/536-2128, \$379. Decision-assistance software handles complex business cases by constructing tree diagrams of probabilities and payoffs. It offers a type of modeling that is easy to modify. Nov 94 


★★★★ **Extend+BPR 3.0 (3.1)**, Imagine That, 408/365-0305, \$990. Business-modeling software includes superior templates for business-process reengineering, but some programming experience is helpful. Oct 94


★★★★ **InfoDepot 2.0 (2.3)**, Chena Software, 610/770-1210, \$295. Project planning program includes tools for brainstorming and organizing ideas; scheduling project steps; and entering, calculating, and presenting data. It does a good job but has some flaws. Jan 95

★★★★ **MarcoPolo 3.0**, Mainstay, 805/484-9400, \$895. Full-featured document-management system is significantly improved. The addition of OCR—both the handling of unrecognized words and the ability to batch-process TIFF files with OCR—make it very usable. Jan 95

★★★★ **MicMac 2.0v1**, Nirvana Research, 408/369-1200, \$89. The concept of Mac as dictation machine is undeniably attractive, and Nirvana Research has pulled it off well. It takes lots of hard drive space to save recordings, though. Nov 94

★★★★ **Microsoft Excel 5.0**, Microsoft Corp., 206/882-8080, \$339. Although the feature set of this Power Mac spreadsheet is stunningly rich, the system requirements for a full install are jaw-dropping, including 27MB of hard drive space plus 24MB of RAM without virtual memory. Still, it is relentlessly complete. Jan 95 


★★★★ **Microsoft Works 4.0**, Microsoft Corp., 206/882-8080, \$99.95. Although this isn't the best integrated package around, it's a sensible, low-cost choice. It offers a respectable word processor, database, spreadsheet, calendar, and address book, as well as a slide-show module, and drawing and communications tools. Jan 95 

★★★★ **OmniPage Professional 5.0**, Caere Corp., 408/395-7000, \$695. In a historic first for OCR, this Power Mac software has an accuracy of 100 percent on good text samples. It does still make occasional baffling minor errors on real-world documents. Nov 94 

★★★★ **Street Atlas USA 2.0**, DeLorme Mapping, 207/865-1234, \$79. For the most part, this geographical information software delivers what it promises at a

great price. Oct 94

★★★ **TeamFlow 3.1**, CFM, 617/275-5258, \$295. Total Quality Management flowchart software is a valuable business tool. Its report printing and customizability are limited, however. Nov 94

★★★★ **ZipZapp 1.0 (2.0)**, True Basic, 603/298-8517, \$34. You can use this data-reference utility to find an area code, the correct spelling of a city's name, and more. The interface is intuitive, and the cost, low. Oct 94 

★★★ **ZP4 12.1 (14.4)**, Semaphore Corp., 408/688-9200, \$125. Inexpensive bulk-mail software supports batch and individual processing, but the progress indicators are uninformative, and unattended operation requires extra work. Sep 94

COMMUNICATIONS/NETWORKS

★ **BLAST Professional**, BLAST Inc., 919/542-3007, \$139. Our reviewer could not get this telecom software to work reliably and consistently during his tests, and found the minimalist and quirky interface frustrating. Jan 95

★★★★ **CreativePartner**, emotion Inc., 415/812-9000, \$1500. Creative collaboration goes digital with this distribution system for video, sound, text, and graphics. Although the system provides a clever way to send annotations over a network, our reviewer wished for either a higher number of features or a lower price tag. Jul 95

★★★★ **FileWave 2.1.2**, Wave Research, 510/704-3900, \$895. Maintain a central repository of files and distribute application updates to LAN users with this easy-to-use software-distribution tool. Excellent features include file distribution during idle time and the ability to copy-protect transferred files. Jul 95

★★ **HoloGate 1.0**, Information Access Technologies, 510/704-0160, \$500. Two unique features—UUCP and Usenet news distribution—are the primary reasons to consider this product. Otherwise, it comes up price-rich and feature-poor. Apr 95

★★ **The Internet Companion**, The Voyager Company, 914/591-5500, \$29.95. Well-written, HyperCard-based electronic book offers less information than others. Internet access is available through accompanying software, but it's a terminal-emulation screen. Dec 94

★★★★ **Internet Explorer Kit and Internet Starter Kit**, Hayden Books, 317/581-3500, \$29.95 each. Well-written books and useful software combine to produce one of the best introductions to the Internet available for Mac users. Dec 94

★★★★ **Internet Membership Kit 1.0 (2.0)**, Ventana Media, 919/942-0220, \$69.95. If you need access to the Internet, this book and software combination is a good package. The best part about it is its included preconfigured software. Dec 94

★★★ **MicroPhone Pro 2.0 (2.1)**, Software continues

Star Ratings

Ventures Corp., 510/644-3232, \$195. The new feature set of this communications package includes multiple sessions, faxing, TCP/IP networking, and more, but it's a mixed bag. Not all the features are well integrated, although some are innovations for which users will be grateful. **Oct 94** **Q**

★★★★ Netscape Navigator, Netscape Communications Corporation, 415/528-2555, \$39. World Wide Web browser is well ahead of the competition in terms of features, stability, and ease of use. Although its E-mail features could use some improvement, it's the best way to surf the Net. **May 95** **Q**

★★★★ NetWorks 3.0.4, Caravelle Networks Corp., 613/225-1172, \$1395 to \$2495. For networks that sprawl across buildings or states, this network-monitoring utility is indispensable. It continually polls devices, checking CPUs, printers, and hubs for signs of life. **Apr 95**

★ PowerShare Collaboration Servers, Apple Computer, 408/996-1010, \$999. Before this collaboration software will be ready for prime time, Apple needs to overhaul the complex Admin application and add serious diagnostic aids. **Aug 94**

★★★★ ProTerm Mac 1.0, InTrec Software, 602/992-5515, \$129.95. This communications program offers a level of sophistication that belies its small size and relative ease of use. It's fast, reliable, and stable, and is suitable for simple BBS connections or sophisticated scripting. **Jul 95**

★★★ QuickMail 3.0, CE Software, 515/221-1801, \$199 to \$3799. If you're shopping for a first-time E-mail application, this product is a good choice for ease of use and setup. The most promising new tool, rules-based messaging, lacks some important features. **Jan 95**

★★★ RunShare, Run, Inc., 201/529-4600, \$199 to \$2499. System extension endeavors to pump up file-transfer speeds across both local- and wide-area networks. It offers twofold to threefold throughput gains for fast Macs and large files but is less useful with small files or slow Macs. **Feb 95**

★★ SoftWindows 1.0, Insignia Solutions, 415/694-7600, \$499. You can run Windows software on a Power Mac with this emulation software. **Aug 94** **Q**

★★★★ White Knight 12.0, The FreeSoft Company, 412/846-2700, \$139. While this telecom software can be bewildering, it works impressively well. If you're willing to read the manual from cover to cover, the program may become your favorite telecom tool. **Nov 94** **Q**

DESKTOP PUBLISHING

★★ CheckPost 1.3, Working Software, 408/423-5696, \$89.95. Interface aside, this imagesetter-simulation software is generally disappointing. It can't automatically scale pages, it prints on a single sheet, and its error reporting is limited. **Nov 94**

★★★★ ClickBook 1.1 (1.2), BookMaker Corp., 415/354-8161, \$69.95. If you need to create inexpensive booklets quickly and without hassle, this print utility that helps you format documents in double-sided booklet form is an excellent tool. **Nov 94**

★★★★ Download Mechanic 1.0.2 (1.5), Acquired Knowledge, 619/587-4668, \$249. The strengths of this PostScript downloader lie in its tools for dealing with problem files, but when dealing with large files, it performs slowly and occasionally crashes. **Feb 95**

★★★★ FontChameleon 1.0.1 (1.5), Ares Software Corp., 415/578-9090, \$295. New font-creation technology builds serif and sans serif fonts from a master outline file. It offers high-quality renditions of popular fonts, plus the ability to customize fonts. **Sep 94**

★★★★ FontMixer 1.0, Monotype Typography, 312/855-1440, \$79. Although a tad expensive for a one-trick pony, this font utility is a straightforward, relatively painless way to mix characters from different fonts to create composite fonts. **Oct 94**

★★★★ Fontographer 4.0.4 (4.1), Macromedia, 415/252-2000, \$495. No other font editor does more or works better than this one. For the price of a few font families, it can give you a universe of unique faces. **Oct 94** **Q**

★★★★ LaserCheck 1.0, Systems of Merritt, 334/660-1240, \$199. Imagesetter-simulation software can save you hundreds of dollars, and many hours, on image-setting jobs by letting you use a laser printer to proof your work. **Nov 94**

★★★★ Let'er RIP 2.0 (2.0.1), Lupin Software, 916/756-7267, \$239. The flexibility, clean implementation, and attention to detail of this PostScript downloader make it a pleasure to use. **Feb 95**

★★★★ PageTools 1.0, Extensis Corp., 503/274-2020, \$129. Collection of ten PageMaker Additions is packed with utility. Many users will find the PageAlign, PagePrinter, and PageRulers Additions alone worth the price, and the others frosting on the cake. **Dec 94**

★★★★ ReadySetGo 6.0.2, Manhattan Graphics Corp., 914/725-2048, \$395. There's no strong reason not to use this desktop publishing software if its tools meet your needs, but there's no compelling reason to choose it, either. Its low price is nice, but not enough. **Oct 94**

★★★★ theTypeBook 4.0, Rascal Software, 805/255-6823, \$59.95. The manual needs work, but this type-specimen generator provides enough customization options to make it a worthwhile purchase. **Jun 95**

EDUCATION/ENTERTAINMENT

★★★★ 3D Atlas 1.1, EA World, 415/571-7171, \$79.95. Well-designed atlas enriches map data with narration, photos, and QuickTime movies. **May 95**

★★★★ A.D.A.M. The Inside Story, A.D.A.M. Software, 404/980-0888, \$79.95. Multimedia anatomy CD-ROM teaches basic anatomy and physiology with a tantalizing mix of sound, graphics, and animation. If you are the least bit interested in learning more about how the human body works, buy this program. **Mar 95**

★★★★ Aquazone 1.0, Inago, 416/487-4005, \$59. The fish in this aquarium simulation are beautiful, but they're darned hard to keep alive. Only two varieties of fish are included. **Jan 95** **Q**

★★★★ Creative Writer 1.0, Microsoft Corp., 206/882-8080, \$49.95. Graphics/page-layout/word-processor hybrid offers some terrific type effects, zany sounds, and bright graphics. **Sep 94**

★★★★ Crossword Wizard 1.0, Cogix Corp., 415/454-7217, \$49.95. If you're a crossword fan, this crossword-puzzle generator is a must. Although it's not perfect, the play mechanics are fantastic. **Dec 94** **Q**

★★★★ The Cruncher, Davidson & Associates, 310/793-0600, \$59.95. If you want to teach a child spreadsheet basics, this combination educational spreadsheet and business application will do the job. **Aug 94**

★★★★ CyberBoogie, Times Mirror Multimedia, 314/531-2503, \$49.95. The easy interface, bouncy songs, and cute graphics of this children's animation software make it a good choice for very young kids, but its relative lack of features restricts it to the same group. **Apr 95**

★★★★ Digital Chisel 1.2, Pierian Spring Software, 503/222-2044, \$199.95, site license \$995. If I had a Chisel, I'd Chisel out some quizzes; I'd say how easy

this is—I wouldn't. Ahem. What I mean is: this authoring tool lets educators create interactive quizzes, but suffers from a nonstandard interface. **Jun 95**

★★★★ Kids World, Bit Jugglers, 415/968-3908, \$30. Although the painting tools could be more robust, this screen-saver-creation tool for kids is easy to use, cleverly designed, and can keep kids busy for hours. **Mar 95**

★★★★ Material World, StarPress Multimedia, 415/274-8383, \$59.95. This multimedia CD-ROM provides a fascinating look at diverse cultures from around the world by documenting the lives of average families. **Jun 95**

★★★★ Small Blue Planet 2.0 (2.0.1), Now What? Software, 415/885-1689, \$59.95. The satellite photos of this atlas are truly dazzling, although the interface is less than world class. **May 95**

★★★★ Storybook Weaver Deluxe 1.0, MECC, 612/569-1500, \$69.95. Hooray for applications that encourage kids to be creative! This one lets them combine pictures, sounds, and words to make their own storybooks. **May 95**

★★★★ Theorist 2.0, Waterloo Maple Software, 519/747-2373, \$299. Despite an occasionally odd interface (for example, a hammer icon), this symbolic-math program is a great learning aid for students. **Jun 95** **Q**

★★★★ WarPlanes 1.0, Maris Software, 800/336-0185, \$69. Wonderful multimedia CD-ROM tours the post-WWII era in military aviation. As well as pictures and text, it includes rotatable models of aircraft, an extensive database, and three flight simulators. **Mar 95**

★★★★ Widget Workshop, Maxis Software, 510/254-9700, \$44.95. Fiendishly clever mad scientist's laboratory allows you to build Rube Goldberg-style widgets out of metronomes, switches, light bulbs, and much more. It encourages imagination and exploration, plus kids think its cool. **Apr 95**

FINANCE/ACCOUNTING

★★★★ M.Y.O.B. 5.0, BestWare, 201/586-2200, \$139; \$239 w/payroll. A well-designed interface makes double-entry accounting easy enough for anyone to do. And—for those small-business owners who are keeping an eye on the bottom line—the price is right. **May 95**

★★★★ QuickBooks 3.0, Intuit, 415/322-0573, \$119. Full-featured double-entry accounting program is easy to use, but its operation is not entirely Mac-like and its cryptic error messages may cause you to ignore serious problems. **Jun 95**

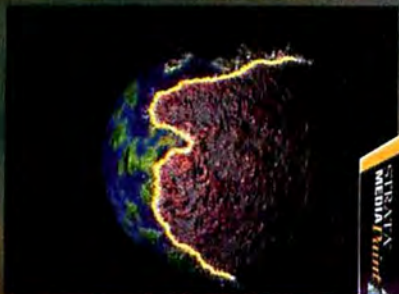
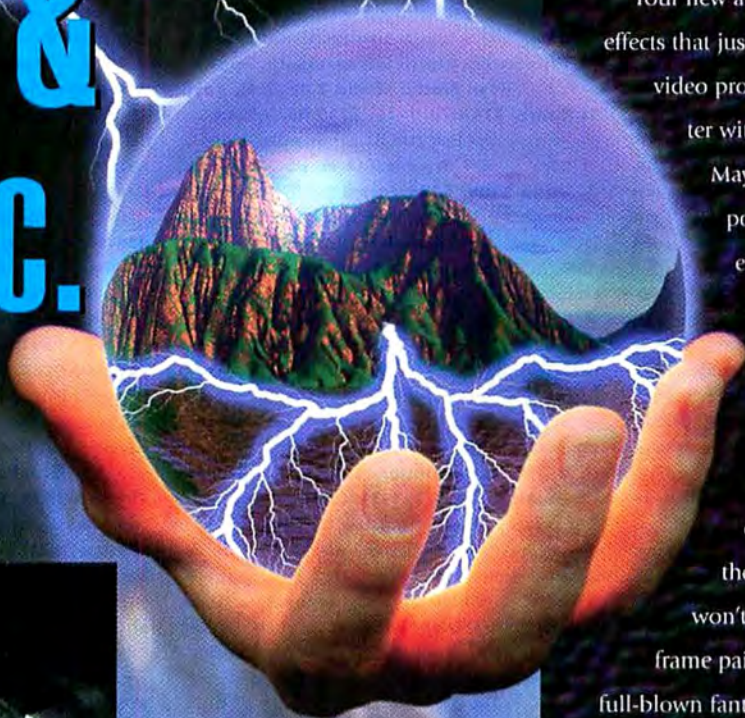
★★★★ Quicken 5.0, Intuit, 415/322-0573, \$49.95. The addition of a calendar and new ease-of-use features keep this personal finance software comfortably ahead of the pack. This upgrade is an incremental, but still welcome, improvement over an already excellent product. **Feb 95**

★★★★ StreetSmart 1.0, Charles Schwab & Company, 800/334-4455, \$59. If Schwab is where you want your investments held, and if you want to have tighter control over your portfolio and save on brokerage fees, you should seriously consider this financial investment software. **Feb 95**

GRAPHICS

★★★★ Adobe Dimensions 2.0, Adobe Systems, 415/961-4400, \$199. 3-D effects software has added color support, as well as drawing and text tools. Its ability to create resolution-independent 3-D images and map

Quicktime™ Light & Magic.



Terraform animation sequence and composite illustration by Steve Cooper.



MediaPaint and StencilPaint are trademarks of Strata, Inc.
QuickTime is a trademark of Apple Computer, Inc.
All other trademarks are the property of their respective holders.

STRATA™ MEDIAPaint

Digital SFX brings video to life.

Your new animation begs for special effects that just can't be rendered. That latest video production would look even hotter with a more dynamic punch.

Maybe a funky squiggle text or powerful laser blast; vivid special effects to bring those projects to life. It's magic you want. It's magic they expect. But it would take magic to fit SFX into the budget.

With MediaPaint, you can create radical special effects on the Macintosh, at a price that won't break your budget. Frame by frame paint effects, elegantly subtle to full-blown fantastic. Explosive, time-based particle and squiggle effects. And with StencilPaint, a second video clip can be applied like paint to hide safety wires or even remove an actor's legs as in *Forrest Gump*. All the action happens on a paint layer above the video so you can edit without altering your original footage.

Now, for the price of about an hour in a high-end effects suite, you can get video paint effects for your desktop. Bring your next video project to life with the light and magic of special effects. Get MediaPaint.



STRATA
1-800-STRATAFX

For Academic Pricing, call:
1-800-531-3227

Circle 129 on reader service card

Star Ratings

two-dimensional art earn Dimensions a place on a designer's hard drive. Apr 95

★★★★ **Adobe Illustrator 5.5, Adobe Systems, 415/961-4400, \$595.** Despite slight speed disappointments, this draw program's upgrade is a bargain. It includes more than 200 tile patterns, 220 fonts, and the Acrobat Distiller and Exchange utilities. Sep 94

★★★★ **Adobe Photoshop 3.0, Adobe Systems, 415/961-4400, \$895.** Image-editing program both broadens its capabilities and simplifies its work environment in this dynamic upgrade. While not perfect, the pros far outweigh the cons. Jan 95

★★★★ **Alien Skin Textureshop 1.0, Virtus, 919/467-9700, \$99.** Apply mutations to master textures to create custom patterns made up of seamless tiles. Control freaks won't like this program's random mutations, but it provides a simple way to create patterns. Jul 95

★★ **Art Explorer 1.0, Aldus Consumer Division, 206/628-2749, \$49.95.** While its cartoon style is refreshing and its features promising, this paint/draw program for kids is still rough around the edges. Its biggest limitation is that it's unusably slow on 68030 Macs. Feb 95

★★★★ **Blueprint 5.0, Graphsoft, 410/290-5114, \$295.** For plain old 2-D drafting, this CAD software has a rich, easy-to-use feature set and is admirably fast. The Power Mac version in particular is a first choice for large architectural or engineering diagrams. Jan 95

★★★★ **CD-Q 2.0, Human Software Company, 408/741-5101, \$145.** Take advantage of Kodak's YCC format for Photo CD with this Photoshop plug-in, which lets you make color corrections and fine-tune color separations. If you frequently use Photo CD for image processing, this is the way to go—if you don't mind an inelegant interface and perfunctory documentation. Jul 95

★★★★ **Claridraw 1.0 (1.0v2), Claris Corp., 408/727-8227, \$399.** For presentations without grand artistic pretensions, this draw program can be an effective tool. Considering the wobbliness of some of its features, however, \$400 may be too much to pay. Jan 95

★★★★ **Dabbler 1.0, Fractal Design Corp., 408/688-5300, \$99.** Art-education and paint software provides an excellent paint set with an appealing if slightly quirky interface, at a great price. Nov 94

★★★★ **DeBabelizer Lite 1.0 (1.1), Equilibrium Technologies, 415/332-4343, \$129.** Terrific graphics utility converts graphics files from one format to another. Aug 94

★★★★ **ElectricImage Animation System 2.0 (2.1), Electric Image, 818/577-1627, \$7495.** Although the price may seem incredibly high, this software, with its extraordinary animation and image-rendering capabilities, is worth every penny for cinematic-production professionals. Dec 94

★★★★ **Flying Colors, Davidson & Associates, 310/793-0600, \$59.95.** While not the most dynamic kids' program, this paint/draw program provides easy-to-use tools and nicely drawn stamps for ages eight to adult. Feb 95

★★★★ **Fractal Design Painter 3 (3.1), Fractal Design Corp., 408/688-8800, \$499.** Image-creation program has achieved a rare state of perfection, balancing enhanced conventional controls with spectacular effects packaged inside a tidy interface. It offers a new level of usability and genuine practicality. Apr 95

★★★★ **FullPixelSearch 1.5, Avian Systems, 201/224-2025, \$1295.** Analyze scientific images with a variety of pixel-selection functions. It's a useful tool for scientists, but could use batch processing, scripting, the ability to handle 12- and 16-bit images, and a heftier manual. Jul 95

★★★★ **Gryphon Batch It 1.0, Gryphon Soft-**

ware, 619/536-8815, \$199. Arranges tiles in a visual interface to automate repetitive graphics operations. Although it lacks conditional statements, this batch processor is a time-saver. Jun 95

★★★★ **IntelliDraw 2.0 (2.0.1), Adobe Systems, 415/961-4400, \$99.99.** Wonderful general-purpose graphics package works well, does a great job of automating drawing tasks, and is straightforward. Despite its breadth of features, it always feels approachable. Sep 94

★★★★ **Koyn Fractal Studio 2.02 (2.1), Koyn Software, 314/878-9125, \$119.95.** Software lets you generate beautiful fractals of your own design. Aug 94

★★★★ **KPT Bryce 1.0 (1.1), HSC Software, 805/566-6200, \$199.** For less than \$200, you get a remarkable 3-D landscape-rendering program, a CD-ROM full of images, a slide-show utility, and screen-saver modules. Although the innovative, graphics-heavy interface can be confusing, this software is lots of fun. Dec 94

★★★★ **Live Picture 1.5.5, HSC Software, 805/566-6200, \$995.** Image editor is a promising program rather rudely assembled atop some marvelous technology. Though fast and blessed with the benefits of a proxy-based system, its day-to-day functions leave room for improvement. Dec 94

★★★★ **LogoMotion 1.0 (1.5), Specular International, 413/253-3100, \$149.** Easy-to-use 3-D package is eminently affordable. It's a terrific program, both for creating flying logos and as an entry-level 3-D package for nonprofessionals. Nov 94

★★★★ **MacDraft 4.0, Innovative Data Design, 510/680-6818, \$449.** Report-links to Excel and a clean interface make this 2-D CAD software an excellent choice for use in mechanical engineering and construction. Plus, it's easy to learn. Mar 95

★★★★ **Macromedia FreeHand 5.0, Macromedia, 415/252-2000, \$595.** The new version of this venerable program has not only kept pace with the competition but has also added unique features of its own. Although the interface is more cluttered than ever, the wealth of new capabilities make this the drawing program to buy. May 95

★★★★ **MetaFlo', The Valis Group, 415/435-5404, \$595.** Graphics utility yields interesting visual effects with a minimum of fuss. It imparts elasticity to 2-D images, letting you push and pull collections of pixels. Aug 94

★★★★ **MiniCad 5, Graphsoft, 410/290-5114, \$795.** Excellent CAD software for the Power Mac offers major performance for its price. It's admirably easy to learn. Nov 94

★★★★ **MovieFlo' 1.1, The Valis Group, 415/435-5404, \$899.** Tug, twist, and pinch your sister—or at least a digital image of her—with this special-effects program for stills or QuickTime movies. Well-designed application is hampered by a steep price and a poor manual. Jun 95

★★★★ **PhotoEnhancer 1.0, PictureWorks, 510/855-2001, \$129.** Nifty utility provides dozens of ways to improve the quality of QuickTake photos, from sharpening or softening focus to correcting over- or underexposed shots. Choose an image from a display of enhanced photos to speed the correction process. Apr 95

★★★★ **PhotoFlash 2.0, Apple Computer, 408/996-1010, \$129.** If you want to enhance or catalog images acquired from a scanner or a digital camera such as Apple's QuickTake 100, consider this utility. It's not a high-end image-editing program, but it does offer basic image-retouching tools and support for Photoshop filters at a reasonable price. Jul 95

★★★★ **PhotoMatic 1.01 (2.0), DayStar Digital, 404/967-2077, \$199.** AppleScript-based utility lets you automate tasks in Adobe Photoshop 2.5.1 or later. Although

it's limited, it can relieve you of some mundane chores. Nov 94

★★★★ **Pixar Typestry 2.1, Pixar, 510/236-4000, \$299.** With QuickDraw GX support, an approachable interface, a strong array of animation features, and outstanding image quality, this 3-D type-effects software is worth a try. It adds a new dimension to the way you look at type. Feb 95

★★★★ **PixelPaint Pro 3.01, Pixel Resources, 404/449-4947, \$379.** Color paint program strikes a good balance between the artistic demands of painting and the technical precision of image processing. New color-management capabilities are a plus for professional users. Mar 95

★★★★ **PixelPutty Solo, The Valis Group, 415/435-5404, \$349.** Affordable modeler lets you manipulate 3-D objects as if they were clay. It's a capable program, but a bare-bones interface and skimpy manual make it somewhat daunting for novices. Jun 95

★★★★ **Ray Dream Designer 3.1.1, Ray Dream, 415/960-0768, \$349.** 3-D graphics program provides competent (if sometimes awkward) modeling tools, offers excellent surface-texturing capabilities, and produces high-quality ray-traced renderings. Mar 95

★★★★ **ScanPrepPro 1.2 (2.0), ImageXpress, 404/564-9924, \$695.** Adobe Photoshop add-on automates the scanning and image-messaging process and produces good results, although the program is somewhat unstable. Nov 94

★★★★ **Scenery Animator 1.0.4 (1.1), Natural Graphics, 916/624-1436, \$149.** Landscape rendering and animation software uses U.S. Geographical Survey data to create remarkably realistic 3-D representations of terrain. Aug 94

★★★★ **Select 1.6, Human Software Company, 408/741-5101, \$245.** Although its selection mode provides a convenient and intuitive way to make changes to several colors at once, all the features of this CMYK color-correction plug-in can be found in Photoshop. Jul 95

★★★★ **Specular Collage 2.0.1, Specular International, 413/253-3100, \$399.** Practical image-compositing solution supplies a smooth interface and strong support for Adobe Photoshop 3.0. As long as you're willing to return to Photoshop to confirm your edits and make final changes, it's a serviceable tool. Feb 95

★★★★ **Terrazzo 1.0, Xaos Tools, 415/487-7000, \$199.** Turning a random group of pixels into a geometric pattern may not be everyone's consuming passion, but this plug-in graphic-effects module has definite appeal for a select niche of fabric, graphic, and video designers. Nov 94

★★★★ **TextureScape 1.5, Specular International, 413/253-3100, \$195.** Algorithmic art program lets you manipulate and arrange PostScript shapes to create seamlessly repeating patterns. Like the best tools, it's simple enough to be fun and flexible enough to give you meaningful control. Feb 95

★★★★ **TypeTwister 1.0, Adobe Systems, 415/961-4400, \$29.99.** Inexpensive, easy-to-use, and fun type styler lets you create wildly styled text effects, although it won't satisfy hard-core type manipulators. Jan 95

★★★★ **Virtus WalkThrough Pro 2.0, Virtus Corp., 919/467-9700, \$495.** Aside from occasional stumbles, this design tool is an exceptional program that lets you quickly and intuitively interact with your designs and gives clients the opportunity to visit and explore your creations before they are built. Apr 95

★★★★ **Vision 3d 4.0, Strata, 801/628-5218, \$695.** The new version of this 3-D modeling, rendering, *continues*

SEE THE WORLD IN JUST FOUR DAYS

Hit all the coolest stops at **Boston Macworld Expo August 8-11**

by jumping on board Macworld's 1995 VIP World Tour. The

VIP Tour will navigate you through the world of the latest

Macintosh hardware and software faster than you can say

Phineas Fogg, and that's not all! Your 1995 VIP World Tour

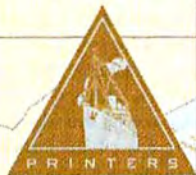
Passport is also a game card. Simply visit ten stops on the VIP

Tour and you could win printers, scanners, CD-ROMs,

software, subscriptions and more!

So come by the Macworld booth #5304 and pick up your VIP

Passport. It's your ticket to a world of fun and prizes.



Macworld



Star Ratings

and animation package expands its array of modeling tools and adds two renderers. Plug-in extensions provide a practical way to customize the program, while informative and easy-to-read documentation makes learning its many features relatively painless. **Jul 95** **Q**

★★★ **Vistapro 3.0, Virtual Reality Laboratories, 805/545-8515, \$149.95.** 3-D landscape rendering software uses digital versions of U. S. Geological Survey maps to create images and allows you to add external features such as buildings and rivers. Although it's a good program, it has some limitations. **Feb 95** **Q**

★★ **xRes 1.11, Fauve Software, 415/543-7178, \$799.** You can apply a variety of effects to selected areas of a large composition with this image editor. Although it offers pluses such as useful filters and customizable gradients, this program's numerous interface oddities make it less attractive than the competition. **Jul 95** **Q**

MATH/SCIENCE

★★★★ **Chamber Works 1.0.2 (1.1), OnScreen Science, 617/776-6416, \$99.** Simulator for particle-physics events is the best introduction to particle physics yet produced, at a great price. **Dec 94**

★★★★ **JMP 3.0 (3.1), SAS Institute, 919/677-8000, \$695.** This statistics software can be used for a wide range of biological, chemical, and physical-science investigations. New features include floating tool palettes, an annotation tool for data tables, and an experimental-design module. **Sep 94** **Q**

★★★ **Kekulé 1.1, PSI International, 410/821-5980, \$495.** Science software reads scanned chemical-structure drawings and interprets them, giving both a diagram for checking interpretation accuracy and a formal string representation of the structure. **Nov 94**

★★★ **Maple V 3.0, Waterloo Maple Software, 519/747-2373, \$795.** If you prefer to do your own programming and function creation, you'll benefit from this symbolic mathematics software's efficient use of your Mac's resources. This version hits most of the points on your symbolic-math wish list. **Oct 94** **Q**

★★★★ **MATLAB 4.1 (4.2c), The Math Works, 508/653-1415, \$1695.** Relatively expensive numerical math software has added nearly 100 new graphics commands, improved its treatment of sparse matrices, and added commands for sound processing. Its toolboxes make it a first choice for many applied-science specialties. **Nov 94** **Q**

★★★★ **MLab, Civilized Software, 301/652-4714, \$1495.** Mathematical-modeling software lets you do fast computation on numerically complex real-world problems, using an ancient Mac II or higher. You must be willing to write short programs, but professional researchers will find it a rewarding choice. **Apr 95**

★★★★ **Spyglass Plot 1.0 (1.01), Spyglass, 217/355-6000, \$295.** This scientific-charting software is the first choice for serious large-set plot crunching. **Oct 94** **Q**

★★★★ **Statistica/Mac 4.1, StatSoft, 918/583-4149, \$695.** At present, this statistical software is the undisputed features-per-dollar champion in the Mac market. **Mar 95**

★★★★ **SuperScope II 1.25 (1.4), GW Instruments, 617/625-4096, \$1490.** Despite a relatively small instrument library, this laboratory data-acquisition software effectively covers a wide range of needs, and learning to use it won't become your life's work. **Oct 94** **Q**

★★★★ **Survival Tools 1.0 (1.1), Abacus Concepts, 510/540-1949, \$295.** The combination of survival analysis with the StatView template systems gives you a

virtual actuary-in-a-box. It's a great set of tools, conveniently packaged. **Feb 95** **Q**

ORGANIZATION/PRODUCTIVITY

★★★★ **ACT 2.0, Symantec Corp., 503/334-6054, \$249.95.** Contact manager's file-level compatibility with DOS and Windows and its complete contact management make it worth considering if you can live with its weak scheduling functions. **Mar 95**

★★★★ **Arrange 2.0, Common Knowledge, 415/325-9900, \$349.** If your needs fall beyond the usual calendar and address-book functions, this personal information manager is a strong contender. It now has more calendar functions and print options. **Dec 94** **Q**

★★★ **Claris Organizer 1.0 (1.0v2), Claris Corp., 408/727-8227, \$99.** New personal information manager users, lured by the low price, good performance, and ease of use of this product, will find that it meets their needs. Most longtime PIM users won't be tempted to switch. **Jan 95** **Q**

★★ **ClieTrac 2.0, Whiskey Hill Software, 415/851-8702, \$99.** It's easy to enter contact information, but this PIM is slim on speed, features, and flexibility. **May 95**

★★★★ **DateBook & TouchBase Pro Bundle 4.0, Adobe Systems, 415/961-4400, \$89.99.** Personal information manager package is now easier to use and offers many new features. The excellent linking between the contacts and calendar is the most significant feature. **Sep 94**

★★★★ **DateView 1.0.1 (1.0.2), Prairie Group, Inc., 515/225-3720, \$69.95.** If you're willing to sacrifice some features to get simplicity and speed, this calendar/to-do manager makes sense. It integrates with the contact manager, InTouch. **Aug 94**

★★★★ **Day-to-Day Organizer 1.0, Portfolio Software, 802/434-6400, \$149.95.** The address-book and outlining components of this organizer are great, but overall, it's a mixed bag. The calendar interface and the way it handles recurring events need to be improved. **May 95**

★★★★ **Dynodex for Macintosh 3.5 (3.5.2), Portfolio Software, 802/434-6400, \$69.95.** Although this program doesn't currently link to a calendar, it is an excellent contact manager. This upgrade has a few new features, improved performance, and an easier-to-use interface. **Sep 94**

★★★★ **Expresso 1.0, Berkeley Systems, 510/540-5535, \$69.99.** The just-the-basics approach of this calendar and address book might be just fine for people who don't need the feature set of other calendar programs and enjoy its graphics. **Apr 95**

★★★★ **FastPace Instant Contact 1.0 (1.1), Attain Corp., 617/776-1110, \$39.99.** Although this contact manager could use a few additional features—especially a menu-bar search function—it does a capable job, and it is intuitive and easy to use. **Jan 95**

★★★★ **First Things First Proactive 1.1, Visionary Software, 503/246-6200, \$149.** Capable scheduling program has some convenient features. It's worth a look if you don't have to share information with a contact manager. **Nov 94**

★★★★ **In Control 3.0.4 (3.0.7), Attain Corp., 617/776-1110, \$85.** Excellent to-do-list manager and outline, coupled with a good calendar is a strong choice if you live and die by to-do lists. **Oct 94**

★★★★ **Now Contact and Now Up-to-Date 3.0, Now Software, 503/274-2800, \$99.** Taken together, this contact manager and calendar provide a set of

solid, reliable tools for keeping your life in order. Users who need to share information over a network may find it close to ideal. **Apr 95**

★★ **Peanuts Family Organizer 1.0, Individual Software, 510/734-6767, \$19.95.** "Hey, Pop, can I borrow the car Saturday night?" "Look at the family PIM and check my calendar, Son." This organizer's endearing interface doesn't make up for missing or poorly implemented features. **Jun 95**

★★ **Souvenir 2.2, ComposeTel, 415/327-0744, \$49.** While this contact manager is fast and simple, it's hard to recommend it when you can buy integrated contact managers and schedulers for about the same price. **Dec 94**

★★★★ **TimeSquare 1.0 (1.0.6), Team Building Technologies, 514/278-3010, \$149.** Fast, flexible, network calendar program has lots of handy features, but it's missing a few as well, such as multiday events and label grouping. **Aug 94**

PRESENTATION TOOLS

★★★★ **Adobe Premiere 4.0 (4.0.1), Adobe Systems, 415/961-4400, \$795.** Video-editing software for the Power Mac remains as solid and reliable as previous versions, and also advances far and above its competitors with new and improved professional-level features. With the right hardware, it can give desktop-video editors broadcast-quality products with a minimum of compromises. **Dec 94** **Q**

★★★★ **Amazing Animation 1.0, Claris Corp., 408/727-8227, \$49.** Cute pictures, funny sounds, and a kid-friendly interface come together in this package that lets children produce short animations or interactive presentations. The canned animations and scenes grow tiresome, however. **Jan 95**

★★ **Animation Master 2.0.5 (2.09), Hash Inc., 206/750-0042, \$699.** Although this animation software packs extraordinary power at a reasonable price, it's difficult to learn and prone to instability. **Oct 94** **Q**

★★★★ **Electronic Marker 1.0.2, Consumer Technology Northwest, 503/643-1662, \$34.95.** This annotation tool can be a practical enhancement to live demonstrations and on-screen presentations, but it needs better controls for modifying and preserving markup layers. **May 95**

★★★★ **HyperCard 2.2, Apple Computer, 408/996-1010, \$249.** Authoring tool strikes a good balance between power and ease of use, and its price is reasonable. It may not satisfy all your wishes, but it should keep you happily building stacks. **Sep 94**

★★ **Living Album 2.5, QuickMedia Labs, 408/749-9200, \$129.95.** A crowded interface detracts from the usefulness—and aesthetics—of this multimedia album. **May 95**

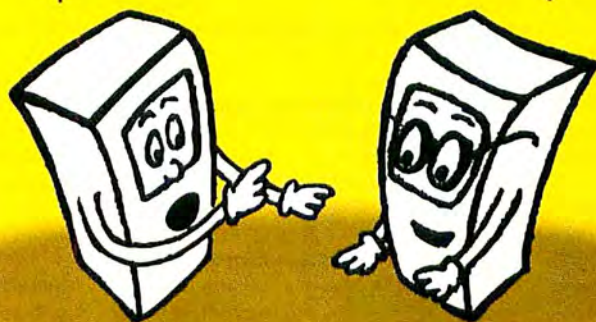
★★★★ **Macromedia Director 4.0 (4.04), Macromedia, 415/252-2000, \$1195.** Although this multimedia program remains far from easy to use, this admirable upgrade increases the program's power and improves its interface. Multimedia professionals will continue to find it the best package available. **Sep 94** **Q**

★★★★ **Microsoft PowerPoint 4.0, Microsoft Corp., 206/882-8080, \$339.** If you're in the market for a presentation-graphics program, this is a good choice to use along with Word or Excel, as long as you don't mind the lack of animation functions. For general purposes, though, other alternatives have the edge. **Feb 95** **Q**

★★ **MovieWorks 2.0.2, Interactive Solutions, continues**

I'LL LEARN HOW TO BE
A WEBMASTER AND HAVE
A COOL WEB SITE

AND I'LL LEARN ALL ABOUT
CONNECTING MACS TO OUR
LAN AND THE INTERNET



Mactivity/Web
is sponsored by:



Two great conferences on using Macs on the Internet and Macintosh networking

Develop Mac-based Web servers and home pages

A two-day conference

MACTIVITY/WEB: The Macintosh WebMasters University® focuses on bringing the power and ease of the Macintosh to Internet publishing. Mactivity/Web has the best instructors, the hottest topics, beginning and advanced tracks and the hands-on Web Site Creation Lab. Whether you are an expert WebMaster or just starting out, Mactivity/Web has something for you. Topics include:

- ▶ Mastering HTML
- ▶ Building CGIs in C and AppleScript
- ▶ Hands-on training with our Web Wizards®—win an Apple Internet Server 6150
- ▶ Performance tuning your server
- ▶ HTML 3.0
- ▶ Securing your transactions
- ▶ Information Architecture Theory
- ▶ and much more!



July 9-10, 1995
San Jose, California

Connect the Macintosh to the computer universe

A three-day conference and exhibition

MACTIVITY'95: The Macintosh Connectivity Conference® is where you'll discover answers to your Macintosh connectivity questions. Whether your environment is predominately Macintosh, or if the Mac is just one part of your desktop strategy, Mactivity'95 is the place for you. Pick and choose from seven tracks. Features include:

- ▶ More than 50 sessions on Internet, cross-platform, workgroup computing and LAN solutions
- ▶ Over 100 exhibitors showing the hottest products
- ▶ internet@mactivity Pavilion
- ▶ FREE lecture series
- ▶ The Mactivity Test Drive Area—try products on our Show Network
- ▶ 3 keynotes by industry visionaries
- ▶ and much more!



July 11-13, 1995
San Jose, California

- ☐ Send me more info about Mactivity/Web.
- ☐ Send me more info about Mactivity'95.
- ☐ Register me for a free ShowcaseExtra pass.

Name _____

Title _____

Company _____

Address _____

City, State, ZIP _____

Tel _____

Fax _____

Email _____

Mail to Mactivity, 20 N. Santa Cruz Avenue, Los Gatos, CA 95030, fax to 408.354.2571 or email to info@mactivity.com

For more information, call 408.354.2500, toll-free 800.798.2928, or browse <http://www.mactivity.com>

Mactivity, Web and Mactivity'95 are registered trademarks not affiliated with Apple Computer, Inc. Macintosh and AppleScript are registered trademarks of Apple Computer, Inc. All other product names are registered trademarks of their respective companies. Features subject to change.

Star Ratings

415/377-0136, \$295. With diligence you can get decent results with this all-in-one QuickTime-based multimedia package. But other entry-level programs make leaping into multimedia easier and more rewarding. Sep 94

★★ **mPower 2.0, Multimedia Design Corp., 704/523-9493, \$295.** Despite a handful of sophisticated multimedia features, this authoring tool is too limited to be compelling. While its push-button interface is easy to understand, it's far too cumbersome. Apr 95

★★★ **The Multimedia Workshop, Davidson & Associates, 310/793-0600, \$79.95.** Children or adults can use this media-integration tool without big investments of either time or money. It's full of compromises, though, such as the inability to layer narration over music. Nov 94

★★★★ **Persuasion 3.0, Adobe Systems, 206/622-5500, \$495.** Users have plenty of new features to cheer about, including improved tool palettes, extensive charting options, and hypertext functions with this presentation graphics program's upgrade. High memory and disk-space requirements are drawbacks. Sep 94

★★★★ **Presenter Professional 3.0, VID, 818/358-3936, \$1995.** The improved interface, enhanced animation module, and reduced price of this 3-D modeling and animation package make it an excellent choice for multimedia producers. The new audio features are especially appealing. May 95

★★★★ **SoundEdit 16, Macromedia, 415/252-2000, \$379.** Digital audio software supports 16-bit sound and has enough goodies to earn it a place in a multimedia producer's toolbox. But its lack of record-level controls limits its usefulness as a professional audio tool. Dec 94

★★ **Special Delivery 2.0, Interactive Media Corp., 415/948-0745, \$399.** Multimedia authoring tool can be confusing and isn't the best choice for complex projects. Still, it may save hours of training for users who merely need to create simple presentations. Apr 95

★★★★ **SuperCard 1.7.1 (2.0), Allegiant Technologies, 619/587-0500, \$495.** Multimedia authoring system adds a few welcome enhancements and squashes some old bugs. For current users, the upgrade is well worth the price; for others, it's an excellent alternative to more expensive authoring systems. Feb 95

PROGRAMMING

★★★★ **IDL 3.5 (3.6), Research Systems, 303/786-9900, \$1500.** In this shockingly powerful, compact, graphics-oriented, interpreted language, a single command is worth a page of C-language code. If you're an image processing professional, you should consider adding IDL to your tool kit. Oct 94

★★ **ScriptWizard 1.0, Full Moon Software, 408/253-7199, \$99.** Software attempts to make writing and debugging AppleScript scripts easier. Unfortunately, it doesn't offer enough improvement over Apple's Script Editor. Jan 95

★★★ **Symantec C++ 8.0, Symantec, 503/334-6054, \$499.** The new version of this development environment offers native PowerPC compilers for C++ and ANSI C. The project manager and class browser have been improved, and the compiled code is laudable. While our reviewer had some complaints about the package's resource demands and the company's support reputation, this C++ compiler is well above average. Jul 95

★★★★ **VIP-C 1.5 (1.5.1), Mainstay, 805/484-9400, \$495.** For convenience in producing 680X0/Power Macintosh applications, this programming utility is a fine investment. Intermediate to advanced users will

get the most benefit, but even beginners will find that it helps turn student projects into serious apps. Feb 95

UTILITIES

★★ **Apple Personal Diagnostics 1.0 (1.1), Apple Computer, 408/996-1010, \$129.** In trying to make a hardware tool for the rest of us, Apple has come up short. This hardware-diagnostics utility has an uneven manual, some less than thorough tests, and a surprisingly unsatisfying interface. Nov 94

★★★★ **Cal 1.0, Thought I Could, 212/673-9724, \$79.95.** Well-chosen set of desktop necessities includes an excellent calculator, an associated-formula editor, a datebook, and a calendar. Due to its easy access and ample power, this software has become an everyday tool for our reviewer. Jan 95

★★★ **CanOpener 3.0, Abbott Systems, 914/747-4171, \$125.** You can use this handy utility to open many types of files—which can be a lifesaver if you don't have the application a file was created in—but it falls a little short in the file-search department. May 95

★★★★ **CD Directory 1.0, Insignia Solutions, 415/694-7600, \$69.95.** Store catalogs of CD directories on your hard drive—and access them at hard drive speeds—with this handy utility. One complaint: cataloged CDs are treated as local drives, and this greatly increases search time during a global search. Jul 95

★★★★ **Conflict Catcher II 2.1.1, Casady & Greene, 408/484-9228, \$79.95.** Customizable, fast, and safe extension-management utility goes well beyond the basics. For Power Macintosh users, it even tells which extensions aren't written in native code and are likely to slow down Power Macs. Oct 94

★★★★ **Disc-To-Disk, Optical Media International, 408/376-3511, \$199.** Audio-capture utility's friendly interface provides a simple way to transfer sound from a CD to the Mac's hard drive. A useful tool for multimedia authors. Jun 95

★★★★ **DiskGuard 1.0.1 and DiskGuard Remote, ASD Software, 909/624-2594, \$129 to \$799.** Rock-solid, flexible disk-protection tools are worth serious consideration if your Mac or Macs are accessible to other users. The remote version (which comes in five- and ten-user packs) adds network features, including clock synchronization. Mar 95

★★★ **DragStrip 1.0, Natural Intelligence, 617/876-4876, \$39.95.** Icon-based file and folder organizer brings a semblance of order to your cluttered desktop. But your troubles aren't over unless a future version lets you label folders. May 95

★★★★ **Drive7 3.0 (3.09), Casa Blanca Works, 415/461-2227, \$89.95.** Highly recommended hard drive-formatting utility easily formats and partitions most drives and provides all the options you need. And within its limitations, its Mount Cache utility provides a real performance boost. Nov 94

★★★ **eDisk 2.0, Alys Software Corp., 415/928-2895, \$149.95.** Driver-level software compresses data read to your drive on the fly and automatically expands data read from your drive. It offers transparent compression. Dec 94

★★★★ **FolderBolt Pro 1.0.3, Kent Marsh, 713/522-5625, \$129.95.** Feeling insecure? Top-notch encryption schemes and flexible access controls let you secure your Mac's contents by password-protecting folders and encrypting the data they contain. Jul 95

★★★★ **Graffiti 1.01, Palm Computing, 415/949-9560, \$79.** If you can't seem to teach Newton your

handwriting, you can teach yourself a new writing system that Newton can handle. Kind of makes you wonder who's running the show, but it works. May 95

★★★★ **Icon Mania 1.0 (1.02), Dubl-Click Software, 503/317-0355, \$69.95.** Delightful icon-editing utility comes with terrific tools for building new icons, including an outstanding thumbnail feature that builds custom icons from graphics files. Aug 94

★★★★ **Kaboom 3.0, Nova Development Corp., 818/591-9600, \$49.95.** Sound-effects utility with sound-editing application is a fun program for anyone who wants to play with sound. Feb 95

★★★★ **Launch Pad 1.0, Berkeley Systems, 510/540-5535, \$49.99.** If you want to share your Mac with your kids, this desktop utility is a worthwhile investment. It can even speak menu items and file names out loud for kids too young to read. Jan 95

★★★ **MacTools Pro 4.0, Symantec Corp., 503/690-8090, \$149.95.** This utility does a good job of diagnosing and fixing disk problems, but suffers from large RAM requirements and expensive technical support. May 95

★★★★ **Maxima 3.0, Connectix, 415/571-5100, \$99.** If you have more than 8MB of RAM, you can use some of it as a RAM disk, speeding up disk-based operations, with this inexpensive utility. Nov 94

★★★★ **MultiClip Pro 3.1, Olduvai Corp., 305/670-1112, \$59.** Easy-to-use utility is exactly what Apple's Clipboard and Scrapbook should have been; a convenient repository of data that moves between documents without fuss or muss. Apr 95

★★★ **Multimedia Utilities 1.1, Motion Works, 415/541-9333, \$299.** Six utilities address many aspects of QuickTime moviemaking, from editing movies and sound tracks to creating morphs, animations, and screen recordings. Although the utilities are appealing, you must save early and often because of frequent crashes. Jul 95

★★★★ **Norton DiskDoublPro 1.1, Symantec Corp., 503/334-6054, \$109.** Utility collection includes DiskDoubl, AutoDoubl, and CopyDoubl. Because of its ease of use, the product is a good choice for beginners. Feb 95

★★★ **Norton Utilities for Macintosh 3.1, Symantec Corp., 503/334-6054, \$149.95.** Data-protection and -recovery utility collection is leaner, meaner, and faster than ever before, but it's also surprisingly uneven. While Disk Doctor leads the pack for disk-repair utilities, the back-up module is weak and the new UnErase module is missing some features. Feb 95

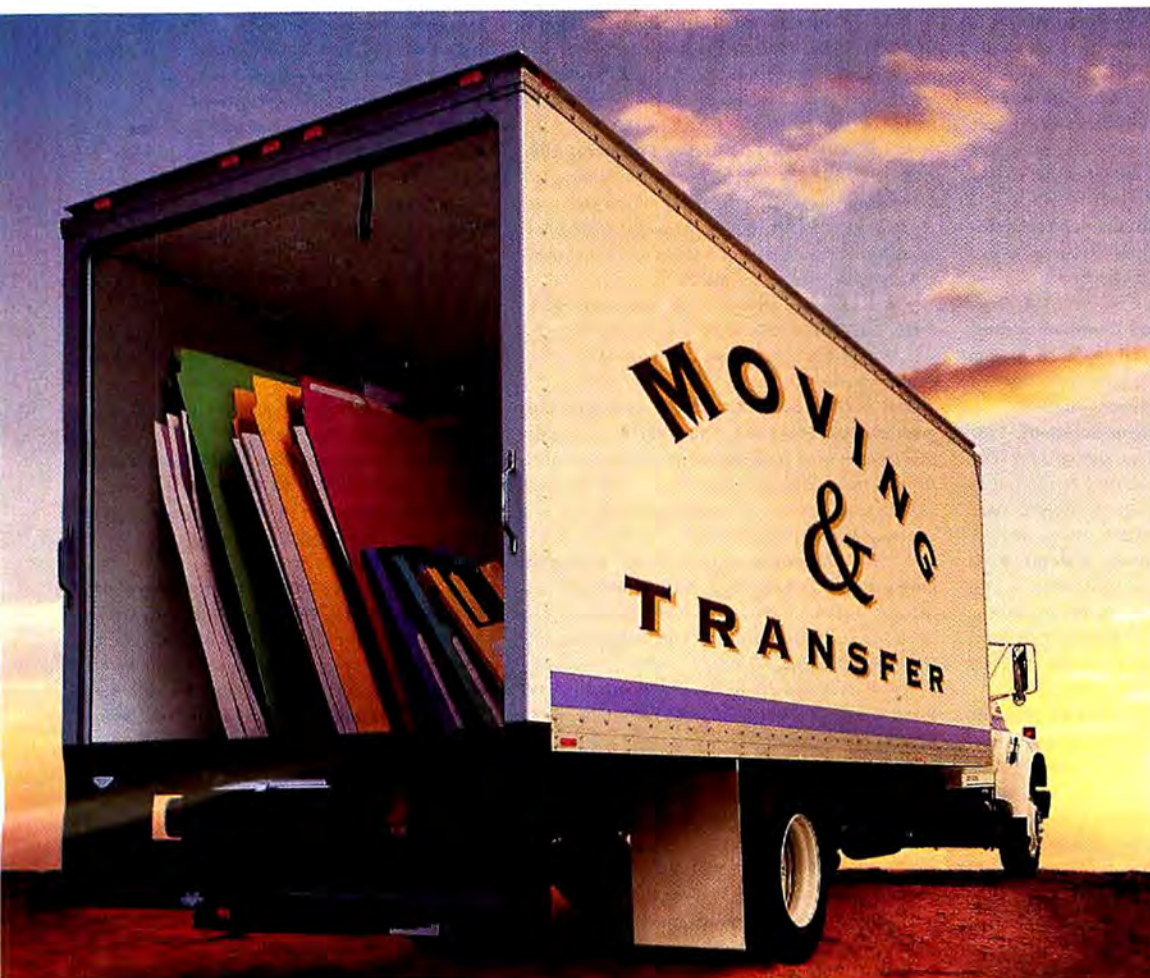
★★★★ **Now Utilities 5.0, Now Software, 503/274-2800, \$89.** Three of the modules of this fine-tuned, interlocking utility set—Now FolderMenus, Now Menus, and Now SuperBoomerang—are almost indispensable, and while the other six may not be tops in their category, they're well worth considering. As a collection, this package remains the best in the business, and it's Power Mac native. Jan 95

★★★★ **OptiMem RAM Charger 2.0.1, Jump Development Group, 412/681-2692, \$129.** Use RAM more efficiently with this memory-management utility. The Mac OS ought to work like this, but until it does, you should use this nifty utility. (An added bonus: it works on older Macs, back to the Mac Plus.) Jul 95

★★★★ **PaperPower 1.0, Pictel, 513/294-6656, \$149.** Graphics-tablet utility provides a useful tool for creating and using macros, but the overlays it creates can be tricky to use. Apr 95

continues

Just Because You're Moving To A New Word Processor Doesn't Mean You Have To Leave Your Files Behind.



MacLinkPlus is the only product that offers true cross-platform, cross-application file translation. No wonder Apple bundles it with their PowerBooks.



Is the fear of losing data the only thing stopping you from leaving your current applications? Relax. With MacLinkPlus[®], you'll have the freedom to use virtually any file in the application of your choice. Without losing your formatting. So you can actually use Microsoft Word files in WordPerfect. Or ClarisWorks spreadsheets in Excel. And these are just a few of the thousands of possible combinations included in MacLinkPlus, allowing you to switch between word processing, graphics, spreadsheet or database applications. Or between Mac and PC platforms. So change or upgrade applications without worrying about your files. With MacLinkPlus, you really can take it with you.



Call (800) 671-1114 for more information.
Ask about multi-packs, site licenses and our Windows version.

DATAVIZ[®]

The PC & Mac File Compatibility Specialists

Circle 79 on reader service card

Star Ratings

★★★ **Peirce Print Tools 1.0, Peirce Software, 408/244-6554, \$129.** Nine handy printing utilities work with QuickDraw GX. Most of the modules are useful, but not all are must-haves. Jan 95

★★★ **PopupFolder 1.0 (1.5.1), Inline Software, 617/935-1515, \$59.95.** Finder utility is so handy and easy to use, you wonder why it isn't built into the Mac's system software. Aug 94

★★★★ **PowerAgent 1.1 (2.0), SouthBeach Software Corp., 305/942-0605, \$159.** You can revolutionize your Macintosh work with this agent program that manages scripts. It provides excellent support for FileMaker Pro. Nov 94

★★★★ **PowerMerge 2.0, Leader Technologies, 714/757-1787, \$129.** Powerful file-management tool helps you keep individual files, folders, or entire volumes organized and up-to-date. Aug 94

★★★ **ProFiles 1.0, Dayna Communications, 801/269-7200, \$129.** Unusual new utility lets you group related files and folders for quick access and actions such as making aliases, copying, and more. Aug 94

★★★ **RapidCD 1.04, Insignia Solutions, 415/694-7600, \$69.95.** RAM and disk caching of CD-ROM data speeds access to frequently used data. This utility does its job well, but it's incompatible with the AppleCD Audio Player and doesn't allow you to add to its settings. Jul 95

★★★ **RescueTxt 1.0, Abbott Systems, 914/747-3116, \$79.** If you want decent performance and the ability to locate text in even a deleted file, this text-retrieval utility is a good choice. It doesn't tell you what file the text comes from, however, so you cannot simply open the found file. Apr 95

★★ **SCSI Director Pro 3.0.6 (3.1.1), Transoft Corp., 805/565-5200, \$99.** Utility provides simple, one-button hard disk formatting, but when it comes to doing some of the fancy tricks, the going gets rough. Sep 94

★★★★ **Square One 2.0 (2.0.1), Binary Software, 310/449-1481, \$74.** The slick design, flexibility, and straightforward interface of this file-launching utility make it a pleasure to use. Dec 94

★★★ **Stop & Go 4.0, Engram International, 415/455-1100, \$69.99.** File-protection/relaunch utility uses a portion of your hard disk to save a snapshot of the data in your Mac's RAM. It's fast, and it relaunches files, applications, and extensions in a single, unified process, but it's unduly complicated. Oct 94

★★★★ **Stuffit Deluxe 3.5, Aladdin Systems, 408/761-6200, \$129.95.** If you're looking for a compression solution, you should look at this product. Its drag-and-drop applications, Magic Menu, and file translators make it easy to integrate compression into your routine. Mar 95

★★★★ **TypeTamer 1.0.4, Impossible Software, 714/470-4800, \$59.95.** Versatile font utility provides information on installed fonts and simplifies tasks such as typing special characters and reselecting fonts from the menu. May 95

★★★★ **Virex 5.5.1, Datawatch Corporation, 508/988-9700, \$99.95.** Comprehensive, reliable, and speedy utility helps protect your files from those misguided lads who get their jollies by releasing viruses. To keep it current, updates are available on online services. May 95

VERTICAL MARKETS

★★★ **Autoscore 1.0, Wildcat Canyon Software, 510/527-5155, \$150.** Converting the human voice into MIDI note information is a challenging task. If you have the right music software, mike, and voice, this music-recognition software can actually pull it off. Feb 95

★★★ **Bird Brain 2.01, Ideaform, 515/472-7256, \$99.95.** Database lets bird watchers record every sighting of every bird they have ever seen to create electronic life lists. Although it can be slow, it includes species names and other information. Jan 95

★★★ **ConcertWare 1.5.7, Jump Software, 415/917-7460, \$159.** Although it lags behind the competition in performance and features, this music-notation program's low price and ease of use make it a viable choice for the budget-wise. Jun 95

★★★ **DigiTrax 1.1, Alaska Software, 408/738-3320, \$349.** If you're an amateur musician or a multimedia producer with modest sound-recording needs and you have a Quadra AV, consider this audio-recording software. What it lacks in features, it makes up for in simplicity and a relatively low price tag. Mar 95

★★★ **ErgoKnowledge 1.0, Visionary Software, 503/246-6200, \$395.** Despite a few shortcomings, this CD-ROM offers a good, basic review of office-computer ergonomics. Dec 94

★★★ **MayaCalc 2.3.1 (2.3.3), Ecological Linguistics, 202/546-5862, \$120.** 4th Dimension database alleviates much of the pain involved in working with the complex, multilayered Maya calendar. Although the design could be improved, it's a highly useful tool for both serious and casual Maya enthusiasts. Feb 95

★★★★ **Maya Hieroglyphic Fonts, Ecological Linguistics, 202/546-5862, \$10 to \$60 per set.** Although these fonts based on Mesoamerican hieroglyphic scripts are beautifully rendered, the character spacing is sometimes uneven. Feb 95

★★★★ **Mayo Clinic, Family Health Book IVI Publishing, 612/996-6000, \$69.95.** Medical CD-ROM for home use deals with the full gamut of health-care topics, from AIDS to zygotes, although it doesn't include any reference to alternative therapies. Sep 94

★★★ **Mayo Clinic: The Total Heart 1.0, IVI Publishing, 612/686-0779, \$21.75.** Cardiovascular health and related subjects are the topics of this medical CD-ROM for home use. Although it makes liberal use of drawings, photographs, and animations, video sequences would have been more effective. Sep 94

★★★ **Medical HouseCall 1.0, Applied Medical Informatics, 801/464-6200, \$99.95.** Interactive medical guide is a painless way for people to learn about diseases, tests, and therapies. Although it's easy to use and interesting, some images were incorrectly labeled. Feb 95

★★★ **MusicTime 2.0 (2.0.1), Passport Designs, 415/726-0280, \$149.** Music-notation program is geared for hobbyists and students. If your needs aren't complex, it may fit the bill, at a great price. Oct 94

★★★★ **Overture 1.02, Opcode Systems, 415/856-3333, \$495.** Easy-to-learn, midrange notation software has a friendly interface and shows real polish. If you don't need all the features of a high-end product, it's a serious contender. Apr 95

★★★ **Performer 5.02, Mark of the Unicorn, 617/576-2760, \$495.** A colorful, redesigned interface and improved sheet-music view are just part of this MIDI recording program's worthwhile overhaul. If you like the sheet-music view, this is the product to buy. Mar 95

★★★★ **Practica Musica 3.0 (3.1), Ars Nova Software, 206/889-0927, \$140.** Music-teaching program, with emphasis on sight-reading and ear-training techniques, shines as a smart, infinitely patient personal music coach in the classroom. Jan 95

★★★ **Route 66 1.5, Route 66 Geographic Information Systems B.V., 415/957-0666, \$79.95.** Jack Kerouac could have saved a lot of time if he'd

used this route planner (unless he was planning to drive to Alaska, which isn't included). It's fast, but omits some cities and can't handle more than three destinations. May 95

★★★ **SAM-CD, Scientific American Medicine, 212/754-0550, \$395.** Despite a few shortcomings, such as the poor interface for case simulations, this medical reference work—a popular series of publications covering topics in clinical medicine—should prove a worthwhile addition to any medical library. Sep 94

★★★ **Vision 2.08, Opcode Systems, 415/856-3333, \$495.** MIDI program's list of exclusive, creativity-slanted features, such as *endless count off* and *scrubbing* (which lets you hear the music as you drag across it), give the program a usability edge. Mar 95

WRITING TOOLS

★★★★ **Bookends Pro 3.1, Westing Software, 415/435-9343, \$129.** Comprehensive database program catalogs and stores all of your reference material—actual quotes as well as citations. It's a useful tool that researchers will appreciate. Mar 95

★★★★ **EndNote Plus 2.0, Niles & Associates, 510/649-8176, \$299.** Despite its power, this indispensable bibliography and citation manager is surprisingly easy to learn and use. If you have to work with references, it's a good choice. Apr 95

★★★ **FullWrite 2.01, Akimbo Systems, 617/776-5500, \$395.** As the leanest of all high-end word processors, this product requires only 2MB of RAM. Its modular architecture is complex, but it's worth considering if you don't need to share files with the Word/WordPerfect crew. Apr 95

★★★ **Grammatik 6 for Macintosh, Novell, 801/225-5000, \$49.95.** The low price, pleasant interface, and improved accuracy of this grammar checker make it worthwhile for a large number of quality-driven writers. It still misses some errors. Feb 95

★★★ **Inspiration 4.1, Inspiration Software, 503/245-9011, \$195.** Writing tool allows you to move between words and diagrams to show the relationships between ideas. This version adds improved keyboard controls, import and export capability, plus more. Apr 95

★★★ **Microsoft Word 6.0, Microsoft Corp., 206/882-8080, \$339.** If you can put this word processor's new features—including cross-referencing, AutoText, automatic numbering, macros and more—to work and you have a Quadra 650 or faster Mac, take the plunge. If you have a slower 68040 Mac, think twice; and if you have a 68030 Mac, don't even think about it. Feb 95

★★★ **Nisus Writer 4.0, Nisus Software, 619/481-1477, \$495.** In a few specialized areas—such as mixing English and non-Romance languages—this word processing program is unmatched. However, for some high-end uses, such as table creation, it's a poor choice. Mar 95

★★ **Read-It O.C.R. Pro 5.0, Olduvai Corp., 305/670-1112, \$395.** Although this OCR software has a nice collection of features, its recognition engine isn't up to par. It's not a first choice unless you simply need to process piles of very clear Courier text. Apr 95

★★★ **TextBridge 2.0, Xerox Imaging Systems, 508/977-2000, \$99.** Optical character recognition software is impressive on good documents and can be trained and automated. Sep 94

★★★ **Writing Coach 1.0, WritePlace Software, 503/484-6380, \$89.** If you'd like help with your writing, this writing-skills tutorial could be a great investment. Skillfully worded worksheets assist with planning, organizing, and revising. Dec 94

continues

Is it an exhibition if you can
rave until dawn?

Can you **move forward** in time without aging a day?

Is it a **party** if you **can't catch** your breath?

Are you dreaming if your eyes are wide open?

Is it possible to
expect the unexpected?

Will you ever recover
if you miss this event?

An exhibition of pioneers, prototypes and vision.



Can you remember something that hasn't happened yet?

Until now, the future hadn't happened. But with Futureworld, you will move forward in time, to a place where technology cuts across industry and discipline and is seamlessly woven into the fabric of our lives. Where you'll put your hands and eyes on futuristic prototypes from the nation's leading manufacturers. Where you'll experience over 80,000 square feet of exhibits, themed attractions, simulator

rides, sensory mazes, live performances, unexpected thrills and unforgettable entertainment.

For one night and one night only, you can move and shake with the true pioneers of integrated technology. So come. Participate in a revolutionary event. A pivotal exhibition. A spectacular celebration.

Come to Futureworld. You'll never forget it.

Opening Night of the 1995 Macworld Expo/Boston
Tuesday, August 8, 1995 • 9 p.m. to 1 a.m.
Hynes Convention Center • Boston, Massachusetts
Advance Tickets—\$240 per block of 20 tickets
Door Admission—\$20 per person
For more information, call 800-234-0455, ext. 650

For advance ticket purchases, send check
made payable to Futureworld to:
Futureworld Tickets, c/o Macworld
501 Second Street, San Francisco, CA 94107

Presented by
Macworld and **MACWORLD EXPOSITION**

Star Ratings

Hardware

INPUT DEVICES

- ★★★★ **ArtPad, Wacom Technology, 206/750-8882, \$199.** Measuring less than 7 by 7½ inches, this pressure-sensitive tablet is sheer convenience if you're looking for a device that you can hide away one moment and readily exhumate the next. Apr 95
- ★★★★ **DrawingSlate II, CalComp, 602/948-6540, \$395.** A responsive stylus and user-definable macros make this digitizing tablet an excellent choice for artists and illustrators. Jun 95
- ★★★★ **FlightStick Pro for Macintosh, CH Products, 619/598-2518, \$129.95.** The authentic feel of this joystick, along with well-conceived software, make it a nearly perfect desktop pilot's companion. Dec 94
- ★★★★ **GlidePoint, Alps Electric, 408/432-6000, \$99.** If you find moving the mouse a pain in the arm, you might want to try this alternative pointing device, which lets you position the cursor by moving your finger across its surface. Jul 95
- ★★★★ **Mac Keyboard Deluxe, MicroSpeed, 510/490-1403, \$125.** If you're in the market for a new or replacement keyboard, this one, which is both smaller and lighter than Apple's Extended Keyboard, is worth considering. It has four ADB ports. Nov 94
- ★★★★ **MacAlly, The Mace Group, 213/780-6110, \$49.** It may not be a better mouse, but it's a cheaper one. This ADB mouse doesn't stand out from the crowd, but it's durable, glides smoothly, and won't leave a big hole in your pocketbook. Jul 95
- ★★★★ **Mouse Deluxe Mac, MicroSpeed, 510/490-1403, \$69.** The extra buttons of this mouse offer several features that Apple's mouse doesn't match, but its shape may not suit everyone's taste. Mar 95
- ★★★★ **PaperPort, Visioneer, 415/812-6400, \$399.** The paperless office is actually here. This clever combination of elegant hardware and intelligent software makes it easy to capture, organize, and retrieve documents. Once a page is scanned in, you can annotate it; run it through OCR software; or print, fax, or E-mail it. May 95
- ★★★★ **QuePoint, MicroQue, 801/263-1883, \$149.** Tired of shoving a mouse around? Slide your finger across this tiny input device to manipulate the cursor with a minimum of movement. May 95
- ★★★★ **Remote Point, InterLink Electronics, 805/484-1331, \$199.** Although it may not be a first choice for desktop work, this infrared pointing device is an elegant workaround for users who don't want to (or can't) be tethered to their Macs. Apr 95
- ★★★★ **Thinking Mouse Macintosh ADB, Kensington Microware, 415/572-2700, \$139.95.** A mouse is a mouse is a mouse. Not so. This one has four programmable buttons that you can use—with the accompanying software—to automate such tasks as selecting commands or typing text. May 95

MISCELLANEOUS HARDWARE

- ★★★★ **AirNote 1.0 (1.1), Notable Technologies, 510/208-4400, \$299.** Remote-messaging service lets you originate alphanumeric paging messages from your own computer, eliminating both dictation charges and errors in translation. It's a very handy way to get into alphanumeric paging. Dec 94
- ★★★★ **Apple PCMCIA Expansion Module, Apple Computer, 408/996-1010, \$219.** Well-inte-

grated, well-designed unit offers 500-series users an efficient and easy albeit expensive way to add features to their PowerBooks. If you can overlook the early-adopter prices (a big if), the PC Cards are great expansion options—lightweight, low-power, and high-performance. Mar 95

★★★★ **Colortron, Light Source Computer Images, 415/925-4200, \$1195.** Getting the colors on your screen to match those in your printed output is now easy and affordable, thanks to this hand-held spectrophotometer, which measures both transmissive and reflective sources. Jun 95

★ **EAB401P Speakers, Panasonic Communications & Systems, 800/742-8086, \$99.** Small, inexpensive speakers provide less-than-state-of-the-art performance. The audio is thin and reedy. Apr 95

★★ **EAB701P Speakers, Panasonic Communications & Systems, 800/742-8086, \$249.** The sound of these speakers is thin and slightly harsh, although they are attractive in a high-tech sort of way. Apr 95

★★★★ **MM5557, Audio-Technica USA, 216/686-2600, \$149.95.** Among a huge selection of similarly priced speaker systems, these stand out as a best buy. They look good, as well as sound good. Apr 95

★★★★ **MultiSpin 4Xe, NEC Technologies, 708/860-9500, \$515.** With its competitive price, free tech support, and two-year warranty, this quad-speed CD-ROM player is ready to race. Feb 95

★★ **NEC AudioTower, NEC Technologies, 800/632-4636, \$99.** Looks great; sounds mediocre. Although this speaker system provides a convenient jack for an external CD drive, the sound quality is nothing to shout about. May 95

★★★★ **Photo Engine, Radius, 408/541-6100, \$1099.** Photoshop acceleration hardware's suite of four 66MHz 32-bit DSP chips offers sufficient processing power to speed up 25 Photoshop functions on the most sophisticated systems, including Power Macs. Feb 95

★★★★ **Reno Portable CD-ROM Player, MediaVision, 510/770-8600, \$349.** Have CD-ROM, will travel. This portable player is lightweight, versatile, and easy to set up; about the only complaint is its short battery life. Jun 95

★★★★ **SCSI Sentry, APS Technologies, 816/483-6100, \$79.95.** Although the price of this terminator may seem steep, this device may well be the cure for SCSI woes. Our reviewer heartily recommends it. Sep 94

★★★★ **Vivace, Coda Music Technology, 612/937-9611, \$2295.** As an intelligent and endlessly patient accompanist, this music study system for wind instruments may be the best thing that's happened to learning wind literature since the metronome. Jan 95

★★★★ **YST-SS1010, Yamaha Corporation of America, 714/522-9240, \$349.95.** With a name like YST-SS1010, you have to be good. And it is. This satellite-and-subwoofer speaker system is highly recommended, despite its mediocre manual. Jul 95

MODEMS/NETWORK HARDWARE

★★ **Cooperative Adapter, Photonics Corp., 408/955-7930, \$449.** The high cost of each unit, the limitations and restrictions inherent in diffuse infrared, and the extremely low cost of traditional LocalTalk adapters and cabling make this infrared network interface an expensive niche product. Dec 94

★★★★ **DaynaPort Pocket SCSI/Link, Dayna Communications, 801/269-7200, \$299 to \$369.** Inexpensive, lightweight SCSI-to-Ethernet connector works with both desktop Macs and PowerBooks and can use the

Mac's ADB port as a power source. Nov 94

★★★★ **FastSwitch 10, Grand Junction Networks, 510/252-0726, \$6250.** Switched Ethernet hub is a great solution for networks that handle large amounts of data traded peer-to-peer, but if your network consists of E-mail and a file server, you probably won't see much benefit in stepping up to switched Ethernet. Dec 94

★★★★ **OneWorld Fax, Global Village Communication, 408/523-1000, \$999.** Easy-to-use network fax product lets an office share fax-sending resources without dedicating a hard drive and CPU. Aug 94

★★★★ **OneWorld Internet 1.0, 700 Series, Global Village Communication, 408/523-1000, \$1699 plus monthly fee.** Users of an office network can connect to the Mother of All Networks with this Internet gateway. It offers E-mail and direct Internet access in an approachable format. Jun 95

★★★★ **Pocket EtherTalk Adapter, Xircom, 805/376-9300, \$349 to \$399.** All-in-one SCSI-to-Ethernet connector is lightweight and works with desktop Macs and PowerBooks. Nov 94

★★★★ **PowerPort Mercury/PB 500 Series, Global Village Communication, 408/523-1000, \$399.** Top-notch fax modem is capable of exemplary fax and data communications performance. Nov 94

★★★★ **Spectra-Com P192mx, Bay Connection, 408/270-8070, \$169.** If you must have absolute portability and AC power isn't available, this pocket data/fax modem can do the job. It's not that much smaller than a regular desktop modem, however. Oct 94

★★★★ **SupraFaxModem 288, Supra Corp., 503/967-2410, \$274.95.** This 28,800-bps fax modem is a very good performer, and the price of admission isn't steep. Combined with fast, stable fax software and a good terminal program, it's hard to beat. Aug 94

PRINTERS

★★★★ **Apple Color StyleWriter 2400, Apple Computer, 408/996-1010, \$525.** Economical, QuickDraw-based color ink-jet printer offers gorgeous color output plus fast black-and-white printing. If you don't need DOS/Windows compatibility, it's a good buy. Apr 95

★★★★ **HP LaserJet 5MP, Hewlett-Packard, 800/752-0900, \$1299.** This laser printer meets the high demands of small businesses and home offices with features such as 600-dpi resolution, support for Adobe PostScript Level 2, and automatic-input switching. Memory Booster software makes good use of the printer's 3MB of RAM. Jul 95

★★★★ **LaserWriter 16/600 PS, Apple Computer, 408/996-1010, \$2399.** If speed is what you need, this fine printer is it. The price is reasonable. Mar 95

★★★★ **P-Touch PC, Brother International Corp., 908/356-8880, ext. 4307, \$449.95.** Versatile label printer is easy to set up and use, and produces high-quality output. The cost per label is high, though, and the documentation is weak. Sep 94

★★★★ **Phaser 140, Tektronix, 503/627-7111, \$1695.** If you're looking for a capable color printer for a small workgroup, this ink-jet is a great choice. It provides only 17 resident fonts, however. Apr 95

★★★★ **Pictura 310, Fargo Electronics, 612/941-9470, \$4995; optional Adobe Level 2 PostScript package \$795.** While this tabloid-size thermal-wax and dye-sublimation printer is affordable and produces acceptable print quality, it's not to dye for. Its substandard color-matching capabilities don't measure up to those of its competitors. Jul 95

continues

“We want a color laser printer with integrated color and monochrome capabilities; automatic optimization of text, graphics, and halftones; electronic precollation; multi-platform connectivity ...”

We just want to do killer proposals.



Introducing the Xerox XPrint family of networked color laser printers. Now you can produce killer-color documents with integrated black-and-white pages easily and cost-effectively at the desktop color laser industry's lowest black-and-white cost per page. Exclusive Xerox *Intelligent Color* technology automatically applies the right printing methods for sharp text, smooth color graphics, and powerful photo images. The XPrint family has the quality workgroups demand, with the robust design and affordability network managers love. These new printers provide a full range of resolution, from 1200 x 300 to true 600 x 600 dpi, and offer page or document-set printing capabilities, all at 3 pages-per-minute in color and 12 pages-per-minute in black and white. MAC-ready out of the box, and backed by the Xerox Total Satisfaction Guarantee. Call 1-800-54-XEROX for stunning print samples and the name of your nearest Xerox Document Network Reseller.

XPrint Family
4925 Color Laser
4920 Color Laser
4915 Color Laser



THE DOCUMENT COMPANY
XEROX



Star Ratings

★★★★ **PowerPrint 2.5 (2.5.2), GDT Software, 604/291-9121, \$149.** Ingenious hardware-software combo lets the Mac print to almost any PC printer. It supports over 1000 printers—through aging dot matrix models to the newer color ink-jet and laser printers. Sep 94

★★★★ **PrimeraPro, Fargo Electronics, 612/941-9470, \$1895.** The photo-realistic output of this thermal-wax and dye-sublimation printer beats that of any other printer in the price range. But with expensive consumables and slow print time, it's best suited for routine thermal-wax use and occasional dye-sub work. Jan 95

★★★★ **Stylus Color, Epson America, 310/782-0770, \$699.** This color ink-jet printer is no speed demon at 720-dpi resolution, you need special paper for hires output, and it offers no color correction. But who cares? The print quality is superb and the price is reasonable. May 95

SCANNERS

★★★★ **Fujitsu ScanPartner Jr., Fujitsu Computer Products of America, 408/432-6333, \$499.** Compact scanner with good OCR software makes converting hard-copy documents to editable text a snap. While it's an economical and fuss-free scanning solution, its page feeder doesn't offer the paper-size and -shape flexibility of a flatbed scanner. Jul 95

★★ **Pro Imager 4000, PixelCraft, 510/562-2480, \$2995.** This midrange scanner delivers excellent highlight detail but produces a lot of noise in shadow areas. It doesn't measure up to similarly priced competitors in speed or image quality. Jun 95

★★★★ **Pro Imager 8000, PixelCraft, 510/562-2480, \$12,995.** Demanding prepress users will like this scanner's tonal sensitivity, high resolution, large image area, and impressive speed. Although its color-adjustment software needs work, this is a superb scanner. Jun 95

★★★★ **Reli 4830T, Relisys, 408/945-9000, \$1699.** The good: high-quality scans, midrange price; lots of bundled software. The bad: slow performance, quirky scanning software. The upshot: If you can live with the cons, this scanner is a bargain. Jun 95

★★★★ **SprintScan 35, Polaroid, 617/386-2000, \$2495.** Compact, efficient scanner offers a cost-effective way to transfer images from 35mm slides or negatives to a Mac. Jun 95

★★★★ **Vista-S8, Umax Technologies, 510/651-8883, \$995 (LE+); \$1095 (Pro+).** This 24-bit color flatbed scanner has a lot of useful features for its low price, including crisp line-art scans and speedy previews. It's a bargain if you can overlook its slow OCR scanning and some scanning-software bugs. Jul 95

SYSTEMS/STORAGE

★★★★ **Alacrity PM 6100, KS Labs, 614/374-5665, \$165.** Installing a clock booster is the quickest, easiest, and cheapest way to extract more power from Apple's entry-level Power Mac. Oct 94

★★★★ **Brainstorm Accelerator for the Macintosh SE, Brainstorm Products, 415/988-2900, \$199.** Your SE will never be a Power Mac or even a IIsi, but if your budget won't buy a new Mac, you can't do better than this accelerator, which pushes an SE's speed to close to a Classic II's in overall performance. Mar 95

★★★★ **Conley SR2 RAID System, Conley Corp., 212/682-0162, \$21995.** While RAID technology is typically praised for its fault-tolerance rather than its speed, this high-performance storage system proves that you can have both. Sep 94

★★★★ **Joule System, La Cie, 503/520-9000, Price varies by component.** Plug-and-play tower lets you stack drives—including hard drives, removable media, and other modules—atop a base unit, making it easy to buy extra storage or swap modules with other Joule towers. Joule drive prices are generally slightly higher than for comparable drives, however. Feb 95

★★★★ **Newton MessagePad 110, Apple Computer, 408/996-1010, \$599.** Personal digital assistant has improved handwriting recognition, more memory, longer battery life, and a more efficient design. Aug 94

★★★★ **OrangePC Model 200 Series, Orange Micro, 714/779-2772, \$1139 to \$3237.** If your goal is to get a Mac that runs Windows as fast as a PC, you can't get there from here. If your goal is to get business-level performance for day-in, day-out use, these PC coprocessor cards are your best choice. Aug 94

★★★★ **PLI Infinity 270 Turbo, PLI, 510/657-2211, \$599.** This 270MB SyQuest drive is fast, reliable, and a very good product. The cost of the medium is competitive with that of optical drives. Sep 94

★★ **PowerBook 150, Apple Computer, 408/996-1010, \$1449.** Fast, lightweight portable is minimalist in the extreme, with no video-out, ADB, Ethernet, or microphone. Unfortunately, the price is less minimalist, and most budget-conscious shoppers would be better off buying a used or discontinued model. Dec 94

★★★★ **PowerBook 540c, Apple Computer, 408/996-1010, \$4839.** The prestige PowerBook du jour, this sleek, curvy and futuristic-looking notebook makes a good computer for both on-the-road and in-the-office use. Its nonstandard battery, memory, and Ethernet ports are not ideal features, however. Oct 94

★★★★ **PowerBook Duo 280c, Apple Computer, 408/996-1010, \$3759.** If you travel a lot, this notebook computer is the best Mac to get. It offers close to the power of a Quadra 650 in a subnotebook. Oct 94

★★ **PowerBook Duo Dock II, Apple Computer, 408/996-1010, \$969.** Apple has added Ethernet to this full-featured docking station, but installing NuBus cards is still absurdly difficult. Oct 94

★★★★ **Power Macintosh 7100/66, Apple Computer, 408/996-1010, \$2899.** Midrange Power Mac makes an outstanding workstation whose power should last for several years. The price is nothing to take lightly, but this system delivers every dollar's worth. Aug 94

★★★★ **Power Macintosh 8100/110, Apple Computer, 408/996-1010, \$6379.** High-end users who have invested heavily in NuBus cards can protect their investment with this top-of-the-line Power Mac. Mar 95

★★★★ **Power Macintosh 8100/80, Apple Computer, 408/996-1010, \$4249.** While this system doesn't quite offer the excellent price/performance ratio of the other available Power Macs, you should consider it if you're a high-end user moving your work over to RISC-based computing. Aug 94

★★★★ **Power Macintosh Upgrade Card, Apple Computer, 408/996-1010, \$699.** Current 33MHz 040 machines will get the best bang for the buck with this card. However, other Macs won't realize as much of a performance gain. Oct 94

★★★★ **Quadra 630, Apple Computer, 408/996-1010, \$1279.** Fast, inexpensive, expandable 33MHz 68040 machine may be the last 680X0-based desktop Macintosh, but it's one of the best entry-level Macs ever. Nov 94

★★ **RCD-1000, Pinnacle Micro, 714/727-3300, \$1695.** The software for this CD-Recordable drive is easy to use, but it's too unreliable to use as a day-to-day backup system. Jun 95

★★★★ **Zip Drive, Iomega, 801/778-1000, \$199.95; 100MB cartridge \$19.95.** Weighing in at about a pound, this external drive combines speedy performance, convenience, and economy in an attractive package. It uses 100MB cartridges the size of a floppy disk, and boasts near hard-drive speeds. What's not to like? Jul 95

VIDEO/DISPLAY

★★★★ **Apple Macintosh Display Card 24AC, Apple Computer, 408/996-1010, \$1579.** 24-bit accelerated graphics card offers a satisfactory price/performance ratio, although it can't switch resolutions from the keyboard. Oct 94

★★★★ **Apple Multiple Scan 15 Display, Apple Computer, 408/996-1010, \$509.** The tridont tube of this 15-inch monitor provides a sharp and accurate image, but reflects some glare. The built-in stereo speakers reproduce sound nicely. Feb 95

★★★★ **FlexCam, VideoLabs, 612/988-0055, \$595.** Small, unobtrusive desktop video camera has a flexible gooseneck for positioning. Dec 94

★★★★ **L-TV Portable, Focus Enhancements, 617/938-8088, \$229.99.** Sturdy, inexpensive, external TV-converter plugs into your Mac and converts video output to NTSC. Aug 94

★★★★ **L-TV Pro NuBus, Focus Enhancements, 617/938-8088, \$299.99.** NuBus card converts your Mac's RGB video signal to NTSC so you can use your Mac with a TV or VCR. Aug 94

★★★★ **Multiscan 15sf, Sony Computer Peripheral Products, 408/432-0190, \$569.95.** Trinitron monitor has a flat screen that displays sharp, bright, and accurate images. With good antiglare coating and adjustable image tilt, it's worth looking at. Feb 95

★★★★ **MultiSync 3V Monitor, NEC Technologies, 708/860-9500, \$495.** With a bright display and great image quality, this monitor delivers a fine picture at a moderate price. Feb 95

★★★★ **Panelight ZX, Panelight Display Systems, 415/772-5800, \$3995 to \$4695.** LCD panel offers vivid images at a comparatively low price. It's a great choice for presenters. Mar 95

★★★★ **The Presenter Plus Mac/PC, Consumer Technology Northwest, 503/643-1662, \$429.** Small, external TV-converter supports output to television from most Macs with built-in video. Aug 94

★★★★ **QA-1500, Sharp Electronics Corporation, 201/529-8731, \$5795.** LCD panel's display is crisp and flicker-free, but placing a presentation on its PC Card is cumbersome. Cheaper products are available. May 95

★★★★ **QuickCam, Connectix Corp., 415/571-5100, \$149.95.** For as little as \$99 (street price), this tiny, fun, easy-to-use, digital video camera lets users experiment with video input for making QuickTime movies or capturing still images. Mar 95

★★★★ **SpigotPower AV, Radius, 408/541-6100, \$999.** Make full-screen, 30-fps movies with this first-rate video-compression-and-decompression board and accompanying JPEG software. Jun 95

★★ **Tornado Graphics Card, Mirror Technologies, 612/832-5622, \$699.** Inexpensive 24-bit accelerated graphics card has zoom and pan options but is relatively slow. Oct 94

★★★★ **VideoDirector 1.5, Gold Disk, 408/782-0200, \$199.95.** Low-end video-editing system lets you log, edit, and organize videotape footage, copying selections from a source deck to a record deck. A good choice for nonprofessionals. Jun 95

Streetwise Shopper

SPECIAL HARDWARE AND SOFTWARE BUYING OPPORTUNITIES

Selected and edited by Charles Barrett

The following listings include both time-sensitive promotions and open-ended offers being sponsored by Macintosh vendors and their resellers. Each listing indicates which products have been awarded a star rating in Macworld's Reviews (products rated ★★ or lower are not eligible for inclusion), have been selected as an **Editors' Choice**, 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. Except where otherwise indicated, prices given are suggested retail prices.

When placing an order, please mention that you saw the offer in Macworld. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), 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

Diamond Scan or Pro + Diamond Control + DiamondMatch Mitsubishi Electronics America is including two software packages free of charge with its \$1750 Diamond Scan 20H, \$1199 Diamond Pro 17TX, and \$2275 Diamond Pro 21TX color monitors for DTP, CAD/CAM, and graphic-design applications. Diamond Control permits users to make all monitor adjustments on screen, while the DiamondMatch Color Calibrator Kit matches screen colors with printer output. Call 800/843-2515 for more information.

QuickMail + QuickMail WAN Gateway CE Software is including IMPACT Immedia's QuickMail WAN software and a coupon waiving the \$50 onetime subscription fee for Immedia's common store-and-forward-mechanism service in every package of its QuickMail electronic-mail system (Jan 95 ★★ for QuickMail 3.0) at no additional cost. QuickMail WAN provides seamless connectivity between offices using QuickMail and other messaging systems. Call 800/523-7638 for more information.

SummaJet 2C Ink Jet Plotter + Ink Supplies or Media Summagraphics is offering customers who purchase a specially labeled SummaJet 2C wide-format color plotter their choice of either \$550 worth of ink supplies (one color and three monochrome print heads with ink refill kits, plus two spare mono refill kits) or \$550 worth of media (200 sheets of translucent bond paper, 300 sheets each of opaque bond paper and vellum paper, and 50 sheets of Mylar film). Customers who trade in any working D- or E-size pen plotter qualify for an additional \$550 in ink supplies. Call 800/337-8662 for more information. Offer expires 7/31/95.

☞ **SuperCard 2.0 + ☞ Ray Dream Designer 3.1.1 + ☞ Kai's Power Tools 2.1 SE + ☞ Color It 3.0 LE** Allegiant Technologies is bundling the following software free

of charge with its \$695 authoring system (Feb 95 ★★★★★ for SuperCard 1.7.1); the \$349 Ray Dream Designer 3-D graphics program (Mar 95 ★★★★★); a special edition (15 filters only) of HSC Software's \$199 collection of plug-in extensions for such applications as Adobe Photoshop and Fractal Design Painter (May 94 ★★★★★ for Kai's Power Tools 2.0a); and a limited edition (12 filters only) of MicroFrontier's \$149.95 Color It 32-bit paint and image processing program (Aug 95 ★★★★★). Whole bundle available from resellers such as MacConnection (800/800-0002) and MacWarehouse (800/225-6227) for about \$399. The three bundled programs are available direct for \$149 to current SuperCard 2.0 owners who call Allegiant at 619/587-0500. Offer expires 8/31/95.

Zip Drive + Zip Tools Iomega includes a 100MB Zip Tools cartridge free of charge with its \$199.95 Zip drive (Jul 95 ★★★★★). Zip Tools includes a Zip version of SunStar Publishing's \$59.95 Personal Backup utility and an abbreviated version of Continuum Software's \$79.98 VirtualDisk Starter disk-cataloging utility. A demo version of Continuum's DiskDupPro for duplicating Zip disks, plus demos of Bungie Software's Marathon and Pathways games, are also included. Call 800/697-8833 for more information.

SIDEGRADES/UPGRADES

☞ **Color It 3.0** MicroFrontier is offering this \$149.95 32-bit image processing and paint program (Aug 95 ★★★★★ for version 3.0b1) to registered users of selected programs such as Photoshop, QuarkXPress, Microsoft Word, and ClarisWorks for \$49.95. Call 800/388-8109 with your program serial number to order. Offer expires 8/31/95.

☞ **DeltaGraph Pro 3.5** DeltaPoint is offering this \$195 charting and graphing package (Apr 94 ★★★★★ for 680X0 version 3, 1993 *World-Class*) for \$79.95 to registered users of competing products. Call 800/222-2808 for more information.

HP JetDirect Print Servers Hewlett-Packard is offering a \$100 (\$150 for Canadian customers) rebate on the purchase of any HP JetDirect print server with the trade-in of an older HP model. These print servers feature flash memory and multiprotocol support, and they come with HP JetAdmin and HP JetPrint software for remote management and printer-status feedback. Call 800/789-6239 for more information. Offer expires 10/31/95.

☞ **LS Fortran** Language Systems' \$695 ANSI F77 compiler is available for \$375 to owners of competitive products. The compiler has extensions from high-performance machines such as VAX, Cray, and Data General. It includes two source-level debuggers and generates optimized code for standard Macs and Power Macs. Call 703/478-0181 to order.

☞ **MacWrite Pro 1.5** Claris is offering this \$99 word processor (May 94 ★★★★★) for \$69 to registered users who upgrade from competitive products. Call 800/544-8554 for more information.

SPARCprinter E Sun Microsystems is offering a \$1000 discount on this \$2995 color laser printer—which outputs resolutions of 300, 600, or 1200 dpi at rates of up to 12 pages per minute—to customers who trade in their original SPARC-printer or selected Apple, QMS, or HP laser printers. Call 800/952-7427, ext. 200, for more information. Offer good until 7/31/95, or while supplies last.

SPECIAL DISCOUNTS/REBATES/ OFFERS/RESOURCES

eWorld Apple Customer Center Apple Computer is now offering direct customer support for all the company's products via its eWorld online service (eWorld software is preinstalled on every new U.S. Macintosh). Customer support features access to product information, a forum for posting technical questions (which will be answered within 24 hours), discussion boards for customer-to-customer interaction, and a forum for product developers. Call 800/775-4556 for more information and to obtain free eWorld software.

☞ **In Control for Workgroups** Attain is offering a \$299.90 two-user starter pack of this group-scheduling software (Oct 94 ★★★★★ for In Control 3.0.4 personal organizer) for an introductory price of \$199.95. Call 800/925-5615 for more information. Offer expires 7/31/95.

Macintosh Product Registry & World of Macintosh Multimedia Redgate Communications is combining (effective 7/1/95) these publications into a single sourcebook (also published in CD-ROM and online versions) containing over 8000 multimedia and Macintosh product descriptions. Distributed quarterly at \$14.95, this sourcebook is available at such retail outlets as B. Dalton's, Waldenbooks, and CompUSA. Call 800/333-8760 for more information and to order a subscription.

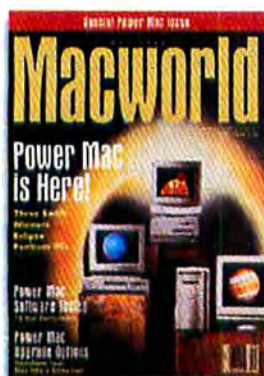
MessagePad 120 Apple Computer is offering a \$50 rebate with the purchase of this PDA between 5/1/95 and 7/31/95. Rebates will be increased to \$100 when an eligible accessory (Newton Connection Kit 2.0, external or PCMCIA fax modem, 2MB or 4MB flash storage card, Newton Print Pack, battery-charging station, leather zip case, or Newton enhancement pack) is purchased at the same time. Rebate coupons are available at MessagePad 120 point-of-purchase displays and via online services. Call 800/909-0260 for more information. Offer expires 8/31/95.

OpenDialog FGM is offering this \$259 set of programming libraries, which is designed to make the creation of dialog boxes easier, for an introductory price of \$99. Call 703/478-9881 for more information and to order. Offer expires 8/31/95.

Phyla 1.0 Mainstay is offering this \$495 object-oriented database (Aug 95 ★★★★★) for \$299. Call Mainstay at 800/484-9817 (code 4636) for more information and to order. Offer expires 7/31/95. **m**

Congratulations

to the Winners of the 9th Annual Computer Press Awards!



Best Computer Magazine
(Circulation more than 100,000)

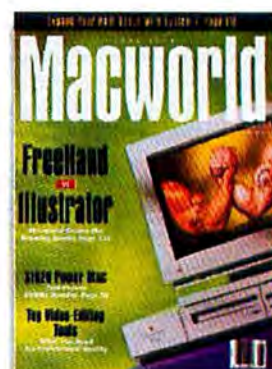


Best Computer Newspaper
(Circulation more than 100,000)

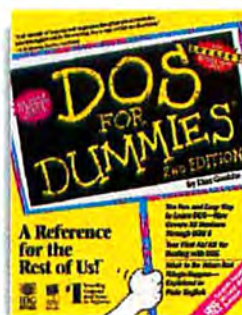


Best News Story in a Computer Publication
("DOS 6.0" by Stuart Johnson, Doug Barney and Kevin Strehlo)

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.



IDG
INTERNATIONAL DATA GROUP
Where you find I.T.

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.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
9	Adobe	231	800/521-1976	259	Educorp	157	800/843-9497	30-31	Microsoft	—	—
224	Advanced Business Center	225	800/723-8262	12	Engineered Software	12	910/299-4843	6-7	NEC Technologies	15	800/NEC-INFO
138	Agfa	158	800/685-4271	72	Environmental Systems Research Institute	160	800/447-9778	IBC	NEC Technologies	16	800/NEC-INFO
156	Agfa	43	800/685-4271	212-213	Express Direct	81	800/765-0020	78	Panasonic Communications & Systems	86	800/742-8086
10	Agio	—	800/688-2446	44	Fractal Design	190	800/647-7443	84	Performance Systems International	95	800/BPSI82
195-197	Alliance Peripheral Systems	62	800/874-1428	132-133	Fujitsu	202	800/831-4094	27	Pinnacle Micro	115	800/553-7070
165-166	America OnLine	—	800/827-6364	179	Futureworld	—	—	2-3	Power Computing	161	800/410-7693
124-125	American Power Conversion	72	800/788-2208	68	Gold Disk	77	—	88	Pro CD	217	800/992-3766
8	Anihro	—	800/325-3841	24	Graphsoft	46	410/290-5114	215	ProDirect	135	800/524-9952
26	Apple Computer	—	—	39	Hewlett Packard	—	—	155	QMS	288	800/392-7559
29	Apple Computer	—	—	76	Hewlett Packard	—	—	28	Reply Corporation	—	800/801-6898
58-59	Apple Computer	—	—	53-57	HSC Software	5	805/566-6200	86	Seiko Instruments	93	800/888-0817
32	ATI Technologies Inc.	257	—	20	Image Club	50	800/387-9193	142	Seybold Expo	—	—
208-209	BottomLine Distribution	63	800/990-5795	12	IMAXIS	105	800/462-9470	65	Sony	—	—
11	Caere Corporation	69	800/535-SCAN	51	Insignia Solutions	68	800/848-7677	67	Sony	—	—
136	CD ROM Expo	—	—	211	J&R Computerworld	282	800/221-8180	199-201	Spin Peripherals	248	800/215-9200
42	Claris Corporation	—	—	BC	Kensington Microwave, Ltd.	—	800/535-4242	14	SPSS INC.	85	800/457-8287
90-91	Claris Corporation	—	—	16-17	LaCie	52	800/999-0182	49	Statsoft	99	918/583-4149
225	ClubMac	96	800/CLUB MAC	97	LaCie	52	800/999-0182	147	Strata	114	800/Strata3d
141	CompuServe	66	800/848-8199	226-227	Mac Bargains	70	800/619-9091	171	Strata	129	800/Strata FX
47	Computer City	240	800/THE CITY	202	Mac Zone	71	800/436-0606	206-207	SuperMicro	126	800/352-3415
220-221	Computer Discount Warehouse	2	800/861-4CDW	82	MacAcademy	106	800/527-1914	198	Technology Now	273	800/555-9622
48	Connectix	192	800/950-5880	104-105	MacConnection	—	800/800-3333	117	Tektronix	143	800/835-6100
50	Connectix	193	800/950-5880	189-194	MacMall	131	800/222-2808	74	Toray Optical Storage Solutions	206	800/TORAY-PD
52	Connectix	191	800/950-5880	195	MacProducts	65	800/347-8756	10	Toyota	—	800/GO-TOYOTA
13	Corel Corporation	78	800/836-3729	15	Macromedia	244	800/326-2128	46	usrEZ Software	36	800/482-4MAC
216-217	CRA Systems Inc.	20	800/375-9000	175	Mactivity	—	—	159	ViewSonic	59	800/888-8583
40	Dantz Development	26	800/225-4800	218-219	MacWarehouse	150	800/255-6227	18	Viking Components	233	800/338-2361
177	DataViz	79	800/671-1114	160	Macworld Expo	—	—	22-23	WordPerfect Corporation	—	800/526-7820
70	Delrina Corporation	137	800/631-8118	128-129	Macworld Expo-Boston	—	—	145	Xante Corporation	112	800/926-8839
21	Deneba Software	57	800/733-6322	173	Macworld-VIP Tour	—	—	181	Xerox Corporation	100	800/ASK-XEROX
208-209	DGR Technologies	63	800/990-5795	210	MegaHaus	245	800/786-1184				
214	DigiCore	269	800/858-4622	IFC	Microsoft	—	—				
224	Digital Axis	83	800/747-7555	148-149	Microsoft	—	—				
223	Direct Connections	121	800/572-4305								
222	Direct Tech	298	800/279-5520								
203-205	DirectWare	88	800/490-WARE								
80	DPT	122	800/322-4378								

Macworld

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 Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
SOFTWARE			STATISTICAL			FURNITURE			SERVICES		
BUSINESS			14	SPSS INC.	85	10	Agio	—	ON LINE		
70	Delrina Corporation	137	49	Statsoft	99	HARD DISKS/STORAGE			165-166	America OnLine	—
IFC	Microsoft	—	UTILITIES			196-197	Alliance Peripheral Systems	62	29	Apple Computer	—
30-31	Microsoft	—	48	Connectix	192	208-209	BottomLine Distribution	63	141	CompuServe	66
148-149	Microsoft	—	50	Connectix	193	225	ClubMac	96	TRADESHOWS/CONFERENCES		
49	Statsoft	99	40	Dantz Development	26	208-209	DGR Technologies	63	136	CD ROM Expo	—
22-23	WordPerfect Corporation	—	51	Insignia Solutions	68	223	Direct Connections	121	179	Futureworld	—
CAD/CAM			HARDWARE			222	Direct Tech	298	175	Mactivity	—
12	Engineered Software	12	BOARDS			80	DPT	122	160	Macworld Expo	—
24	Graphsoft	46	32	ATI Technologies Inc.	257	132-133	Fujitsu	202	128-129	Macworld Expo-Boston	—
CD ROM			80	DPT	122	16-17	LaCie	52	173	Macworld-VIP Tour	—
13	Corel Corporation	78	28	Reply Corporation	—	97	LaCie	52	142	Seybold Expo	—
259	Educorp	157	CD ROM			195	MacProducts	65	TRAINING		
88	Pro CD	217	259	Educorp	157	210	MegaHaus	245	82	MacAcademy	106
10	Toyota	—	IBC	NEC Technologies	16	78	Panasonic Communications & Systems	86	ACCESSORIES		
COMMUNICATION			COMPUTER SYSTEMS			27	Pinnacle Micro	115	FURNITURE		
177	DataViz	79	216-217	CRA Systems Inc.	20	215	ProDirect	135	8	Anthro	—
70	Delrina Corporation	137	214	DigiCore	269	206-207	SuperMicro	126	MAIL ORDER		
ENTERTAINMENT			212-213	Express Direct	81	74	Toray Optical Storage Solutions	206	224	Advanced Business Center	225
13	Corel Corporation	78	2-3	Power Computing	161	18	Viking Components	233	196-197	Alliance Peripheral Systems	62
GRAPHICS/DTP			206-207	SuperMicro	126	INPUT DEVICES			208-209	BottomLine Distribution	63
9	Adobe	231	198	Technology Now	273	BC	Kensington Microware, Ltd.	—	225	ClubMac	96
21	Deneba Software	57	DIGITIZERS/SCANNERS			MICROPROCESSOR			220-221	Computer Discount Warehouse	2
44	Fractal Design	190	138	Agfa	158	2-3	Power Computing	161	208-209	DGR Technologies	63
53-57	HSC Software	5	156	Agfa	43	PRINTERS			214	DigiCore	269
20	Image Club	50	47	Computer City	240	76	Hewlett Packard	—	223	Direct Connections	121
15	Macromedia	244	224	Digital Axis	83	155	QMS	288	222	Direct Tech	298
MULTIMEDIA			39	Hewlett Packard	—	86	Seiko Instruments	93	203-205	DirectWare	88
68	Gold Disk	77	12	IMAXIS	105	117	Tektronix	143	212-213	Express Direct	81
15	Macromedia	244	DISPLAY			145	Xante Corporation	112	211	J&R Computerworld	282
OCR			216-217	CRA Systems Inc.	20	181	Xerox Corporation	100	226-227	Mac Bargains	70
11	Caere Corporation	69	224	Digital Axis	83	SECURITY			202	Mac Zone	71
ONLINE			6-7	NEC Technologies	15	124-125	American Power Conversion	72	104-105	MacConnection	—
84	Performance Systems International	95	65	Sony	—	VIDEO			189-194	MacMail	131
SECURITY			67	Sony	—	52	Connectix	191	195	MacProducts	65
46	usrEZ Software	36	159	ViewSonic	59	EXPANSIONS/UPGRADES			218-219	MacWarehouse	150
			47	Computer City	240				210	MegaHaus	245
			18	Viking Components	233				215	ProDirect	135
									199-201	Spin Peripherals	248
									198	Technology Now	273

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.

FASTFAX

For faster results just fax this sheet to
+1-415-657-4343. 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 ☐ 1000+
02 ☐ 999 - 100
03 ☐ 99 - 25
04 ☐ Under 25
- B. Which of the following computers are installed at this entire work-site? (Check all that apply.)
- 05 ☐ Apple Workgroup Servers/
Mac Quadra-series
06 ☐ Mac Centris-series/II-series/IIx/III/
Performa 600/450/SE 30
07 ☐ Mac LC/IIx/II/Performa 430/405/
400/200/Classic-series/SE/Plus/
512K/128K/Portable
08 ☐ Mac PowerBook-series/Duo-series
- C. What is the total number of Macs installed at this entire work-site? (Check one.)
10. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/or services? (Check one.)
- | | | |
|-----------|-----------------------------|-----------------------------|
| | C | D |
| 500+ | <input type="checkbox"/> 09 | <input type="checkbox"/> 15 |
| 499 - 100 | <input type="checkbox"/> 10 | <input type="checkbox"/> 16 |
| 99 - 50 | <input type="checkbox"/> 11 | <input type="checkbox"/> 17 |
| 49 - 10 | <input type="checkbox"/> 12 | <input type="checkbox"/> 18 |
| 9 - 1 | <input type="checkbox"/> 13 | <input type="checkbox"/> 19 |
| None | <input type="checkbox"/> 14 | <input type="checkbox"/> 20 |
- E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)
- 21 ☐ Initiate/Determine need for product/capabilities/features
22 ☐ Evaluate, recommend, or approve brands/models
23 ☐ Evaluate, recommend, or approve purchase source
24 ☐ Authorize purchases
- F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)
- 25 ☐ \$1 million or more
26 ☐ \$999,999 - \$500,000
27 ☐ \$499,999 - \$100,000
28 ☐ \$99,999 - \$50,000
29 ☐ \$49,999 - \$10,000
30 ☐ Under \$10,000
- G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)
- 31 ☐ Business software (Word processing, spreadsheet, database, etc.)
32 ☐ Graphics/publishing software
33 ☐ Monitors/displays
34 ☐ Printers/scanners
35 ☐ Networking/communications hardware and/or software
36 ☐ Multimedia/AV hardware and/or software
37 ☐ Mobile computing products (PowerBooks, peripherals, software, etc.)
- H. What is your primary job function? (Check one.)
- 38 ☐ Computer Reseller/VAR/VAD
39 ☐ MIS/DTP/IS/Network Management
40 ☐ Engineering
41 ☐ R&D/Scientific
42 ☐ Corporate/General Management
43 ☐ Accounting/Finance
44 ☐ Marketing/Sales/PR/Communications
45 ☐ Art/Design/Creative Services

Thank You!

Please print or type all information.

Title _____

Co. _____

Phone _____

Fax _____

☐ Check box and fill in the appropriate information to subscribe to Macworld. You will be billed \$24.00 for a 1-year (12 issue) subscription (U.S. only).

Expires October 6, 1995 S1 Aug. 1995



Free Product Information

1	2	3	4	5	151	152	153	154	155
6	7	8	9	10	156	157	158	159	160
11	12	13	14	15	161	162	163	164	165
16	17	18	19	20	166	167	168	169	170
21	22	23	24	25	171	172	173	174	175
26	27	28	29	30	176	177	178	179	180
31	32	33	34	35	181	182	183	184	185
36	37	38	39	40	186	187	188	189	190
41	42	43	44	45	191	192	193	194	195
46	47	48	49	50	196	197	198	199	200
51	52	53	54	55	201	202	203	204	205
56	57	58	59	60	206	207	208	209	210
61	62	63	64	65	211	212	213	214	215
66	67	68	69	70	216	217	218	219	220
71	72	73	74	75	221	222	223	224	225
76	77	78	79	80	226	227	228	229	230
81	82	83	84	85	231	232	233	234	235
86	87	88	89	90	236	237	238	239	240
91	92	93	94	95	241	242	243	244	245
96	97	98	99	100	246	247	248	249	250
101	102	103	104	105	251	252	253	254	255
106	107	108	109	110	256	257	258	259	260
111	112	113	114	115	261	262	263	264	265
116	117	118	119	120	266	267	268	269	270
121	122	123	124	125	271	272	273	274	275
126	127	128	129	130	276	277	278	279	280
131	132	133	134	135	281	282	283	284	285
136	137	138	139	140	286	287	288	289	290
141	142	143	144	145	291	292	293	294	295
146	147	148	149	150	296	297	298	299	300



Free Macworld Shopper Information

401	402	403	404	405	501	502	503	504	505
406	407	408	409	410	506	507	508	509	510
411	412	413	414	415	511	512	513	514	515
416	417	418	419	420	516	517	518	519	520
421	422	423	424	425	521	522	523	524	525
426	427	428	429	430	526	527	528	529	530
431	432	433	434	435	531	532	533	534	535
436	437	438	439	440	536	537	538	539	540
441	442	443	444	445	541	542	543	544	545
446	447	448	449	450	546	547	548	549	550
451	452	453	454	455	551	552	553	554	555
456	457	458	459	460	556	557	558	559	560
461	462	463	464	465	561	562	563	564	565
466	467	468	469	470	566	567	568	569	570
471	472	473	474	475	571	572	573	574	575
476	477	478	479	480	576	577	578	579	580
481	482	483	484	485	581	582	583	584	585
486	487	488	489	490	586	587	588	589	590
491	492	493	494	495	591	592	593	594	595
496	497	498	499	500	596	597	598	599	600

PATRICIA G MIRANDA
4208 SHADY BEND DR
DALLAS TX 75244

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

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

Macworld

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906



CREATIVE COMPUTERS

MacMall

YOUR MAC SUPERSOURCE!

Since 1985

Verified Low Prices!

This Month at MacMall
Over 75 Values & Bargains
Plus over 7500 more products on sale in our FREE catalog!

FastMac™ V.34 28.8kps
Fax/Data Modem

Includes \$150 worth of
free online software

\$139⁹⁹!
#72526

Ram Doubler 1.5
Get **TWICE** the memory at
a fraction of the cost!

\$49⁹⁹!
#66970

* with purchase
of Microsoft® Word,
Excel or CPU



Hi-Val Quad-Speed External
CD-ROM Drive

\$249⁹⁹!
#70038

QuarkXPress 3.31
for Power Mac™

Power Publishing System is now
paired with the Power Mac™!

\$658⁹⁹!
#65992

QuarkXPress \$589⁹⁹!
#64734



FASTEST DELIVERY
SERVICE GUARANTEE!

"Mac Mall will deliver your order
by 10:30am **THE NEXT DAY**
or pay for your shipping!"

*Limited to in-stock orders placed before 8pm (EST)
not requiring configuration and delivered by
FedEx® delivery service to destinations
within the contiguous U.S. ("Next Day"
not available to certain rural areas.)



Your LARGEST Authorized Full Line Apple
Macintosh Mail-Order Superstore!!

- ✓ **Fastest** growing Macintosh® catalog.
- ✓ **Largest** Apple® authorized mail-order company.
- ✓ **First** full-line Apple® authorized catalog reseller.
- ✓ **Buy from a leader.**



Authorized
Catalog Reseller

Creative Computers' MacMall is a
NASDAQ publically traded company.

CALL TODAY FOR YOUR
FREE MacMall CATALOG!!

1-800-222-2808

WE HAVE THE LARGEST SELEC-
TION OF APPLE® PRODUCTS!!



PaperPort™

Feed in any document
and it turns into a
digital page on your
screen in seconds!

\$359⁹⁹!
#66433



100MB Removable
Drive Stores
100MB on one 3.5"
cartridge

\$199⁹⁹!
#69404

i-MEGA
Stickers of Memory!



Conflict Catcher 3

Version upgrade

Save hours of start-up file
trouble-shooting! No Macintosh®
should be without it!

\$39⁹⁹!
#69758

Conflict Catcher 3 \$64⁹⁹
Mac™ Power Mac™ #69644



A
NASDAQ
COMPANY
TICKER SYMBOL:
MACM

FedEx
Federal Express

24 HRS
7 DAYS
1 WEEK

TOLL
CUSTOMER SERVICE &
TECHNICAL SUPPORT
FREE!

MacMall is Always Open!
Call Toll-Free Anytime
1-800-222-2808

or Fax 310-222-5800



To Order, Call Toll Free

PRIORITY CODE:
D582MG14

1 • 800 • 222 • 2808

Call today
for your
FREE
Catalog!!

Fax: 310-222-5800

Customer Service: 800-560-6800

International Orders: 310-787-4500

Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144



MacMall has it all!

If you see a lower price not advertised in this magazine, please call us and we'll do our very best to BEAT that advertised price.

EPSON MACWORLD

Stylus Color Printer W/Mac™ interface

720x720 DPI Color Ink Jet

Print vivid color with clarity never before possible in a personal printer, with EPSON Stylus Technology. This exclusive technology produces a very precise dot, eliminating feathering. 360 dpi blacks and colors are crisper and sharper. Plus, with special paper, get even sharper 720 dpi color images. Two year warranty and toll free technical support.



High Definition for
vivid color and
clarity

Epson Apple LocalTalk™ Interface* #68785 \$134⁹⁹
*Interface replaces Mac™ Serial Port. Installation Available for 130" #2214

#68178 \$549⁹⁹

HSC LIVE PICTURE 1.5

High-End Image Editing at an Affordable Price!

The future of digital imaging is now more affordable, faster and colorful! Put Live Picture in your digital toolbox



and enjoy the amazing high-end image editing software MacWEEK called "deep, rich and powerful" when the magazine awarded its highest rating ever. With its revolutionary FITS and IVUE technology, resolution independence, 48-bit color tools, unlimited size brushes, selective undo and real time screen editing of gigantic images, Live Picture gives professional digital images, unparalleled creative freedom and incredible productivity.

Free Upgrade
to 2.0 from HSC
(now available from HSC)

#69382 \$599⁹⁹

UMAX POWERLOOK

It Beats Other Flatbed Scanners...Like a Drum.

Single Pass Scanner w/ transparency

Designed for professional pre-press applications. The first flatbed with true 3.0 dynamic range.

• 30 bit scanning mode recognizes more than one billion colors and 1,024 shades of gray (10-bits per pixel); true 30-bit output! • Single pass CCD imager captures 30-bit color without the need for prisms, filters or color lamps. This gives you superior images with outstanding reliability. • Includes full version Adobe™ Photoshop™ 3.0 and Kai's Power Tools SE (interpolated) with 1200 x 600 optical • Supports color, grayscale, halftone and line art modes. • Built-in SCSI-II interface • Scaling from 1% to 400% in 1% increments



POWERLOOK
1200 x 600 (2400) single pass
scanner w/o transparency or software \$2499⁹⁹ #68859

#66132 \$3099⁹⁹

VISTA-S8LE

6400 dpi, High
Speed, Single
Pass, Color Scanner

- SCSI 2 interface with cable included
- Scans black and white, color and line art
- Single pass with single color lamp technology
- Includes Adobe™ Photoshop™ LE, OmniPage Direct
- Optical resolution of 800 x 400 dpi
- De-screening, auto-density adjustment, filtering functions
- MagicMatch included



#67757 \$729⁹⁹

UMAX™

VISTA-S8 Includes: Adobe™ Photoshop™ 3.0 and Kai's PowerTools SE \$829⁹⁹ #67758

UC1260LE w/ Adobe™ Photoshop™ LE, OmniPage Direct, Corel Professional Photos CD and Microsoft™ Home CD Sampler & Transparency Adapter for UC1260. LIMITED TIME OFFER \$1219⁹⁹ #71884

UC1260 PRO w/ Adobe™ Photoshop™, Kai's PowerTools SE, Pictor Typsetty CD, KPT PhotoCD, Pictor 128 Textures Transparency Adapter for UC1260. LIMITED TIME OFFER \$1329⁹⁹ #71883

Deskwriter **hp** HEWLETT PACKARD 660C Printer

The HP 660C printer is the perfect home printer. It's family-friendly and easy to use. Delivers crisp sharp 600dpi black printing at 4 pages per minute. Convenient built in color printing for brilliant colors at the touch of a button. Prints postcard to legal size paper and holds up to 100 sheets of paper or 50 transparencies. The industry's only 3 year warranty and a lot more.



#72086 \$479⁹⁹

HP ScanJet 3c Scanner

The high performance
color/grayscale
scanner

The HP ScanJet 3c color/grayscale scanner offering 2400-dots-per-inch (dpi), enhanced resolution, and 60 optical resolution. The HP ScanJet 3c scanner captures images in 30-bit color internal or 10-bit grayscale internal for greater shadow detail. Calera WordScan OCR, the optical character recognition solution, included with the HP ScanJet 3c scanner, allows users to input text directly into word processing applications.

- INCLUDES:
- Adobe™ Photoshop™ LE
 - Calera WordScan OCR software
 - HP DeskScan II 2.1 image scanning software with new HP ColorSmart support
 - HP Copier Utility use your scanner and printer to make convenience copies



#70991 \$959⁹⁹

HP LaserJet 5MP Printer

Giving Macintosh® and Windows™ PostScript™ users excellent print quality and paper handling in an adaptable, value-packed printer.

The HP LaserJet 5MP printer delivers outstanding print quality, versatile paper handling, performance and adaptability at an attractive price. You also get the reliability, support and ease of use HP has delivered for over 10 years as the standard for laser printing in the office.

- True 600x600dpi laser resolution
- Adobe™ Postscript™ level-2 software



#71647 \$1049⁹⁹

Microsoft® Rebate Extravaganza!

Microsoft® Office 4.2.1

FREE Berkeley Express!!
\$237⁹⁹*

Version Upgrade 3.5" Disks #65781
Version Upgrade CD #68719

*Price reflect \$40 manufacturer's mail-in rebate. Price before rebate is \$277.99. Upgrade rebate expires 8/31/95.

Microsoft® Office 4.2.1
w/ RAM DOUBLER 1.5 Mac™/PowerPC™
REGULAR PRICE
3.5" Disks #56776 \$473⁹⁹
CD #66299

Microsoft® Word 6.0.1

\$94⁹⁹* #71967
Version Upgrade

*Price reflects a \$30 rebate direct from the manufacturer. Price without rebate is \$124.99. Details on box. Upgrade rebate expires 8/31/95. Proof of purchase is required for the upgrade.

Microsoft® Word 6.0.1
Mac™/PowerPC™
REGULAR PRICE
#72051 \$299⁹⁹

Microsoft® Excel 5.0

\$94⁹⁹* #65782
Version Upgrade

*Price reflects a \$30 rebate direct from the manufacturer. Price without rebate is \$124.99. Details on box. Upgrade rebate expires 8/31/95. Proof of purchase is required for the upgrade. Mail or FAX photocopy of title page of user manual or original program disk.

Microsoft® Excel 5.0
Mac™/PowerPC™
REGULAR PRICE
#65779 \$299⁹⁹



Networking Solutions

Focus has over 1,300,000 Mac™ networking customers around the world!



Ethernet Tranceivers

EtherLAN FN Thin AAUI	#66059	\$39 ⁹⁹
EtherLAN TR - FN - T 10Base AAUI	#66064	\$39 ⁹⁹

Rack Mount & Desktop Hubs

EtherLAN Hub 9 Compact	#69395	\$169 ⁹⁹
EtherLAN Hub 16 Rack Mountable	#69397	\$409 ⁹⁹
EtherLAN Hub 16 Vertical	#69396	\$429 ⁹⁹



Ethernet Cards

EtherLAN II-T (10BaseT, MacII, NuBus)	#66062	\$79 ⁹⁹
EtherLAN LC (LC, LCII & thin)	#66065	\$79 ⁹⁹
EtherLAN (10BaseT for LC, LCII, LCIII, Color Classic)	#66066	\$72 ⁹⁹



EtherLAN Print

Print Plus (6 Devices supported)	#64441	\$334 ⁹⁹
Print (2 Devices supported)	#64442	\$274 ⁹⁹



TurboNet STDIN-8 Apple Local Talk® Connectors

Apple LocalTalk® Phonenet connector	#66056	\$13 ⁹⁹
-------------------------------------	--------	--------------------

Graphics Solutions

TV Presentations On The Go!



L•TV Portable

L•TV Portable is designed to display what's on your Mac™/PC onto a TV, or record to VCR. Ideal for Educators, Trainers, Corporate Presenters and home Multimedia users. Works with any Mac™/PC with a VGA video out signal. Simultaneous video support with VGA monitors. All cables supplied.

#64434 \$214⁹⁹

L•TV Portable Pro

FOCUS L•TV Portable Pro adds support of all Apple® 13/14" RGB monitors, as well as all the features of the L•TV Portable.

#66055 \$269⁹⁹

Create on your Macintosh® and instantly display with TV or tape with your VCR.



"...I Recommend the L•TV Portable..."
David Fogue of MacWorld Magazine, January 1995

LC 24 Bit Color for Less!

Lapis Color LC 2421 for LC

The LC 2421 card is compatible with all LC/Performa® Mac™ systems with an LC-PDS slot—including, Quadra® 630 and 605, LC I, LC II, LC III, LC 475, LC 520 and LC 575! If you want more colors and/or video expansion, the LapisColor 16 and 24-Bit cards are available for any Mac™ that has an LC-PDS, SE30/IIx or NuBus® expansion slot.

All cards are maximized for speed, easily installed and support virtually any Apple® or 3rd party color display. All cards come with easy-to-install software and necessary video connectors. 3-year warranty.

#66961 \$469⁹⁹



Other great graphics cards to choose from,

Lapis Color 16 for LC #66960 \$349⁹⁹

Focus cards work with most Monitors in the industry. Apple®, Radius™, RasterOps®, SuperMac, and Sony®.

To Order, Call Toll Free

PRIORITY CODE: D582MG14

1 • 800 • 222 • 2808

MacMall Now Open 24 Hours!!





To Order, Call Toll Free

PRIORITY CODE:
D582MG14

Call today
for your
FREE
Catalog!!

1 • 800 • 222 • 2808

Fax: 310-222-5800

Customer Service: 800-560-6800

International Orders: 310-787-4500

Mail: MacMail Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144

MacMail is your
SUPERSOURCE!!

If you are 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!

WIDE
Selection

TRINITY WORKS PowerPak™ 61/80

Your Power Mac™ will actually know it is faster!

- Finally, an accelerator that truly increases the speed of your entire system!
 - The PowerPak™ is a motherboard upgrade which directly boosts operating speed across the entire system. The computer recognizes the PowerPak™ boost and portrays the change in "About This Macintosh™" window.
 - The Trinity PowerPak™ increases the clock speed of the Power Mac™ 6100 from 60MHz to 80MHz. The technology employed in the PowerPak™ is a major advance in CPU acceleration by providing a reliable upgrade through a slot-less connector that attaches directly to the motherboard rather than using a PDS slot.
 - Easy installation. Installs in seconds! The PowerPak™ plugs onto the motherboard securely by saddling the existing IC. If desired, the PowerPak™ may be removed with no harm to the system.
 - Does not use a PDS slot. You can still use your favorite add-on boards!
- Manufacturer: Trinity Works, Inc.

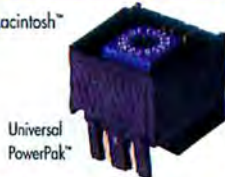
\$89⁹⁹ #71772

PowerPak™ 71/80	\$89 ⁹⁹ #71773
PowerPak™ 61/80 and 256K Level 2 Cache Card	\$224 ⁹⁹ #71770
PowerPak™ 71/80 and 256K Level 2 Cache Card	\$224 ⁹⁹ #71771

Ultimate Acceleration from TRINITY WORKS

The Universal PowerPak™ increases the clock speed of Power Macintosh™ computers to varying degrees, depending on the model:

- Performa® 6110, 6112, 6115, 6117, & 6118
- Power Mac™ 6100/60 & 66
- Power Mac™ 7100/66
- Power Mac™ 8100/80
- Power Mac™ 8100/100



If the system does not respond to these known maximums, the user can simply adjust the Universal PowerPak™ to a customized lower speed by easily rotating a rotary switch on the module. Don't worry about fumbling with dip switches. Get a customized boost for your system.

\$99⁹⁹ #71774

The Ultimate Upgrade-
Universal PowerPak™ and 256K Level 2 Cache Card **\$269⁹⁹** #71769

StudioScan II

With the true optical resolution of StudioScan II at 400x800 and interpolated to 2400, image enlargements are possible, and printed results are crisp and sharp. StudioScan II has 30 Bit Color Scanning and 10 Bit Grayscale with a 8.5 x 14" scanning area. A complete bundle of software is included for Macintosh® - FotoSnap, FotoLook, FotoTune Light, which includes the industry standard IT8 color calibration chart. Adobe® Photoshop® LE completes the bundle, providing the facility for creative image manipulation.

#66017 **\$869⁹⁹**

StudioScan Transparency adapter	\$389 ⁹⁹ #69719
StudioScan II Transparency adapter	\$389 ⁹⁹ #66018
StudioScan II Auto Document feeder	\$599 ⁹⁹ #69720

AGFA Studio Scan



- One pass flatbed scanner
- True 300x600dpi resolution
- Max scanning are 8.5"x14"
- Optional Transparency adapter

\$679⁹⁹ #63876

Fiber Optic AAUI Ethernet Transceivers

Allied Telesyn International

Ethernet connectivity for the Mac™ or PC printers with built-in Ethernet card and 24-pin AAUI connector. One-half meter cable with AAUI and latch for either desk placement or back drop. Wide optic input dynamic range. Sophisticated link monitor function and LED. Lifetime warranty.

Fiber Optic Transceiver/Mac™ Adapter
ST Connector #70757

\$199⁹⁹

AAUI Apple® Ethernet Transceivers

Transceiver 10Base-T #70758
Transceiver 10Base-2 #70759

\$39⁹⁹

Powercard™ 601

Turn Your Macintosh® LC, Performa® or Quadra® 470, 570, 605 and 630 series into a Power Mac™

PowerCard 601 brings Power Macintosh™ performance to the latest family of entry-level Macintosh® computers. Developed in partnership with Apple®, this inexpensive PowerPC™ upgrade provides Power Mac™ performance for half the cost of a new machine. It is easy to install, and includes a 256K cache and System 7.5. And like the Power 601, the PowerCard 601 not only works with your current Mac™ memory, it lets you run software on your Mac™ either as a PowerPC™ or 68K based machine.

DAYSTAR DIGITAL



\$639⁹⁹ #67669

Turbo™ 601

Turn Your Macintosh® IIfx into a Power Mac™!

Turbo 601 brings real Power Macintosh™ performance to your Mac™ IIfx in an easy to install PDS upgrade card. Turbo 601 runs as much as 11 times faster than a Mac™ IIfx without an upgrade. It even provides faster performance for 68K based applications. Get the best of both worlds because you can switch back to your 68030. Based on the award winning design of DayStar's Turbo 040, we've added a 66MHz PowerPC™ processor, Apple® Macintosh® ROMs and a 256K secondary cache.



\$1199⁹⁹ #67670

PrecisionColor Display/17

Exceptional Quality at a Great Value!

New 17" color monitor, with "on-the-fly" resolution switching from 640x480 to 1152x870, offers exceptional focus, clarity, brightness and vivid color accuracy. Features two-page resolution, digital controls for precise settings, and super sharp .26mm aperture dot-pitch. Compatible with the built-in video of most Macintosh Quadra®, Centris® and Power Mac™ models.

INCLUDES

- Dynamic Desktop software for easy resolution switching
- Antiglare Screen coating

\$999⁹⁹
#63587

radius



Video Vision Studio 2.0

The Professional Macintosh Digital Video System

INCLUDES:

Adobe® Premiere®, VideoFusion, Apple® QuickTime®, ASIO Disk Express II, and VideoVision desktop video utilities (not included in VideoVision Studio upgrade).



\$3749⁹⁹ #66275

Thunder/24 GT

The award-winning Thunder/24 graphics card. With the leading QuickDraw™ acceleration, the Thunder/24 v.3.0 processes layouts, illustrations and other full-color graphics with lightning speed up to 43 times faster than on-board video.

\$1399⁹⁹

#67662



Save a bundle on the best Adobe™ products!



Illustrator™ 5.0 to 5.5

UPGRADE

\$97⁹⁹

#67320



Illustrator™ 5.5
(3.5" disks and CD)
Regular price **\$384⁹⁹**
#64843

PageMaker™ 5.0

UPGRADE

\$144⁹⁹

#69511



PageMaker™ 5.0
w/ FREE Page Tools
Regular price **\$548⁹⁹**
#69510

Photoshop™ 3.0.1 Adobe

UPGRADE

\$144⁹⁹

#67319

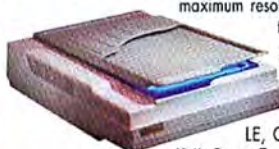


Photoshop™ 3.0.1
Mac™/PowerPC™
(3.5" disks & CD)
Regular price **\$559⁹⁹**
#67568

AVEC 2400 Mac™

Color Scanner

The AVEC Color 2400 Mac™ is a three pass design, capable of scanning an 8 1/2" x 14" area in 24-bit, 16.8 million colors with a maximum resolution of 2400 dpi. This translates into 180,000 pixels per square inch, a true benefit for image scanning. Bundled with Adobe™ Photoshop™ LE, OmniPage Direct OCR, Kai's Power Tools SE, Kai's Power Tools Tips & Tricks and ArtScan. The AVEC 2400 has everything you need in an entry level color scanner with three times the specifications of the competition at a lower cost. SCSI-2 interface.



\$489⁹⁹

#65711

RELI 4816 Mac™/TE

Color Scanner

The Reli 4816 Mac™/TE is a single pass design, capable of scanning a 24-bit 8 1/2" x 14" 16.8 million color image with a maximum resolution of 4800 dpi. The Reli 4816's maximum optical resolution translates into 640,000 pixels per square inch. Bundled with Adobe™ Photoshop™ LE, OmniPage Direct OCR, Kai's PowerTools SE, Kai's PowerTools Tips and Tricks and ArtScan. Transparency adapter not pictured.



\$889⁹⁹

#66772

RELI 2412 Mac™/TE

Color Scanner

The Reli 2412 Mac™/TE is a 24-bit 8 1/2" x 14" 16.8 million color image with a maximum resolution of 2400 dpi. The Reli 2412's maximum optical resolution translates into 360,000 pixels per square inch. Bundled with Adobe™ Photoshop™ LE, OmniPage Direct OCR, Kai's PowerTools SE, Kai's PowerTools Tips and Tricks and ArtScan. Transparency adapter not pictured.



\$789⁹⁹

#66771

RELISYS

RELI 4830 Mac™/TE

Color Scanner

The Reli 4830 Mac™/TE is a 30-bit color, single pass design, capable of scanning an 8 1/2" x 14" image with a maximum of 16.8 million colors at a resolution of 4800 dpi. Exclusive to Reli 4830 is its transparency adapter with an LCD Bundled with Adobe™ Photoshop™ 3.0, OmniPage Direct OCR, Kai's Power Tools and Kai's Power Tools Tips & Tricks and ArtScan Professional (which includes the EPS file tracing feature). Transparency option not pictured.



\$1279⁹⁹

#67716

Multiscan 15sf

Trinitron Digital Control Color Monitor

- 15" Digital Multiscan computer display with 14.0" maximum diagonal viewable area
- Trinitron technology delivers bright and vibrant colors
- .25 Aperture Grill pitch
- EPA Energy Star and MPR II complaint
- Supports PC and Macintosh™ resolutions from VGA to 1280x1024 at 60Hz and 1024x768 at 75Hz
- New simple control buttons and minimized footprint
- Includes color temperature control for accurate whites
- 3 year parts and labor and 2 year CRT warranty
- 31-664KHz Horizontal scan

SONY

Multiscan 17sf

Trinitron Digital Control Color Monitor

- 17" Trinitron™ CRT with 16.1" maximum diagonal viewable area
- .25 Aperture Grill pitch
- Bonded anti-reflective panel
- Maximum refresh rate at 1600x1200 at 60Hz, 128x1224 at 77Hz
- EPA Energy Star and MPR II complaint
- New design features front panel control buttons
- 3 year parts and labor and 2 year CRT warranty



FREE Bonus

Includes Windows™ and Macintosh™ Version of Berkeley System's After Dark Starter Edition, with Ecologic Power Manager



\$449

#69298

\$879

#69576



FREE Bonus

Includes Windows™ and Macintosh™ Version of Berkeley System's After Dark Starter Edition, with Ecologic Power Manager



Nomai SyQuest® Cartridges

The Nomai™ Family of SyQuest® compatible REMOVABLE CARTRIDGES provides the optimum in data storage performance. Nomai™ cartridges are the most shock-resistant cartridges available on the market today. In a recent MacUser review, Senior Editor Mark Frost said, "We mailed 'em, cooked 'em, magnetized 'em and dropped 'em - and these removable cartridges came back for more... None of the cartridges suffered any data loss!" This **TREMENDOUS SHOCK-RESISTANCE** is obtained by DLC (Diamond Like Coating). DLC protects against airborne particles which results in a long-life cartridge you can trust. **PREFORMATTED** and backed by a **5 YEAR WARRANTY**, Nomai™ offers unparalleled dependability and performance at an **UNBEATABLE PRICE**.



44MB **\$39⁹⁹**

#66229

88MB **\$44⁹⁹**

#66230

Optical Media Disks

The most reliable at the best price!

- Macintosh® preformatted
- 5 years limited warranty
- Rewritable to 10 million
- ISO/ECMA standard
- 100% Certified
- 100% Tested

128MB 3.5" Optical Media (5 Pack)

\$89⁹⁹

#72676

230MB 3.5" Optical Media (5 Pack)

\$99⁹⁹

#72675

NOMAI™



To Order, Call Toll Free

PRIORITY CODE: D582MG14

1 • 800 • 222 • 2808

MacMall Now Open 24 Hours!!





To Order, Call Toll Free

PRIORITY CODE:
D582MG14

1 • 800 • 222 • 2808

Call today
for your
FREE
Catalog!!

Fax: 310-222-5800

Customer Service: 800-560-6800

International Orders: 310-787-4500

Mail: MacMall Order Dept., 2645 Maricopa St., Torrance, CA 90503-5144



Priority Overnight
Delivery by 10:30am!
\$3 Per Order*

*Limited to in-stock orders placed before 8pm (EST) and requiring configuration and delivery by FedEx delivery service to destinations within the contiguous U.S. Next day delivery may not be available in certain rural areas. Limit 10lbs.

Arriva™ External Hard Drives

Arriva™ external hard drives incorporate advanced technological features to significantly enhance the speed of your Macintosh® system. Achieve high speed and performance with new high speed microprocessor, a fast single-chip read channel, firmware and hardware enhancements. Accelerate the performance and throughput of your system with an Arriva™ 365, 540, 730, 1080, 1400 or 2100MB drive. Increase the performance of your mid-range or high-end Macintosh® system. Reliability, performance and price so that everyone can enjoy the benefits of having a Arriva™ external hard drive. Arriva™ drives include everything you need to get started right away! Get the most for your money, buy a Arriva™ hard drive today!

365MB External (11ms) **\$279⁹⁹** #70020

540MB External (14ms) **\$319⁹⁹** #70021

730MB External (11ms) **\$389⁹⁹** #70022

1080MB External (12ms) **\$619⁹⁹** #70023

2100MB External (9ms) **\$1089⁹⁹** #70025



MEMORY

4MB, 32bit, 80ns (72pin) **\$169** #4468
for Performa®, LC, Centris, Quadra®, Power Mac™

8MB, 32bit, 80ns (72pin) **\$345** #4417
for Performa®, LC, Centris, Quadra®, Power Mac™

16MB, 32bit, 80ns (72pin) **\$555** #65416
for Quadra®, Power Mac™



Arriva™ SyQuest Drives

**200MB/RW88/44
External Syquest Drive**

- 18msec average seek time
- 3MB/sec data transfer rate
- SCSI cable and terminator included
- 2 Year Warranty
- Drive only, Cartridge extra

\$389⁹⁹ #72029



200MB SyQuest® Cartridge **\$79⁹⁹** #64417
270MB SyQuest® Cartridge **\$64⁹⁹** #64415

TelePort Platinum™ 28.8

v.34 External
Data Fax/Data Modem

No matter which Macintosh® you use, the TelePort Platinum™ fax/modem is the best choice for maximum performance. With data access speeds up to 28,800 bps and fax speeds up to 14,400 bps, you'll save time and money when you send and receive faxes, access your office network, transfer files, and connect to on-line services. What's more, TelePort Platinum™ also offers fax/Apple® Remote Access (ARA) and voice/fax incoming call recognition so your modem will respond appropriately to these types of calls. GlobalFax™ OCR software is included making it easy to convert received faxes into editable files. TelePort Platinum™ is the most powerful, easy-to-use fax/modem available for the Macintosh® computer. (Operates through Macintosh® or Power Macintosh®.)



\$234⁹⁹ #70098

TelePort Gold™ II

14.4 External
Fax/Data Modem

The TelePort Gold™ II fax/modem is perfect for people who want to get connected to the world of faxing and on-line services. It's powerful and extremely easy to use. Sending and receiving faxes, accessing on-line services, and dialing into an office or campus network is convenient and quick. With data access and fax speeds up to 14,400 bps, the TelePort Gold™ II meets high-performance requirements at a very affordable price. Everything necessary for set-up is included. Connect the TelePort Gold™ II to your Macintosh® and access the world. (Operates through Macintosh® or Power Macintosh® computers.)

\$109⁹⁹ #66954



GLOBAL VILLAGE
COMMUNICATION



**Fastest Delivery
Service
Guarantee**

"MacMall will deliver your order
by 10:30am THE NEXT DAY or
pay for your shipping!"

*Limited to in-stock orders placed before 8pm (EST) not requiring configuration and delivered by FedEx® delivery service to destinations within the contiguous U.S. Southern California orders will be shipped UPS Ground for next day delivery. Next day not available to certain rural areas. Limit 10 lbs.



**MacMall has
all the
latest
Power Mac™
Native
Software!!**



OUR POLICIES *\$3.00 FEDEX® offer applies to continental U.S. only, orders over 10lbs incur extra charges. Call customer service at 800-560-6800 or tech support at 800-760-0300 if you have a question or problem with any order. No packages will be accepted with out a Return Authorization Number form Customer Service. All returned products must be in original condition with all packaging and registration card, within 30 days of original invoice date. For International orders, please include a photocopy of the front and back of your credit card. Minimum International order is \$50 Canada, \$100 Foreign; \$20 in U.S.A. Apple and Hewlett Packard products cannot be shipped outside of the U.S.A. International orders shipped via DHL, FOB Los Angeles. Apple, the Apple logo and Macintosh are registered trademarks of Apple Computer, Inc. While we do our best to check for mistakes, occasionally they do occur. Prices and specs subject to change without notice. ©1995 MacMall

MacProducts USA.

Optical Blow Out!
Your best storage
value. Dollar for
dollar. Megabyte
for megabyte.



Magic Optical



Magic 230MO

with purchase of 10 230MB carts.

3.5" format. 1 year warranty.

230 Optical Cartridge

128 Optical Cartridge

\$399

\$29

\$24



	Drive Cost	Media Cost (10 pack)	Cost per MB
230 MB Optical	\$399	\$290	29¢
Zip Drive	\$199	\$150	34¢
SyQuest 270	\$399	\$630	38¢
SyQuest 200	\$419	\$790	60¢
1GB Hard Drive	\$699	-	69¢
SyQuest 88*	\$359	\$470	94¢
SyQuest 44*	\$199	\$430	\$1.46

* Discontinued products. Cost per megabyte is figured from drive cost plus ten cartridges.

The optical advantage.

MacProducts USA Optical drives provide your most effective cost per megabyte of any proven storage medium. And now, with our new lower price, that cost advantage is stronger than ever. Plus, unlike other removable media types, optical media is heat resistant, shock resistant and has up to 500% longer shelf life. The small form factor makes storage and transport easy.

**\$399. Prices have
never been better!**

MacProducts USA
1-800-347-8740

Major credit cards and institutional PO's accepted.
Prices subject to change without notice. Call customer
service at 512-892-4090 for returns. Returns may be
subject to restocking fee.

512-892-4070 Fax: 512-892-4455

Internet: sales@dgr.com

4544 S. Lamar Blvd., Suite 100, Austin, Texas 78745



133 MHz
**POWER
CLOCK**

PowerMac
ACCELERATOR

**Take your
Power Mac
to the limit.
\$79.**

PowerClock accelerates your Power Mac by up
to 40%. Total compatibility. Now includes
software FPU, 30 Day MBG, 3 Year Warranty.
Toll-free technical support. Prices start at \$79.



PowerMac
ACCELERATOR

Dealer pricing available.

1-800-347-8740
Internet: <http://www.dgr.com/>

Major credit cards and institutional PO's accepted. Prices subject to
change without notice. Returns may be subject to restocking fee.

512-892-4070 Fax: 512-892-4455 Internet: sales@dgr.com

4544 S. Lamar Blvd., Suite 100, Austin, Texas 78745

Circle 65 on reader service card

MACWORLD August 1995 195



GREAT PRODUCTS. PRICELESS SUPPORT!

WOW... \$349⁹⁵ ONLY!

Internal configuration

1GB STORAGE



APS Q 1080

- ✓ Formatted capacity over 1GB for all your data-intensive needs
- ✓ Average seek time of 9.8 ms and access time of 17 ms
- ✓ 3-year warranty

MACWORLD 1994 WORLD-CLASS AWARDS:

- ★ Best Customer Support
- ★ APS Hard Drives
- ★ Alternative Storage
- ★ APS DAT Drive

MACWORLD 1993 WORLD-CLASS AWARD:

- ★ APS Hard Drive Series

CONSULTANTS CHOICE AWARD 1994:

- ★ Best Technical Support

MACUSER EDITOR'S CHOICE AWARD 1993:

- ★ Best New Storage Product



APS Q 730
\$249⁹⁵

Internal configuration

APS Q 730/Q540

- ✓ Today's best value for your storage needs
- ✓ Formatted capacity up to 700MB
- ✓ 2 & 3 year warranties for high product reliability

APS Q 540
\$199⁹⁵

Internal configuration



7200 RPM! APS MS 2.0

- ✓ Fastest 2GB available!
- ✓ 2GB in a compact third-height form factor
- ✓ 5-year warranty

APS MS 2.0
\$999⁹⁵

Internal configuration



APS SCSI HARD DRIVES CALL FOR CURRENT PRICING!

349-2050MB			
Model	Capacity	Internal	SR2000

APS Q 365² 349MB \$159⁹⁵ \$259⁹⁵

Quantum 365 Lightning

APS Q 540³ 516MB \$199⁹⁵ \$299⁹⁵

Quantum 540 Fireball

APS Q 730² 699MB 249⁹⁵ 349⁹⁵

Quantum 730 Lightning

APS Q 840³ 811MB 299⁹⁵ 399⁹⁵

Quantum 840 Trailblazer

APS Q 1080³ 1042MB 349⁹⁵ 449⁹⁵

Quantum 1080 Fireball

LABS APS ST 1.0⁵ 1010MB 549⁹⁵ 649⁹⁵

Seagate ST 31230N Hawk

LABS APS Q 1.0⁵ 1025MB 699⁹⁵ 799⁹⁵

Quantum Atlas XP31070

LABS APS MS 2.0⁵ 1955MB 999⁹⁵ 1099⁹⁵

Micropolis 4221

APS ST 2.0⁵ 2047MB 999⁹⁵ 1099⁹⁵

Seagate ST 32550N Barracuda

APS Q 2.0⁵ 2050MB 999⁹⁵ 1099⁹⁵

Quantum Atlas XP32150

APS MS 2.0xv⁶ 1955MB 1099⁹⁵ 1199⁹⁵

Micropolis 4221AV

4064-8669MB			
Model	Capacity	Internal	SR2000

APS MS 4.0⁵ 4064MB \$1399⁹⁵ \$1499⁹⁵

Micropolis 3243

APS MS 4.0xv⁵ 4064MB 1499⁹⁵ 1599⁹⁵

Micropolis 3243AV

APS Q 4.0⁵ 4101MB 1499⁹⁵ 1599⁹⁵

Quantum Atlas XP34300

LABS APS ST 4.0⁵ 4094MB 1499⁹⁵ 1599⁹⁵

Seagate ST 15150N

LABS APS MS 9.0⁵ 8669MB 2299⁹⁵ 2499⁹⁵

Micropolis 1991

LABS APS MS 9.0xv⁵ 8669MB 2399⁹⁵ 2599⁹⁵

Micropolis 1991AV

LABS APS ST 9.0⁵ 8669MB 2699⁹⁵ 2899⁹⁵

Seagate ST410800N

External case is special Full Height only

LABS APS MS 9.0xv⁵ 8669MB 2699⁹⁵ 2899⁹⁵

Seagate ST410800N

APS DISK ARRAYS (0-1)			
Model	Capacity	RAID LEVEL	Price

ARRAID S2/5400⁵ 2GB Striped (0) \$1399⁹⁵

ARRAID S2/7200⁵ 2GB Striped (0) 1599⁹⁵

ARRAID S4/7200⁵ 4GB Striped (0) 2499⁹⁵

ARRAID S8/7200⁵ 8GB Striped (0) 3299⁹⁵

ARRAID M1/7200⁵ 1GB Mirrored (1) 1599⁹⁵

ARRAID M2/7200⁵ 2GB Mirrored (1) 2499⁹⁵

DaTerm™ patent pending

Copyright © 1995 APS Technologies

Internal drives for Quadra 800 and Centris 610 available

1-5 Denotes length of manufacturer's warranty in years

Full height cases include SCSI Sentry FREE!



**CALL FOR YOUR
FREE SUBSCRIPTION
TO OUR CATALOG OF
DRIVES AND ACCESSORIES.**



APS TECHNOLOGIES

1-800 874-1428 APS Technologies 6131 Deramus, Kansas City, MO 64120



DOUBLE THE CAPACITY FOR THE SAME GREAT PRICE

\$799⁹⁵

External configuration



Macworld's 1994 World-Class Award for Alternative Storage goes to the APS line of DAT Drives

Don't Wait!
Order Now!
24 Hours a Day 7 Days a Week

24
x7

APS DAT²

- ✓ Up to 4GB+ native capacity using 120-meter tape
- ✓ Uses either 60, 90 or 120-meter DAT tapes
- ✓ 2-year warranty

APS TAPE DRIVES

Model	Capacity*	Internal	External
APS HyperTape ²	2GB+	—	\$499 ⁹⁵
APS DAT ²	4GB+	\$749 ⁹⁵	799 ⁹⁵
APS HyperDAT ²	8GB†	949 ⁹⁵	999 ⁹⁵
APS DLT20 ²	20GB†	—	3999 ⁹⁵
APS DLT40 ²	40GB†	—	4999 ⁹⁵

NOW WITH
TWICE
THE
CAPACITY
FOR THE
SAME PRICE

*Actual data compression and tape capacity vary greatly depending of the type of data recorded, other system parameters and environment.
†Native capacity without data compression.

‡ 2:1 Hardware data compression.
All APS DAT, DLT & HyperTape drives include Retrospect by Dantz

Tape Media	1-4	5-19	20+
3080XLF (HyperTape)	\$34.95	\$32.95	\$31.95
60-Meter	7.95	6.95	5.95
90-Meter	9.95	8.95	7.95
120-Meter (DDS-2)	19.95	18.95	17.95
DLT20 Data cartridge	45.95	—	—
DLT40 Data cartridge	109.95	—	—
DLT20 3PK Data cartridges	129.95	—	—

BEST
VALUE!

APS REMOVABLES

Model	Capacity	SR 2000
APS SQ 3270 ²	255MB	\$479 ⁹⁵
APS SQ 5200 ²	194MB†	499 ⁹⁵

† Does not format 44MB & 88MB cartridges
All SyQuest drives include 1 FREE cartridge

SyQuest Media	1-4	5-9	10+
SQ-400 (44MB) cartridge	\$44.95	\$43.95	\$41.95
SQ-800 (88MB) cartridge	\$49.95	\$39.95	\$19.95
SQ-2000 (200MB) cartridge	84.95	83.95	81.95
SQ-310 (105MB) cartridge	59.95	58.95	56.95
SQ-327 (270MB) cartridge	64.95	63.95	61.95

BEST
VALUE!

Prices listed are for unformatted media
• 30-day money-back guarantee • (Excluding opened software). Your risk is the cost of shipping.

• Drive for Drive Repair or Replacement Warranty • The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.

• All prices and specifications are subject to change without notice.
• Refused orders subject to restocking fee.
• Hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh where applicable. All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, and APS Technologies' APS POWERTOOLS SCSI formatter/hard disk partitioner.

All external drive products and cases come with a premium 25 x 50 SCSI cable.
• International customers must pay for all shipping charges.
• Toll-free Technical Support as needed. Regular hours are 8 am to 8 pm Monday thru Friday, 9 am to 5 pm Saturday, Central Time.

APS MO DRIVES

Model	SR 2000
APS 230MB MO ¹	\$599 ⁹⁵

APS 1.3GB MO ¹	New 4MB Cache	1999 ⁹⁵
---------------------------	---------------	--------------------

All MO drives include 1 FREE cartridge
1-5 Denotes length of manufacturer's warranty in years

MO Media	1-4	5-9	10+
128MB cartridge	\$27.95	\$26.95	\$22.95
230MB cartridge	39.95	38.95	34.95
1.3GB cartridge	89.95	88.95	84.95

BEST
VALUE!

APS CD-ROM DRIVES

Model	SR 2000
APS T 3601 ¹	Quad-speed \$349 ⁹⁵

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
Wir sprechen Deutsch (816) 920-4138
どうぞ迅速なく日本語の
ファックスでもお申し込み下さい。

24-Hour Intl. Fax: (816) 483-3077

APS 230 MO

- ✓ Highly reliable, stable storage ensures data integrity for years
- ✓ Patented dust-free design
- ✓ Unlimited capacity—let's you expand as your storage needs expand

\$599⁹⁵

External configuration with cartridge!



POWERBOOK DRIVES

Model	Capacity	Internal	***AC Only
APS Q 341 ¹	326MB	\$299 ⁹⁵	N/A
APS Q 514 ¹	491MB	379 ⁹⁵	N/A
APS T 504 ¹	504MB	399 ⁹⁵	\$499 ⁹⁵
APS T 800 ¹	773MB	599 ⁹⁵	699 ⁹⁵

AC/DC available for \$50.00 extra *SR 1000 AC only enclosure



APS T 800

\$599⁹⁵

Internal configuration



Visa, MasterCard, Discover, American Express: No Surcharge



Same day shipping for personal checks (Restrictions apply)

1-800 874-1428

Circle 62 on reader service card

APS

Technologies

CALL TODAY!
Prices in this ad effective 5/24/95.
for our most current pricing!



LASERJET 5MP \$1049



DESKWRITER 320 \$289
DESKWRITER 660C \$475
LASERJET 5P \$875
DESKJET 1200CPS \$1549

NEC

SILENTWRITER 640 \$699
SUPERScript 660I \$799
SUPERScript 3000 \$949

OKIDATA

OL410E-PS \$790

MICROTEK

NEW LOW PRICE
NEW BUNDLES AVAILABLE

SCANMAKER IHR

24-BIT, 8-PASS, COLOR FLATBED SCANNER
600X1200 DPI OPTICAL RESOLUTION

SCANMAKER II \$449
SCANMAKER III \$2525

EPSON

ES600C-MAC \$549

VISIONEER

PAPERPORT \$365

POLAROID
PRINT SCAN \$1999

CONNECTIX
QUICKCAM



\$89

USRobotics

14.4 MACEFAX \$125
28.8 MACEFAX \$229



GLOBAL VILLAGE
COMMUNICATION

New!! Platinum Series

TelePORT PLATINUM \$249
TelePORT GOLD II \$115

Macromedia
Director

Professional MultiMedia
Authoring Software

\$775



QuarkXPRESS for PowerMac \$649
QuarkXPRESS for Quadra \$599
CONNECTIX RAM DOUBLER \$50

We Carry The Full-Line
Of Apple Products



Authorized
Catalog Reseller

Farallon

AAUI TRANSCEIVER \$49
AUI TRANSCEIVER \$49

ASANTÉ Hubs

10T HUB 8-PORT \$179
10T HUB 12-PORT \$359
10T HUB 24-PORT \$499

NEC NEW XV SERIES
COLOR MONITORS
17" INCH COLOR \$759

NEC XV14 14" Color Monitor \$325
NEC XV15 15" Color Monitor \$449

SONY TRINITRON
MONITORS

CPD1425 14" Color Monitor \$299
15sf1 15" Color Monitor \$469
17sf1 17" Color Monitor \$849
20se1 20" Color Monitor \$1975

radius



PRESSVIEW
17"SR

\$1849

PRECISION 17 \$975
SUPERMATCH 20+ \$1475
INTELLICOLOR 20/E \$1929
SUPERMATCH 21TXL \$2100

radius video boards

THUNDER IV GX-1152 \$1899
THUNDER IV GX-1360 \$2200
THUNDER IV GX-1600 \$2799

RASTEROPS Video Boards

Prism 1152x870 \$889
Prism GT 1152x870 \$949



Canon

RC-360 NuBus
Imaging Kit

\$2125

LOWEST PRICE
POWERMAC
MEMORY!!
CALL NOW!!



TECHNOLOGY NOW

APPLE AUTHORIZED CORPORATE CATALOG RESELLER

CALL FOR A FREE CATALOG!

1-800-566-9622

The Latest in Hard Drive Technology

**840MB
Just
\$269!**



Hard Drives

Spin introduces the new, affordable Quantum Fireball and Trailblazers! Perfect for home/office users.

CAPACITY

Quantum Trailblazer 420MB
Quantum Fireball 540MB
Quantum Trailblazer 840MB
Quantum Fireball 1.0GB

INTERNAL

\$189
\$219
\$269
\$379

TORNADO

\$289
\$319
\$369
\$479

Toll-Free
Tech
Support

30-Day
Money-Back
Guarantee

FAX:
508-787-1201

TEL:
508-787-1200

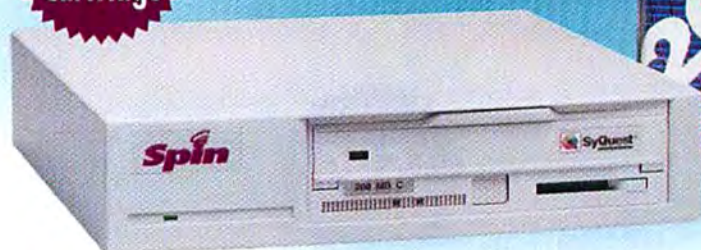
Spin hours:
8:30am to 8pm
EST, Monday-
Friday

Great Prices on SyQuest Drives

**Includes
One Free
Cartridge**



4 1/2 mice rating
for our SyQuest
200 and 270!



SyQuest Drives

Transport and save your DTP, graphics, digital photography, and prepress files with SyQuest drives. All drives delivered with one cartridge.

SyQuest 44MB

SyQuest 44/88MB

SyQuest 200MB

SyQuest 105MB

SyQuest 270MB

\$339
\$479
\$249
\$479

Cartridge

Cartridge

Cartridge

Cartridge

Cartridge

\$43
\$48
\$75
\$56
\$65

→ \$5⁰⁰ OVERNIGHT SHIPPING →
FOR ANY ORDER UP TO 5 POUNDS!

Spin will ship any order to you overnight for just \$1.00 per pound, with a \$5.00 minimum. If your order is over 21 pounds your price per pound goes down. Offer valid within the contiguous 48 states.

The best products. Reasonable overnight shipping.
Overall value. So go ahead, take a Spin and enjoy.



Spin and Whirlwind are registered trademarks of Spin Peripherals, Inc.
All other trademarks are the property of their respective holders.
All prices subject to change without notice, call for latest pricing information.

Spin
PERIPHERALS

734 Forest Street, Marlborough, MA 01752
spin@world.std.com

800-215-9200

**Limited
Time
Offer!**

**2 Gigabytes for just
\$849!**



Large Capacity Hard Drives

Introducing the latest technology in large capacity solutions for your expanding storage needs.

CAPACITY	INTERNAL	TORNADO
S Hawk LP 2GB	\$849	\$949
Q Capella 2GB	\$849	\$949
Q Grand Prix 2GB	\$899	\$999
Q Atlas 2GB	\$999	\$1099
Q Atlas 4GB	\$1499	\$1599

\$379!
Including Cartridge!



Bernoulli Drives

Spin's 230MB removable cartridge drive is a premium storage solution for DTP and graphics users. Five year warranty and one cartridge included.

Bernoulli 230MB	\$379
Single Cartridge	\$89
3-Pack	\$199

Retrospect backup
software included.



DAT Drives

Spin DAT drives are the flexible backup solution for all types of users. Store up to 8GB of data on one inexpensive tape. One cartridge included.

Spin 3100 (DDS)	\$799
Spin 3200 (DDS-DC)	\$899
Spin 3400 (DDS-2)	\$999



QuickTape

Back up your small business and home systems in minutes with QuickTape. Includes a 1GB QIC-WIDE cartridge and Cheyenne ARCServe software.

QuickTape	\$499
Cartridge	\$19

230 Magneto-Optical

Backup or archive your valuable Photoshop®, QuarkXPress®, Excel®, Word®, and database files for years with Spin Magneto-Optical drives.

Olympus 230MB	\$599
Cartridge	\$39
Maxoptix T4 1.3GB	\$1999
Cartridge	\$85

**Two
Cartridges
Included!**

**ONLY
\$599
230 MO**



**Toll-Free
Tech
Support**

**30-Day
Money-Back
Guarantee**

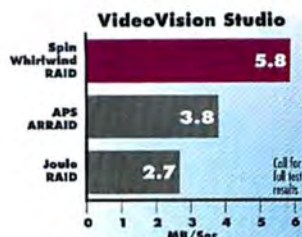
**FAX:
508-787-1201**

**TEL:
508-787-1200**

**Spin hours:
8:30am to
8pm EST,
Monday-
Friday**

→ \$5⁰⁰ OVERNIGHT SHIPPING FOR ANY ORDER UP TO 5 LBS! →

Spin will ship any order to you overnight for just \$1.00 per pound, with a \$5.00 minimum. If your order is over 21 pounds your price per pound goes down. Offer valid within the contiguous 48 states.



Whirlwind RAID

Video and server applications need the power of our Fast/Wide Whirlwind RAID. ATTO Silicon Express IV and Remus RAID software included.

CAPACITY	RAID 0,1	RAID 0,1,4,5
2GB	\$2999	\$3199
4GB	\$3799	\$3999
8GB	\$5399	\$5599



**Fast
& Wide
RAID!**



Internal RAID

Fast/Wide RAID that fits inside your 800, 840AV, PowerMac 8100, or Workgroup Server 80 and 8150. ATTO SE IV and Remus RAID software included.

CAPACITY	RAID 0,1	RAID 0,1,4,5
2GB	\$2999	\$3199
4GB	\$3799	\$3999



PowerBook Drives

Spin 2.5" drives are fast, easy to install, and offer the capacity you need when you are on the road.

Quantum 170MB	\$179
Quantum 256MB	\$249
Quantum 341MB	\$349
Quantum 514MB	\$449

Including the
Anubis Formatting utility by
CharisMac Engineering, Inc.



Whirlwind

Whirlwind Fast/Wide drives are for graphics and other users who need superior throughput but not the horsepower of our Whirlwind RAID system.

1GB Seagate Barracuda	\$999
2GB Seagate Barracuda	\$1399
4GB Quantum Atlas	\$2199
ATTO SE IV with drive purchase	\$895



Spin Cartridges

DTP and graphics designers—save your work and your money on Spin's SyQuest™ compatible cartridges. Constructed of the most durable material, each cartridge is fully backwards compatible. All cartridges ship preformatted and offer the security of an unconditional 6-year warranty.

Manufactured by
NOMAI

OPTICAL • BERNOLLI
FOR MEDIA
800-215-9200
OVERNIGHT
DAT • SYQUEST

Spin
PERIPHERALS

The best products. Reasonable overnight shipping.
Overall value. So go ahead, take a Spin and enjoy.

734 Forest Street, Marlborough, MA 01752
spin@world.std.com

Circle 248 on reader service card

MACWORLD August 1993 181

ORDER DIRECT: 800-215-9200





your **Macintosh®** catalog SuperStore



- ✓ Full line of Apple Macintosh® computers
- ✓ Over 3,000 products
- ✓ Serving Mac users since 1986
- ✓ Lowest Catalog Prices or we give you **FREE SHIPPING!**
- ✓ Next Day Delivery only \$3* *Up to 10 lbs.



ArtPad II



with Erasing UltraPen™

It's like drawing with pencil and paper!

Order #91042

#90644 ArtPad II w/Fractal Design Dabblers . \$159.98
#90645 ArtZ II 6x8 w/Erasing UltraPen . . . \$298.98

HI-VAL QUAD SPEED CD-ROM DRIVE

**Not 2X. Not 3X...
but state-of-the-art
4X speed!**

**Plays your
music CDs,
too!**



4X

Don't be fooled by lower prices on old technology! 4X is the power you need for hot new applications!

- <200ms average access time; 256K cache
 - 600K per second data transfer rate
- Case design may vary.

**SAVE
On The Latest
Technology!**

**SPECIAL
LOW PRICE
\$245⁹⁸**

Order #90482

Full line of Apple® Power Macintosh®, PowerBook®, Performa® and Quadra® computers BY MAIL!

**Call Today for your
FREE CATALOG!**

Before you buy, call The Mac Zone

1-800-436-0606

For the best Macintosh products at better than Warehouse and Superstore prices.

Fax (206) 603-2500 • International (206) 603-2550 • CompuServe code: GO MZ
CORPORATE SALES GOVERNMENT SALES EDUCATION SALES INTERNATIONAL SALES eWorld
1-800-258-0882 1-800-372-9663 1-800-381-9663 1-206-603-2570 @MACZONE

Buy The 1995 Grolier Multimedia Encyclopedia



**And Get two
FREE CDs!**

**Only
\$49⁹⁸**

with purchase of any
CD-ROM drive
Order #93459

#93918 Grolier Bundle
(w/o purchase of CD-ROM drive) . . \$69.98
Product ships in promotional packaging.



**Super
VALUE**

DOOM II/ Marathon Bundle

*Two action-
packed games
— one low
price!*

**Only
\$59⁹⁸**

Order #91041

Star Trek Omnipedia

*Your reference for all the
characters, creatures
and locations from
Star Trek!*

Order #90561



NEW!

©1995 Multiple Zones International, Inc. All rights reserved.

The Mac Zone Trusted Internationally

France - 33 14688 8040	Fax 33 14790 6903	Brazil - 55 193 3459 86	Fax 55 193 38 0765
United Kingdom - 44 483 911 456	Fax 44 483 911 567	Colombia - 57 1 600 3008	Fax 57 1 914 6492
Scandinavia - 45 86 11 81 83	Fax 45 86 11 81 23	Venezuela - 58 9 713197	Fax 58 9 7604970
Germany - 49 40 551 6066	Fax 49 40 551 9151	Hong Kong - 852 9851 1750	Fax 852 9581 0359
Switzerland - 411 401 4070	Fax 411 401 4073	Japan - 81 3 5454 7026	Fax 81 3 5454 7212
BeneLux - 31 20 656 2299	Fax 31 20 656 5088	Singapore - 652 965 555	Fax 652 965 556
Portugal - 351 1 387 4558	Fax 351 1 386 3001	Malaysia - 602 965 555	Fax 602 965 556
Spain - 351 1 387 4558	Fax 351 1 386 3001	Indonesia - 62 21 530 4567	Fax 62 21530 4715
Mexico - 525 611 4646	Fax 525 563 5025	Middle East - 971 4 359 800	Fax 971 4 359 997

MW508

PLEASE USE THIS CODE TO RECEIVE THESE SPECIAL PRICES
Circle 71 on the reader service card

YES! START MY FREE 1-YEAR CATALOG SUBSCRIPTION ASAP!

☒ **MAC ZONE** ☐ **PC ZONE**

I buy primarily for: ☐ Home Use ☐ Business Use ☐ Work-from-Home Use

Name

Address

City

State

Zip

Mail to: The Mac Zone, 15815 SE 37th St., Bellevue, WA 98006-1800

MW508

Your Single Direct Source for Macintosh® Peripherals & Software.



Authorized Reseller



We are members of the DMA. Our membership signifies our commitment to the complete satisfaction of our customers.

DIRECTWARE™

HARDWARE & SOFTWARE SHIPPED ANYWHERE

Reliability & Trust

have been an important factor in our success as the number one computer reseller in Southern California. Since 1985, we have delivered what and when we promise to our Fortune 500 customers. Our goal is to provide you, the end-user, with this same high level of reliability & trust. We want to *earn* your business!

Your Satisfaction

is our number one priority, always!

Turn to the next two pages for more great Mac deals!



Grand Opening Specials!

prices valid through July 31, 1995.

Fast Delivery!
FedEx
as low as \$5*

NEW! **Tru-Form**
Ergonomic Keyboard
105-key layout, split space bar, built-in on-board wrist support.
#144780 **\$89⁹⁹**

omega Zip Drive
Award winning storage drive, fits 100MB on a single cartridge!
Fits easily in your bag or briefcase. High capacity portable storage on 25MB and 100MB removable disks. Fast, easy backup.
zip **\$189⁹⁹**

zip Carts
100MB cartridges for omega ZIP Drive.
100MB cartridge \$18⁹⁹
100MB cartridge 10-pack \$144.99

NEC 6xe CDRom
Six times speed external drive • 900KB/sec. transfer rate • 256K cache memory • 150ms access time • Auto lens cleaning mechanism • Includes Mac driver software and Bonus SCSI interface cables.
\$549 **NEW!**

Microsoft® **Free MS Word Training Software or Video worth up to \$79⁹⁹**
OFFICE 4.2.1
\$438⁹⁹ **BEST BUY!**
#101670 for Mac/PowerMac
When you purchase Office or Word for Mac, get by mail: MacAcademy Word 6.0 Video or Personal Training Systems module tape or CD. Coupon with purchase good through 8/31/95.

\$39
88MB
SyQuest® Compatible Cartridge by Noma!

NEC Multisync xv17
17" Flat/Square technology CRT
• Max. res: 1024 X 768 M
• 28mm dot pitch
• 3 year limited warranty
\$739 **NEW!**
#128829

BEST BUY! **HP LaserJet 5MP printer for Mac**
• 250-sheet paper tray
• IrDA compliant infrared port
• 4 page-per-minute engine
• 20-MHz processor, 2 SIMM slots
• Includes microfine toner cartridge
\$979
#139902

GRAND OPENING SUPER SPECIALS!
HP ScanJet 3C scanner for Macintosh
• 600dpi optical resolution, 2400dpi enhanced resolution
• Includes Calera WordScan OCR and PhotoShop LE
• 30x24-bit color scanner
• One year HP warranty
\$899
#139882

NEW! **HP DeskWriter 660C inkjet printer for Mac**
• 600x600dpi color and 600x600dpi black printing
• 17 built-in fonts
• Two Ink Cartridges
\$449
#125374

Live Picture 2.0
\$599 **NEW!**

EPSON STYLUS COLOR
720x720 dpi Inkjet Printer
\$499
#125184
• Two Year Warranty
• MacWorld Rated 4 Stars!

Bonus FREE GIFT
MAC INTERNET ROAD MAP!
FREE with any order from this ad!
Our way of saying THANK YOU!
PLEASE HURRY! LIMITED SUPPLY AVAILABLE!

CLARIS Impact FREE
on CD with purchase of **Claridraw 1.0**
SAVE \$200! **BOTH FOR ONLY \$184**
#144503

MacALLY™ 105-Key ADB Extended Keyboard
High quality Mac soft-touch keyboard
FREE CLARIS ORGANIZER!
BOTH FOR ONLY \$65
Reg. price \$89

MYST CD with BONUS TIP-BOOKLET!
\$44⁹⁹ **EXCLUSIVE!**
#110130
DOOM II CD-ROM\$CALL
DARK FORCES CD-ROM\$CALL
MARATHON CD-ROM\$CALL
Disney LION KING\$CALL
BURIED IN TIME CD-ROM\$CALL

The DirectWare ADVANTAGE

- ✓ DirectWare is the mail order division of the #1 computer reseller in Southern California, in business since 1985 with over 65,000 satisfied business customers!
- ✓ Accurate, pay only for "what you order" shipping methods. We charge you actual shipping and don't mark up prices to cover costs of "free shipping".
- ✓ Highly trained telephone sales representatives, not "order takers". We listen to you and respond to your needs!
- ✓ Ethical staff. No deceptive business practices.
- ✓ Toll free technical support for our customers with certified personnel.
- ✓ No credit card surcharges, and we NEVER charge your card until the order is on its way to you!
- ✓ We sell only brand new, brand name, full warranty, factory sealed products!

See additional ordering terms on third page. Some items may have limited availability. Sales tax will be added to orders to California. Call customer service before returning any product. Return shipments will be charged for shipping. For your safety, we thoroughly verify all credit cards.



24-Hr. Fax Order Line 310.793.7175
Fax-on-Request Service 310.793.8606
Customer Service 310.793.4580
Visit Our Booth at Macworld Boston!

For Great Service, Call Toll-Free Today

1-800-490-WARE (9273)

Offer Code MWM9507

Please circle 88 on the Reader Response Card for a free DirectWare catalog!

"Service is our specialty, always."

DIRECT WARE

HARDWARE & SOFTWARE SHIPPED ANYWHERE



For Great Service, Call Toll-Free Today

1-800-490-WARE (9273)

SupraExpress™ 144 Plus
14.4 FaxModem for Macintosh

Includes FAXtilate fax software, MicroPhone LT and CompuServe Information Mgr. #109107

\$95

Optra L
Heavy Duty, high volume printer

LEXMARK
Authorized Dealer

Affordable, high performance desktop printer

Optra R

• 600 dpi, 12 ppm
• 1200 dpi, 8 ppm
• 4MB RAM, 64 MB max.
• PostScript level 2
• 39 fonts
• 500 sheet paper tray
• 1 Year LexExpress Warranty

\$1899

• 600 dpi, 12 ppm
• 1200 dpi, 10ppm (with 2MB upgrade)
• 2MB RAM, 64 MB max.
• PostScript level 2
• 39 fonts
• 200 sheet paper tray

\$1469

Why settle for a no-name in storage? Choose CMS!

Since 1983 CMS has delivered over 3 million quality drives!

SyQuest®
High quality external systems include cable, one cartridge and utility software.

MightyLite™
Portable external drives for PowerBook and Duo. Fits in your hand. Automatically terminates SCSI bus.

340MB #139542 **\$549** 200MB #144825 **\$497**
520MB #144824 **\$679** 270MB #144827 **\$537**

ADRESSO

ProPoint
with built-in 2 button, touch sensitive pointer

97-key layout featuring separate numeric keypad and 12 function keys. Fully ADB compatible. Built-in opto-mechanical, touch sensitive 2-button pointer. (ThinkPad-style device) meets pointing device needs without sacrificing desk space. FREE "Open Sesame" software!

\$74.99 **NEW!**

Soft Touch+ Mac Extended Keyboard
TWO EXTRA ADB PORTS!
FREE DELUXE WRIST PAD!

\$54

The ITT Advantage

Now you can extend any manufacturer's warranty to four years (48 months) with complete in-home service!

Guaranteed warranty extension covers parts and labor with replacement of unit if device cannot be repaired! Toll-free service. In-home service in all 50 states!

\$351-700 **\$59.99** **\$701-1200** **\$99.99** **\$1201-2000** **\$144.99**

On left is purchase price of hardware product, to right is warranty cost.

Micronet Master CD
Professional quality CD-ROM recorder, great for back-up, archiving, multimedia, one-off music CD masters and much more! 2x speed, records 650MB in about 30 minutes. Includes critically acclaimed "Toast" software worth \$599 and Micronet quality!

\$1859

Also Available: Micronet MasterCD Pro 4x Recorder #115597 \$4689.99

Send for our free catalog!

Available the end of July, 1995. Our complete catalog features only the BEST Mac peripherals, hardware and software at great prices. Simply mail the postage-paid postcard bound into the magazine, or use the magazine reader response card and we'll send you one when available.

Or call us for a catalog at 800-490-WARE

Authorized Reseller

SOFTWARE DIRECT

ADOBE (and previously Aldus)

Acrobat 2.0	#116084	\$121.99
Datebook Pro 2.0	#117988	\$42.99
Dimensions 2.0	#117078	\$123.99
Fetch 1.2 Single User	#109890	\$92.99
Illustrator 5.5 with CD	#116080	\$369.99
Pagemaker 5.0a	#144805	\$572.99
Pagemaker PowerMac	#144806	\$572.99
Persuasion 3.0	#108134	\$299.99
Photoshop 3.0.1	#116124	\$566.99
Premiere 4.0	#116150	\$503.99
Streamline 3.1	#117083	\$124.99
Type Manager 3.8 PPC	#117074	\$38.99

BERKELEY

After Dark 3.0	#112829	\$28.99
Simpsons Screen Saver	#112840	\$26.99
Trek NextGen Scrn Saver	#105867	\$27.99
Looney Tunes Screen Saver	NEW!	SCALL

CLARIS

Claris Works 3.0	#116457	\$116.99
Claris Impact 2.0	NEW	SCALL
Filemaker Pro 2.1	#112017	\$86.99
Filemaker Comp. Upgd	#112025	\$110.99
MacProject Pro 1.5	#112013	\$362.99
MacWrite Pro 1.5	#116414	\$87.99
Claris Organizer		\$62.99

CONNECTIX

RAM DOUBLER 1.5	#106280	\$53.99
-----------------	---------	---------

COMPUTER ASSOCIATES

CA-Simply Accounting		\$129.99
----------------------	--	----------

COREL

Corel Gallery CD		\$32.99
------------------	--	---------

ENTERTAINMENT SOFTWARE

Velocity Spectre VR CD	#144800	\$38.99
------------------------	---------	---------

FRACTAL DESIGN

Poser	NEW!	SCALL
Painter 3.0	#107919	\$299.99
Sketcher 1.0	#107911	\$49.99
Dabbler 1.0	#107916	\$58.99

HSC SOFTWARE

Kai's Power Tools 2.1	#110857	\$110.99
KPT Bryce 1.0	#110860	\$111.99
Live Picture 2.0	NEW!	\$599.00
Convolver	NEW!	\$117.99

INSIGNIA SOLUTIONS

Access PC 3.0	#110256	\$79.99
SoftWindows for PowerMac		\$269.99
SoftWindows for Mac		\$269.99
SoftWindows for Performa		\$179.99
Rapid CD		\$43.99

INTUIT

QuickDraw 5.0		\$40.99
QuickBooks		\$109.99

MACROMEDIA

Director 4.0	#111980	\$749.99
Freehand 5.0	#117296	\$349.99
Freehand 5 comp. upgd	#117301	\$138.99
Action Bundle	#135071	\$202.99
Fontographer 4.1	#105233	\$245.99

MICROSOFT

Excel 5.0	#103321	\$279.99
Excel Version Upgrade	#103323	\$113.99
FoxPro 2.6	#109961	\$88.99
Office 4.2.1 Upgrade	#101671	\$229.99*

*After \$40 mail-in rebate thru 8/31/95

PowerPoint 4.0 #103614 \$298.99

PowerPoint 4 Upgrade #103615 \$118.99

Project 4.0 #103538 \$418.99

Word 6.0.1 Improved! #102784 \$289.99**

**INCLUDES \$79 in FREE Tutorial Products!

Word 6 Upgrade #102788 \$79.99

†After \$30 mail-in rebate thru 8/31/95

Works 4.0 #103460 \$78.99

Cinemania CD 1995 #107342 \$47.99

Encarta CD 1995 #107334 \$84.99

QUARK

XPress PMac 3.3.1 CD	#106571	\$659.99
QuarkXPress 3.3.1 Mac	#106568	\$569.99

SPECULAR

Infini-D 2.6	#144802	\$399.99
--------------	---------	----------

SYMANTEC

ACT! 2.0	#106856	\$154.99
Norton Utilities 3.1	#106862	\$95.99
SAM AntiVirus 4.0	#106860	\$64.99
Suitcase 2.1	#108236	\$64.99
DiskDoubler Pro 1.1		SCALL

WORD PERFECT

Word Perfect 3.1	#137546	\$86.99
------------------	---------	---------

UTILITY SOFTWARE

Caere Omnipage Pro 5	#114551	\$309.99
C&G Conflict Catcher III	NEW!	\$59.99
PWB CD-ROM Toolkit	#111157	\$49.99
PWB HD Toolkit Personal	#144803	\$49.99
Lightsource OFOTO	#107922	\$187.99

HARDWARE DIRECT

APC (American Power Conversion)

Back-UPS 600 VA		\$269.99
Back-UPS 900 VA		\$359.99
Back-UPS 1250 VA		\$449.99
Smart-UPS 400 VA		\$289.99
Smart-UPS 600 VA		\$339.99
Smart-UPS 2000 VA		\$1149.99
Power Manager		SCALL
Personal Surge Arrest		\$16.99
Pro. Surge Arrest		\$30.99

ASANTE

FriendlyNet 10Base-T		SCALL
FriendlyNet Adapter/Thin, self term.		SCALL

DAYNA

EasyNET DaynaPort Thin		SCALL
EasyNET 10Base-T		SCALL
MacCon-1 NuBus Thick/Thin		SCALL
MacCon-1 NuBus 10Base-T/Thick		SCALL
LC 10Base-T for FPU socket		SCALL

DAYSTAR Accelerators

100MHz PowerPro601	#109600	\$1669.99
--------------------	---------	-----------

ASK ABOUT LIMITED TIME 100MHz REBATE!

66MHz PowerCard 601 #109596 \$619.99

PowerPro 601 66 #109601 \$1669.99

PowerPro 601 80 #109603 \$1799.99

Turbo 601 66MHz #109595 \$979.99

PARALLON

EtherWave Transceiver		SCALL
EtherWave NuBus Card		SCALL

GLOBAL VILLAGE

Teleport Platinum	NEW	\$229.99
Teleport Gold II		\$109.99
PowerPort Mercury for 500 series PowerBk		\$309.99

HEWLETT PACKARD

ScanJet 3P	#125471	\$458.99
LaserJet 4M Plus	#139888	\$1469.99
LaserJet SMP toner cart.		SCALL
DeskWriter 320	#138809	\$278.99
DeskWriter 540	#139892	\$268.99
Color Kit 540/320 inkjet	#125619	\$32.99
DeskWriter 660 black cart.		SCALL

IOmega

Zip Cart.-100MB 3-pk		\$44.99
MacTransportable 230		\$439.99

KENSINGTON

Turbo Mouse 4.0		\$102.99
Thinking Mouse		\$96.99

LACIE LIMITED

Ext. 365MB Q drive 11ms		\$299.00
Ext. 540MB Q drive 14ms		\$339.00
Ext. 730MB Q drive 11ms		\$399.00
Ext. 1080MB Q drive 9.5ms		\$699.00

LEXMARK

Optra Lxi		\$2949.00
Optra Rx		\$1999.00

MALLY

BatWing Game Controller		\$29.99
BatWing w. Callburn PinBall Game		\$44.99
Joystick		\$44.99
1 Button ADB Mouse		\$19.99

MICROTEK

35T Slide/Film Scanner	#112372	\$967.99
------------------------	---------	----------

NEC

Multisync XV15 Monitor		\$399.00
Multisync XE15 Monitor		\$559.00
Multisync XP17 Monitor		\$1059.00
NEC 2Xc ext. 7-CD changer	NEW!	SCALL
NEC 2V CD-ROM	#125947	\$248.99
NEX 3XP plus CD-ROM	#125950	\$479.99
NEX 4XE CD-ROM	#123953	\$503.99
SilentWriter640 printer	#121226	\$699.99

NEC

PowerClip Jr. for 6100/7100		\$89.99
256K VRAM Video		\$33.00
PowerPump Accel. for 700/900/950		\$279.00

PINNACLE MICRO

RCD1000 CD Recorder	#131849	\$1649.99
Sierra 1.3GB Optical	#136259	\$2399.99

RADIUS

Spigot PRO AV		\$1269.99
Thunder/24 GT		\$1329.99
Intellicolor Display 20e		\$1929.99
Precision Color Pro 24XK		\$739.99
Precision Color 24XP	#141235	\$271.99
VideoVision Studio 2.0	#103156	\$3779.99
Spigot Power AV	#118087	\$799.99

RASTER OPS

SuperScan MC21		\$1699.99
----------------	--	-----------

SONY

SRS-PC50 Speakers	#111810	\$89.99
Blank CDR 63min 553mb	#125943	\$10.99
Multiscan 17sf Trinitron	#115224	\$879.99

SUPRA

SupraFaxModem 288 v.34		\$209.99
------------------------	--	----------

U.S. ROBOTICS

Mac&Fax Sportster14.4	#118979	\$119.99
-----------------------	---------	----------

VISIONEER

PaperPort		\$349.99
-----------	--	----------

Genuine SYQUEST® CARTRIDGES

200MB Cartridge	#143399	\$77.99
105MB Cartridge	#143395	\$53.99
270MB Cartridge	#107795	\$63.99

Exclusive BONUS from DirectWare!

"Floppy of Plug-ins"

EXCLUSIVE! FREE "Floppy of Plug-ins" for Photoshop, etc. with any DTP/Multimedia product purchase! For a limited time only!

Vendors for more information on participating in our DirectWare marketing program for Macintosh and PC products, call Christopher Simmons, Director of Marketing, at 310.793.4900

ENTER TO WIN A FREE APPLE® POWER MAC™!

Your choice of either a Power Mac or IBM Pentium starter system (IBM subject to availability). As part of our Grand Opening Celebration, we're giving away a computer! Simply fill out the postage paid postcard bound into the center of this ad. Drawing will be held August 31, 1995 from all postcards received. Limit one entry per person, group, address or family. Excessive entries will be disqualified. Employees or business partners of DirectWare and NovaQuest InfoSystems are not eligible. Pentium system will be basic starter package without monitor. PowerMac is a 6100, without monitor. Either system will include Adesso ergonomic keyboard. Winner responsible for any taxes. Mail postcard entries to: DirectWare, Box 11191, Dept. MW, Torrance, CA 90510.

DIRECTWARE™

HARDWARE & SOFTWARE SHIPPED ANYWHERE

UMAX® The Magic of Color™

Vista-T630 Pro 600x300 color scanner

Great 24-bit scanner for video and multimedia, web pages or presentations, or OCR scans.

- Scan up to 8.5 x 11.7" art
- Includes Photoshop LE
- Includes WorldLink OCR
- Up to 4800dpi resolution, 600x300 optical resolution
- Toll-free technical support
- Transparency Adapter option only \$359!

\$475 #144798

Vista-S8 Pro One-pass 800x400 Color Scanner

High quality 24-bit color scanner, with enhanced resolution to 6400dpi. Maximum image 8.5x11.7"

- Includes Adobe Photoshop 3.0.1 (full version)
- Includes Adobe Typestry and Pixar 128 CD-ROM
- Kai's Power Tools SE & Power Photos CD-ROM
- Transparency Adapter option only \$359!

\$835 #144796

with MagicMatch Color Management Software

UC1260 600x1200 color scanner

Great 24-bit scanner for graphic professionals who need to prepare artwork for printing.

- Scan up to 8.5 x 14" artwork
- Includes full Photoshop 3.0.1
- Includes Kai's Power Tools SE and Kai's Power Photos CD
- Bonus Pixar Typestry & 128CD
- 3-pass, up to 9600dpi resolu.
- Transparency Adapter option only \$359!

\$895 #144797

"The World's Best Value in Power Protection."

The award winning Back-UPS line gives you 100% power protection for your Mac or workstation. Protect yourself from hardware damage and data loss with the legendary reliability of the Back-UPS! The Back-UPS line features unmatched surge and lightning protection with battery back-up, hot-swappable user replaceable batteries, communications interface port (400), test switch (400), site diagnostics, user adjustable option switches, full UL and CSA approvals!

\$25,000 LIFETIME EQUIPMENT PROTECTION POLICY

2 YEAR WARRANTY

Back-UPS 200 • 200VA UPS
2 outlets; for energy efficient Macintosh models #136391 **\$92**

Back-UPS 280 • 280VA UPS
2 outlets; for network stations, standalone systems #136394 **\$102**

Back-UPS 400 • 400VA UPS
2 outlets; for desktop Power Mac models #131300 **\$139**

Back-UPS.

PC MAGAZINE EDITOR'S CHOICE

APC

AMERICAN POWER CONVERSION

RASTEROPS® SuperScan Mc17

17" flat/square screen multiscan monitor

3 Year Warranty

- 26mm dot pitch
- Anti-static AR coating
- Up to 1280 x 1024 at 76 Hz
- 13 user programmable & 7 factory presets; MPR II
- White balance (9300K/6550K)
- Tilt/swivel base
- With cable

\$829



SuperScan Mc20 20" black matrix multiscan monitor

- 28mm dot pitch
- Anti-static AR coating
- Up to 1152 x 870 at 86 Hz
- 24 user programmable; 7 factory presets
- White balance (9300K/6550K)
- MPR II compliant
- Ergonomic tilt/swivel base
- With cable

\$1299

Newer Technology Mac Clip & Power Clip

Remarkable accelerator gives up to 40% increase in chip performance, especially on the Centris 610 and Power Mac 6100. Average performance increase of 20%. Guaranteed compatible!

for 6100 or 7100 **\$129** #144781

for 800 or 840w **\$129** #144783

for 610, 650, 660 **\$129** #144782

Newer Technology Mac Memory

Please call to verify current memory prices due to fluctuating costs.

16MB 70ns \$525 #144787

32MB 70ns \$1045 #144788

16MB 60ns \$535 #144789

CLARIS®

ClarisWorks 4.0

Work fast & smart with new Assistants & automated technology

Over 100 new features • Easily create professional looking documents • Multiple format changes in one step • Automated database tasks and much more!

NEW! FOR LOWEST PRICE... **\$CALL**



CLARIS® E-MAILER
Groundbreaking new utility program
Let's you control all your electronic mail, even from multiple on-line services.
CALL FOR LOWEST PRICE!

TERMS: FedEx second day shipping is approximately \$5.00 for 5 lbs. or less, \$1.00 per lb. after that plus insurance and packaging material. Cost of freight insurance is .0035 of order total. Packing material and handling charge of \$3.00 per order. For your protection we ship only to your verified billing address. Non-refundable returns subject to a restocking fee. No returns accepted without an RMA# (call customer service). Most software and memory chips are not returnable, unless covered by a manufacturer's return policy. Next day service available most areas. Certain products cannot be shipped outside of the U.S. While we do our best to check for errors, occasionally mistakes can occur. Prices and availability are subject to change. Call for current pricing. For faster service, our system recognizes existing customers by phone number to instantly locate prior order records and information. All trademarks used to benefit and with intent to inform on mark holders.

Copyright © 1995 DirectWare

FileMaker Pro 2.1 Deluxe CD

Includes FREE Claris Organizer

- Clickbook booklet publisher
- 20 custom solution files
- FileMaker Pro Tips database & Claris Solutions Alliance Directory

\$113.99 **NEW!**

CLARIS® E-MAILER
Groundbreaking new utility program
Let's you control all your electronic mail, even from multiple on-line services.
CALL FOR LOWEST PRICE!

Fax-on-Request Service
Get detailed information on products from APC, Adesso, UMAX, Microtek, Newer, Claris and more!
Simply follow directions, and get the facts by fax!

24-Hr. Fax-on-Request Service 310.793.8606

24-Hr. Fax Order Line 310.793.7175
Customer Service 310.793.4580
Tech Support for Customers 800.610.9273

For Great Service, Call Toll-Free Today
1-800-490-WARE (9273)

Please circle 88 on the Reader Response Card for a free DirectWare catalog!

MICROTEK Better Images Through Innovation.

ScanMaker® III

Award winning, 36-bit 1200dpi scanner

Capable of scanning 12 bits per RGB color channel with an increased color range. Gradients look better, color is richer. Ideal for all professional scanning applications. One-pass scanning up to 8.5x14". 1200x600dpi optical resolution (up to 2400dpi through software). 68.7 billion colors! Includes Microtek's scan software, DCR™ color calibration, full version of Adobe Photoshop!

ScanMaker® IISP

One-pass, high quality 600dpi scanner

Fast single-pass 24-bit color scanner captures up to 16.8 million colors at 600x300dpi (1200dpi through software). Perfect for artists and publishers, multimedia and OCR. INCLUDES Color It! image editing software from MicroFrontier and OmniPage Direct OCR software from Caere. Award-winning quality!

ScanMaker® II

Affordable high quality 600dpi scanner

Three pass color scanner, scans up to 8.5x14" images in vivid 24-bit color. 600x300dpi resolution (1200dpi through software). Ideal entry level color scanner for home office use, OCR and classroom. INCLUDES Color It! image editing software from MicroFrontier and OmniPage Direct OCR software from Caere.

VIKING MEMORY

Please call to verify current memory prices. We have the LOWEST PRICES on Viking!!

8MB 32-bit Simm 70ns	#144817	SCALL
16MB 32-bit 70ns	#144818	SCALL
32MB 32-bit 70ns	#144816	SCALL
8MB 32-bit Simm 60ns	#144819	SCALL
16MB 32-bit 60ns	#144820	SCALL
32MB 32-bit 60ns	#144821	SCALL

MacUser BEST BUY DECEMBER 1994

ScanMaker® III

\$2359 #112371

ScanMaker® IISP

\$535 #112393

ScanMaker® II

\$455 #112394

VIKING MEMORY

Please call to verify current memory prices. We have the LOWEST PRICES on Viking!!

8MB 32-bit Simm 70ns	#144817	SCALL
16MB 32-bit 70ns	#144818	SCALL
32MB 32-bit 70ns	#144816	SCALL
8MB 32-bit Simm 60ns	#144819	SCALL
16MB 32-bit 60ns	#144820	SCALL
32MB 32-bit 60ns	#144821	SCALL

VIKING COMPONENTS

BEST BUY

FedEx

DirectWare is open to serve your needs from 5:00am to 10pm (PST), or 8am to 1am (EST). Please call early to guarantee next day delivery.



Offer Code MWM9507

MACWORLD August 1995 205



SuperMicro
\$100,000
Lease Credit

\$0 DOWN BUSINESS LEASING FROM SuperMicro

SuperMicro
\$100,000
Lease Credit

8100 Systems



8100/80 SUPERSTATION

- PowerPC 8100/80MHz
- Internal CD ROM
- 40MB RAM
- 2.1GB internal hard drive
- Extended keyboard
- Apple 17" Trinitron monitor
- Radius Thunder 24 video card
- dsc 12000c, 9600x9600 dpi color flatbed scanner
- TI MicroLaser PowerPro, 600 dpi, 8.5" x 11", 12 ppm printer w/ 2 AppleTalk connectors
- Wacom 12x12 Graphics Tablet
- SuperMicro Extended Services

0 Down!
\$228
PER MONTH

CPU Starting at \$2599

\$7.40
ADAY!

8100/100 VIDEO WORKSTATION

- PowerPC 8100/100MHz
- Internal CD ROM
- 72MB RAM
- 2.1GB internal hard drive
- Extended keyboard
- Radius 21" Trinitron monitor
- Radius Thunder 24 video card
- Radius Video Vision Studio Pro Pak including 4GB Fast&Wide disk array w/ Fast&Wide SCSI controller
- Internal SDT-5000 DAT tape drive w/ 1 FREE tape
- SuperMicro Extended Services

0 Down!
\$452
PER MONTH

CPU Starting at \$3199

\$14.05
ADAY!

8100/110 ULTIMATE GRAPHICS WORKSTATION

- PowerPC 8100/110MHz
- Internal CD ROM
- 135MB RAM
- 4.0GB internal hard drive
- Sony 20SE Trinitron monitor
- Radius Thunder IIGX 1600
- Multifunctional SyQuest 200
- Sony 650 optical w/ SyQuest 200 cartridge, 650MB optical cartridge
- Umax PowerLook 1200 dpi color flatbed scanner w/ full Photoshop
- GCC XL 808 Laser Printer, 800x 800 dpi, 11"x17", Ethernet
- Two GCC toner cartridges
- Wacom 12x18 Graphics Tablet Electrostatic
- SuperMicro Extended Services

0 Down!
\$656
PER MONTH

CPU Starting at \$4199

\$21.58
ADAY!

7100 Systems



7100/66 VALUESTATION

- PowerPC 7100/66MHz
- Internal CD ROM
- 40MB RAM
- 540MB hard drive
- Extended keyboard
- External SyQuest 88c w/ FREE cartridge
- Sony 17SF Trinitron monitor
- dsc 6000c, 2400x2400 dpi scanner w/ PS LE
- Radius Thunder 24 video card
- TI Pro 600, 600 dpi, 8 ppm printer w/ 2 AppleTalk connectors
- Wacom 6x8 Artz Graphics Tablet
- SuperMicro Extended Services

0 Down!
\$185
PER MONTH

CPU Starting at \$2199

\$8.08
ADAY!

7100/80 PAPERLESS OFFICE

- PowerPC 7100/80MHz
- Internal CD ROM
- 40MB RAM
- 1.0GB hard drive
- Extended keyboard
- Sony 20SE Trinitron monitor
- Radius Thunder 24 video card
- GlobalVillage TelePort Gold fax modem
- Umax UC630 scanner w/ page feeder and OCR software
- Pinnacle Micro CDR-1000 CD-ROM Recorder
- SuperMicro Extended Services

0 Down!
\$239
PER MONTH

CPU Starting at \$2399

\$7.95
ADAY!

7100/80 DESIGNSTATION

- PowerPC 7100/80MHz
- Internal CD ROM
- 72MB RAM
- 1.0GB hard drive
- Extended keyboard
- Turbo SyQuest 200 external w/ 1 FREE cartridge
- Sony 20SE Trinitron monitor
- Radius Thunder 24 video card
- dsc 6000c, 3600x3600 dpi scanner w/ full Photoshop
- TI MicroLaser Pro 600 PS23, 600 dpi, 8 ppm printer w/ 2 AppleTalk connectors
- Wacom 12x12 Graphics Tablet
- SuperMicro Extended Services

0 Down!
\$264
PER MONTH

CPU Starting at \$2599

\$8.87
ADAY!

6100 Systems



6100/66 DATA ENTRY WORKSTATION

- PowerPC 6100/66MHz
- Internal CD ROM
- 24MB RAM
- 540MB internal hard drive
- Extended keyboard
- Apple 15" Trinitron monitor
- TI MicroLaser Pro 600, 600 dpi, 8 ppm printer w/ 2 AppleTalk connectors
- SuperMicro Extended Services

0 Down!
\$95
PER MONTH

CPU Starting at \$1499

\$3.12
ADAY!

6100/60 DTP SOLUTION

- PowerPC 6100/66MHz
- Internal CD ROM
- 24MB RAM
- 540MB internal hard drive
- Extended keyboard
- External SyQuest 88c w/ cartridge
- Sony 17SF Trinitron monitor
- Radius 24x4 video card
- dsc 6000c, 2400x2400 dpi color flatbed scanner w/ transparency and Photoshop LE
- TI Pro 600 printer w/ 2 AppleTalk connectors
- Wacom 6x8 Artz Graphics Tablet
- SuperMicro Extended Services

0 Down!
\$159
PER MONTH

CPU Starting at \$1399

\$5.22
ADAY!

SYSTEM SPECIALS

Every SuperMicro system is completely assembled and tested before shipping—all ready to run.

CPU/XKEY/MOUSE	MONITOR/CARD	CASH	LEASE
8100/110/16/2.0GB/CD	None/Thunder 24	\$5299	\$121
8100/110/72/2.0GB/CD	Sony 17"/Thunder 24	\$3049	\$184
8100/110/136/4.3GB/CD	Sony 20"/Thunder 24	\$12,228	\$280
8100/80AV/72/540/CD	Sony 17"/Thunder 24	\$7499	\$171
7100/66/24/1.0GB	Sony 17"/Thunder 24	\$4699	\$107
7100/80/40/700/CD	Sony 20"/Thunder 24	\$7295	\$167
6100/66/24/540	14" hi-res color monitor	\$2575	\$58
6100/60/8/350	14" hi-res color monitor	\$1799	\$44

MONTHLY SPECIALS



FULLY LOADED 8100/110 \$5299!

- PowerMac 8100/110 CPU
- 16MB RAM
- 2GB hard drive
- Internal dual-spin CD-ROM
- Radius Thunder 24 series IV video card

While they last!

SCANNERS



- 24-bit color
- 600 dpi resolution
- Includes color calibration system

SCANNER	DESCRIPTION	PRICE
dsc 6000c	600 dpi flatbed w/PS LE	\$449
dsc 8000c	800 dpi flatbed w/PS LE	\$549
dsc 12000c w/trans	1200 dpi flatbed w/PS LE	\$949
Agfa StudioScan II	400 dpi flatbed	\$829
Agfa Arcus II w/trans	1200 dpi flatbed	\$2579
ScanMaker III	1200 dpi flatbed	\$2449
ScanMaker IIHR	600 dpi flatbed	\$828
Umax PowerLook	1200 dpi flatbed	\$2449
Nikon CoolScan	2700 dpi slide	\$1389
Polaroid SprintScan	2700 dpi slide	\$1859
StudioScan II adapter	transparency upgrade	\$379
Microtek adapter	transparency upgrade	\$519

SCANMAKER IIHR \$828!

TI MICROLASER PRO 600 PS23 \$1189!



- 600 dpi camera ready output
- 8.5" x 11" print size
- 500 sheet capacity

MODEL	RESOLUTION	SIZE	PRICE
TI MicroLaser Pro 600 PS23	600x600	8.5"x14"	\$1189
TI MicroLaser Pro E	600x600	8.5"x14"	\$1365
TI MicroLaser PowerPro	600x600	8.5"x14"	\$1629
Primera Pro Color	300x300	8.5"x11"	\$1499
Primera Pictura 310 Color	300x300	12"x18"	\$3899
Epson StylusColor	300x300	8.5"x11"	\$529
GCC XL 608	600x600	11"x17"	\$2189
GCC XL 808	800x800	11"x17"	\$2719

GRAPHICS TABLETS



- 1016 lpi resolution
- Pressure-sensitive stylus with no cord or batteries!

MODEL	SIZE	PRICE
Wacom ArtZ	6" x 8"	\$279
Wacom SD-420E	12" x 12"	\$487
Wacom SD-310E	12" x 18"	\$599
Wacom UD-1825	18" x 25"	\$1999
Calcomp Drawing Slate II	12" x 12"	\$249

MONITORS

SONY 17SF/ RADIUS THUNDER 24 \$1479!



Save \$200 on a Sony 17SF monitor and Radius Thunder 24 Series IV complete video solution!

MONITOR	RESOLUTION	PRICE
Sony 1425	14in, 25mm, 1024x768	\$321
Sony 155F	15in, 25mm, 1024x768	\$439
Sony 17SF	17in, 25mm, 1024x768	\$859
Sony 20SE	20in, 25mm, 1280x1024	\$1889
NEC 17XE	17in, 25mm, 1280x1024	\$979
Apple 15	15in, 25mm, 1024x768	\$399
Apple 17	17in, 1024x768, .26mm	\$799

FAX MODEMS



- 14,400 bps data transmission rate
- 100% AT&T compatible
- Free fax software included!

MODEL	DESCRIPTION	PRICE
dsc Turbo FaxModem	External, 14.4K bps	\$98
US Robotics Sportster 28.8 V.34	External, 28.8K bps	\$248
SupraFAXModem 28.8 MC V.34	External, 28.8K bps	\$219
GlobalVillage TelePort Gold II	External, 14.4K bps	\$123
GlobalVillage TelePort Platinum	External, 28.8K bps	\$226

VIDEO CARDS



- 24-bit color at 1152 x 870 dpi
- Photoshop acceleration

VIDEO CARDS	RESOLUTION	PRICE
Radius Spectrum 24 Series V	1024x768	\$399
Radius Thunder 24	1152x870	\$799
Radius Spectrum Power, 1152	1152x870	\$1138
Radius Thunder II Series IV GX 1152	1152x870	\$1819
Radius Thunder II Series IV GX 1360	1360x1024	\$2339
Radius Thunder II Series IV GX 1600	1600x1200	\$2769

44MB CARTRIDGES \$29!

SYQUEST CARTRIDGES LOW PRICES

CARTRIDGES	PRICE
270MB Cartridges (5+ or with drive purchase)	\$56
200MB Cartridges (5+ or with drive purchase)	\$70
105MB Cartridges (5+ or with drive purchase)	\$50
88MB Cartridges (5+ or with drive purchase)	\$38/45
44MB Cartridges (5+ or with drive purchase)	\$29/39

OPTICAL CARTRIDGES

3.5" OPTICAL	PRICE
Sony 128MB	\$29
dsc 128MB	\$17
dsc 230MB	\$32
Komag 128MB	\$24
Komag 230	\$28
Sony 230	\$39

5.25" OPTICAL	PRICE
Sony 650MB	\$75
3m 650MB	\$75
dsc 650MB	\$64
Komag 650	\$69
Tahiti II 1GB	\$159
Komag 1.0GB	\$81
dsc 1.3GB	\$79
Komag 1.3GB	\$83
Sony 1.3GB	\$95

FEATURED

TAPE DRIVES

CARTRIDGES	PRICE
Sony DAT 90m	\$12
Sony DAT 120m	\$24
Maxell 6mm 112m	\$21
Sony 6250	\$25
Sony 6525	\$29

SAVE ON KOMAG OPTICAL CARTRIDGES!

Get high performance, quality and cost effective storage from the world's leader in storage technology—Komag!

KOMAG 1.3GB CARTRIDGES \$83!

5.25"	PRICE
600/650MB	\$69
1.0GB	\$81
1.2/1.3GB	\$83

3.5"	PRICE
128MB	\$24
230MB	\$28

- Compatible with all magneto optical drives
- Made in the USA
- Every cartridge fully tested and certified
- LIFETIME Warranty

HARD DRIVES

NEW!

dsc Turbo Drives

Now even faster! Turbo models have guaranteed 72-hour replacement plus FWB Hard Disk Toolkit—FREE!

TURBO IBM 730 MB \$310!

FWB Hard Disk Toolkit \$59 Value!

SYQUEST 270MB \$400!

- High speed—13ms access time!
- Compact 3.5" format
- Compatible with SyQuest 105 cartridges
- Meets the speed and capacity requirements of image processing and publishing professionals

FREE! 72 hour Replacement Guarantee with any tape drive purchase!

SYQUEST DRIVES Turbo-charged SyQuest Drives!

MODEL	INTERNAL	EXTERNAL	PRICE
SyQuest 270	\$360	\$400	\$425
SyQuest 200	\$345	\$385	\$410
SyQuest 105	\$155	\$195	\$220
SyQuest 88C	\$255	\$295	\$320
SyQuest 44	\$125	\$155	\$180

Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes FWB Hard Disk Toolkit and 72-hour warranty repair.

SONY SDT-5000 \$1019!

- Built in data compression
- 16GB per 120 meter tape
- Low cost, dependable backup

FREE! 72 hour Replacement Guarantee with any tape drive purchase!

MULTIFUNCTIONAL DRIVES

- Up to 6 devices in the same enclosure!
- Costs less than individual drives
- Quick setup. Only one cable!
- Promotes data security. Just lock it away after hours.

SYQUEST 200 /540MB HD COMBO \$669!

Quantum QUANTUM WARRANTY: 2 TO 5 YEARS

MODEL	ACCESS	INTERNAL	EXTERNAL	PRICE
85MB Go	Daytona	17ms	\$199	\$319
256MB Go	Daytona	17ms	\$185	\$305
341MB Go	Daytona	17ms	\$289	\$409
512MB Go	Daytona	17ms	\$375	\$495
42MB	Maverick	17ms	\$79	\$139
85MB	Maverick	17ms	\$110	\$170
270MB	Maverick	14ms	\$140	\$200
365MB	Lightning	11ms	\$155	\$215
540MB	Maverick	14ms	\$195	\$255
540MB	Lightning	11ms	\$205	\$265
730MB	Lightning	11ms	\$215	\$275
1.0GB	Empire	9.5ms	\$509	\$569
1.4GB	Empire	9.5ms	\$659	\$719
2.1GB	Atlas	9.5ms	\$879	\$939
4.2GB	Atlas	9.5ms	\$1369	\$1429

Seagate SEAGATE WARRANTY: 5 YEARS

MODEL	ACCESS	INTERNAL	EXTERNAL	PRICE
1.0GB	Hawk 1	9ms	\$519	\$579
2.1GB	Hawk 2LP	9ms	\$839	\$899
2.1GB	Barracuda 2LP	8ms	\$1029	\$1089
2.1GB	Barracuda 2W*	8ms	\$1129	\$1189
4.3GB	Hawk 4LP	9ms	\$1329	\$1389
4.3GB	Barracuda 4LP	8ms	\$1479	\$1539
4.3GB	Barracuda 4W*	8ms	\$1579	\$1639
3.4GB	Elite 3	10ms	\$1935	\$2035
9.1GB	Elite 9	11ms	\$2829	\$2889

IBM IBM WARRANTY: 5 YEARS

MODEL	ACCESS	INTERNAL	EXTERNAL	PRICE
160MB	12ms	\$140	\$200	\$225
364MB	12ms	\$169	\$229	\$254
540MB	12ms	\$199	\$259	\$284
730MB	11ms	\$225	\$285	\$310
1.0 GB	11ms	\$499	\$559	\$584
2.0 GB	11ms	N/A	\$799	\$824

TAPE DRIVES

MODEL	CAPACITY	SIZE	MACKIT	PRICE
Sony SDT-2000	2GB	3.5"HH	\$725	\$775
Sony SDT-4000	8GB	3.5"HH	\$889	\$939
Sony SDT-5000	5-16GB	3.5"HH	\$889	\$939
Exabyte 8200	2GB	5.25"FH	\$1275	\$1350
Exabyte 8500	5GB	5.25"FH	\$2175	\$2250
Exabyte 8205	2-5GB	5.25"HH	\$1479	\$1529
Exabyte 8505XL	5-10GB	5.25"HH	\$2189	\$2239

Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes Retrospect and 72-hour warranty repair.

OPTICAL DRIVES

- High 2.0MB p/s transfer rate
- Economical storage of large color images and digital audio/video data

SONY 1.3GB \$1699!

MULTIFUNCTIONAL DRIVES

MODEL	PRICE
SyQuest 200 /540MB hard drive	\$669
Sony SDT 5000 /2.0GB Quantum	\$1899
Sony 650MB Optical /SyQuest 200	\$1199
Olympus 3.5" optical /Nikon Coolscan	\$1899
SyQuest 88C /650MB optical drive	\$1099
SyQuest 88C /NEC 3X CD ROM /540MB HD	\$979
Archive 525 Tape drive /540MB harddrive	\$699
NEC 3X CD-ROM /1.3GB optical drive	\$1799
4.0GB Quantum HD /Nikon CoolScan	\$2679

Includes external drive, 25/50 SCSI Cable, terminator, MAC SW and 72-hour warranty repair.

FUJITSU FUJITSU WARRANTY: 5 YEARS

MODEL	ACCESS	INTERNAL	EXTERNAL	PRICE
540MB	9ms	\$199	\$259	\$284
1.2GB	9ms	\$509	\$569	\$594
2.1GB	9ms	\$889	\$949	\$974

For Active Termination, add \$29. Additional 50/50 SCSI cables, \$15 each.

Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo models include FWB Hard Disk Toolkit and 72-hour warranty repair.

* Fast/Wide drives require ATTO SE IV SCSI interface card at \$895

OLYMPUS 128MB \$389!

- Convenient 3.5" format
- Optical technology for years of reliable storage

TOSHIBA 3501 \$375!

- Quad speed
- Supports PhotoCD, Multisession and MPC
- Includes FWB CD Toolkit FREE!

MODEL	PRICE
Toshiba 3501 QuadSpeed	\$375
NEC MultiSpin 2V	\$189
NEC MultiSpin 4Xi	\$369
NEC MultiSpin 4Xe	\$459
CD-ROM Special (with CD-ROM drive purchase)	\$79

DISK ARRAYS

dsc 4.0GB Array \$2569!

- Supports Raid Levels 0 and 1 for disk mirroring and striping
- Speeds up all applications—including VideoVision Studio!

MODEL	DESCRIPTION	ARRAY	VIDEOVISION
dsc 2.0GB Array	(2 x 1.0GB drives)	\$1319	N/A
dsc 4.0GB Array	(2 x 2.0GB drives)	\$2569	\$2899
dsc 8.0GB Array	(2 x 4.0GB drives)	\$2999	\$3699
dsc CD-ROM Array	(6 x Quadspeed)	\$1299	N/A

Includes external disk array, SCSI Cable, MAC SW and terminator. *VideoVision Studio support requires ATTO Fast/Wide interface; add \$895

3.5" DRIVES

CAPACITY	SEEK	MACKIT	PRICE
Olympus 128	35ms	\$389	\$439
Fujitsu-230	30ms	\$569	\$594
Most-256	37ms	\$895	\$945

Includes external drive, 25/50 SCSI Cable, MAC SW and terminator. Turbo model includes FWB Hard Disk Toolkit and 72-hour warranty repair.

CD ROM RECORDERS

PM CDR-1000 \$1799!

MODEL	PRICE
PinnacleMicro CDR-1000	\$1799
Yamaha 4-Speed CD-ROM Recorder	\$3369

Serving you since 1985

Ship it
5 lbs.
5 bucks



230MB Optical.....\$399

With purchase of 10 cartridges.

28.8 v.34 Modem ...\$139

With software & cable.

SQ270\$56

Hot storage solution from SyQuest.



Business Card Reader	219
Vista T630	499
Vista S6	599
Vista S8	729
UC1260	819
PowerLook	2199
Transparency Adapter	399

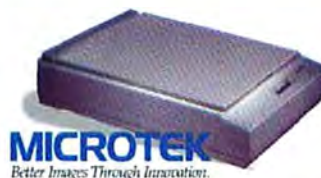
Business Card Reader \$219



Wacom

ArtZ	269
ArtPad	148
UD 12x12 RM	509
Painter Bundle	289

Painter Bundle \$289



MICROTEK
Better Images Through Innovation.

Scanmaker II	469
Scanmaker IIhr LE	689
Scanmaker IIsp	535
Scanmaker III	2489
III Transparency Adapter	136
35T Slide Scanner	953
45T Slide Scanner	4999

Scanmaker II \$469



Attention Power Macintosh Owners!
PowerClock™ accelerates CPU performance by 40%. User installable in seconds. Clips in place. Total compatibility. 30 Day MBG.
PowerMac 6100 to 84MHz 79 || PowerMac 7100 to 84MHz | 79 |
| PowerMac 8100 to 126MHz | 99 |
| Power Clock Level II Cache | 149 |

Now includes Software FPUs while supplies last

DGR Ext Keyboard

\$59

105 key full featured extended keyboard for Macintosh. Fully ADB compatible. **DGR Technologies**



Apple Systems

Call for latest prices!

6100/66 8/500	1599
6100/66 8/500/CD	1799
6100/66 16/500/CD/DOS2469	2529
7100/80 8/500	2859
7100/80av 16/700/CD	3399
8100/100 8/700	3243

8100/100 16/1000/CD	3999
8100/100av 16/1000/CD4199	5559
8100/110 16/2000/CD	2999
Powerbook 540c	1299
Laserwriter Select 360	1035
Powerbook 150	Call
Performa Series	Call



PowerBook Upgrades

160 to 180	399
145 to 170	129
140 to 180	399
140 to 170	299
Apple 17" Monitor	949
Apple 15" Monitor	469

Favorite Products

Adobe Illustrator 5.5	408
Adobe Pagemaker 5.0	499
Adobe Persuasion 3.0	349
Adobe Photoshop 3.0	539
Agfa Arcus II	2599
Agfa StudioScan II	865
Agfa StudioScan IIsi	980
Castle Wolfenstein	38
Delrina FaxPro 1.5.1	39
Filemaker Pro 2.1	99
Freehand 5.0 PPC	390
Kensington ThinkingMouse95	99
Kensington TurboMouse	99
Macromedia Director	799
Macromedia Freehand	389
Magic 10baseT Trnscvr	39
Marathon 3D	39
Myst	49

Magic Memory

4MB 72pin	139
8MB 72pin	279
16MB 72pin	499
32MB 72pin	999
256K Cache	149



Nomai



Media for SyQuest	
44MB Removable Cart	34
88MB Removable Cart	39

GCC

NEW Elite XL808	3190
Elite 600	1399
Elite XL608	2499
600 Pro	3799



Daystar

40MHz Turbo 040	775
66MHz PowerPro	965
100MHz PowerPro	1449



BOTTOM LINE 24-HOUR INTERNATIONAL SALES FAX (512) 892-4455



Subscribe to our Internet Specials:
Mail to online@dgr.com with
"subscribe specials" in subject

Bottom Line Distribution is committed to the needs of the international Macintosh user and reseller. We offer discounted rates with DHL, UPS International and Airborne Express. Delivery times to most countries is 2 to 3 days. We stock 220v versions of most hardware. Dealer inquiries are welcome. Language interpreters are available. Se aceptan pedidos internacionales. Nous acceptons des commandes internationales. Internationale Handlerkonditionen



Domestic: sales@dgr.com
Int'l: world@dgr.com
Surf over to
<http://www.dgr.com/>
Prices updated hourly!

1-512-892-4070 4544 S. Lamar Blvd., Suite 100 • Austin, TX 78745



PowerMac
8100/110

16/2000/CD

\$5559

PowerMac
8100/100av

16/1000/CD

\$4199

Radius
Precision

Color 17"

\$949



QuarkXPress 3.31

\$549



**Iomega
ZIP Drive**

ZIP 100MB.....189
ZIP Disk19
3-Pack ZIP Disks.....48
10-Pack ZIP Disks.....143

ZIP 100MB \$189



Teleport Platinum225
Teleport Mercury.....269
Teleport Gold II.....125
Powerport Gold.....239
Powerport Mercury.....312
Powerport Mercury PB500.....341
Powerport Duo Mercury.....319

Teleport Platinum \$225

radius



PrecisionColor Pro 24X575
VideoVision Studio 2.03449
Photo Engine.....799
IntelliColor 20e.....1875
Thunder IVGX 1600.....2799
Thunder IVGX 1360.....2359
Thunder IVGX 1152.....1899

Radius PCI Products Available



**Hewlett
Packard**



DeskWriter 320.....343
DeskWriter 560c.....479
LaserJet 4ML w/toner1029
LaserJet 5MP.....1120
LaserJet 4MV2749
(after \$250 manufacturer's rebate)
ScanJet 3C.....1015

DeskWriter 560c \$479

Favorite Products



MS Office 4.2 w/RAM Dblr475
MS Word 6.0.1.....329
Nikon CoolScan.....1360
Nikon Scantouch1145
Optical Cart 12825
Optical Cart 25635
Polaroid SprintScan1899
QuarkXPress 3.31549
QuarkXPress 3.31 PPC629
QuickTake 150699
RasterOps Targa 2000 .4599
Retrospect 2.1139
Supra v.34218
Supra v.34 PowerBook.....309
SyQuest 88MB Cart49
SyQuest 200MB Cart79
SyQuest 270MB Cart56
Warlords II.....45

Magic Products



Magic

1.08GB 10ms.....499
2.15GB 9ms965
4.3GB 9ms1349
Barracuda 2GB1099
Lightning 730 11ms.....290
Seagate Hawk 4300 9ms1599
1GB to 2GB upgrade699

Magic SyQuest

270MB Drive/Cart399/56
200MB Drive/Cart419/79
44MB/88MB Cart.....43/49
Magic Optical
Olympus 128/Cart.....349/25
Olympus 230/Cart399/29
1.3GB/Cart.....1699/89

Magic Specialties

2GB RAID.....1199
4GB RAID.....2099
NEW 8GB RAID3399
2GB Tape w/Retrospect675
Logic 3601 4.4X435



Magic



microWriter PS23625
microLaser 600.....853
microLaser Pro PS23.....1195
microLaser PowerPro.....1635

DiiMO



DiiMOCache '040 50MHz
Accelerator with 128K cache
for Quadra and Centris **\$799**

Macromedia



Freehand 5.0.....389
Director799

JetInc. Inkjet Refill



Color StyleWriter 1pk Blk5.95
2pk Blk/Color.....15.99/9.99
2pk High Capacity Blk.....19.99
500/50/60c/310 8pk.....45.95

Sony Monitors



Sony 17SF929
Sony 15SF474

Domestic Shipping: \$5 for 2nd day air up to 5 lbs. - Shipping via UPS and DHL. 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. Purchase orders welcome. 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. Bottom Line Distribution cannot be responsible for errors in typography or photography. All brands and product names are trade marks of their respective holders. Local number: 512-892-4070. Customer service 512-892-4090. 24-hour order fax line.

Open Mon-Fri 9 am - 9 pm. Sat 9 am - 4 pm.



BOTTOM LINE
DISTRIBUTION

We build systems! Call for
all your Macintosh needs.

1-800-990-5697

Fax: 1-512-892-4455

US and Canada
8/95 MW

- Low price guarantee!
- Selling quality drives at incredibly low prices Since 1987.
- 30 Day money back guarantee.
- Fast service. Most orders shipped same day!
- Lifetime technical support.
- 24 Hour turnaround, 1 year replacement policy.
- Friendly, helpful staff. We appreciate your business!

OPTICAL DRIVES

230MB FUJITSU

- Read and write 128 or 230MB disks
- External only \$569 1 free disk
- DynaMO external \$579 1 free disk

1.3 Gig NEC

- Read and write 650MB or 1.3Gig disks
- 2 Year warranty! 1MB data buffer.
- External only \$1599 1 free disk

1.3 Gig Maxoptix

- Read and write 650MB, 1Gig or 1.3Gig disks
- 4MB data Buffer. 1 year warranty.
- External only \$2269 1 free disk

MICROPOLIS

- NEW LOW PRICE on MicroDisk external stackable disk drives! Available now for only \$120 more than internal!
- WIDE SCSI A/V Drives now available.

RAIDTEC DISK ARRAYS

- Raidtec SCSI to SCSI arrays are much faster than software driven RAID! No CPU time is required to implement the RAID.
- Call for specs & a custom configuration quote.

ATTO SCSI ACCELERATOR

- Nubus cards, get the full speed from your drives.
- SAVE \$20 with hard drive sale! Alone \$499
- SiliconExpress II FAST SCSI \$499
- SiliconExpress IV WIDE SCSI \$859

CD ROM RECORDER \$1799

- Smart and Friendly CD-R 1002
- Double Speed, Multi Session, 1MB buffer
- Includes Gear CD Authoring Software for Mac
- Media CDR63 or 74 Qty 50 \$8.50ea, Qty 100 \$8ea.

2.5" Powerbook Drives

Size	Speed	RPM	Brand	Price
240MB	14ms	4500	Fujitsu	\$245
256MB	17ms	4500	Quantum	\$255
514MB	17ms	4500	Quantum	\$425
535MB	12ms	5400	Fujitsu	\$429

FUJITSU

BEST BUY!

FUJITSU OFFERS THE BEST VALUE ON THE MARKET!

- Low price guarantee on all Fujitsu drives!

Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
530MB	13.8ms	4500	256K	2yr	M2684S	\$209	\$269
1080MB	9.5ms	5400	256K	3yr	M1606S	\$455	\$515
2100MB	9.5ms	7200	512K	5yr	M2915S	\$889	\$949

Quantum

#1 HARD DRIVE FOR MAC!



Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
420MB	14ms	4500	128K	3yr	TB420S	\$199	\$259
541MB	11ms	4500	128K	2yr	LT540S	\$222	\$282
545MB	12ms	5400	128K	3yr	FB540S	\$235	\$295
731MB	11ms	4500	128K	2yr	LT730S	\$252	\$312
850MB	14ms	4500	128K	3yr	TB850S	\$279	\$339
1080MB	12ms	5400	128K	3yr	FB1080S	\$479	\$539
2140MB	8ms	7200	1024K	5yr	XP32150	\$909	\$969
4280MB	8ms	7200	1024K	5yr	XP34300	\$1479	\$1539

MegaHaus is your #1 source for Quantum drives.

- Low price guarantee on all Quantum drives!
- Same day shipping on most orders!



SyQuest

Genuine Syquest cartridges
Qty 4-9 / 10+ or with drive.
44MB \$42 \$40
88MB \$47 \$45
105MB \$53 \$50
200MB \$76 \$71
270MB \$59 \$56

Capacity	Speed	Compatible	Model	Buffer	Internal	External
88MB	20ms	44, 88MB	SQ5110C	32K	\$285	\$345
105MB	14.5ms	105MB	SQ3105S	64K	\$260	\$320
200MB	18ms	44, 88, 200MB	SQ5200C	64K	\$419	\$475
270MB	13.5ms	105, 270MB	SQ3270S	128K	\$409	\$465

MegaHaus is your #1 source for Syquest drives.

- Low price guarantee on all Syquest drives!
- 1 FREE cartridge with each drive!
- 2 year warranty on drive and case!
- 5 year warranty on all cartridges!
- Same day shipping on most orders!

Brand	Capacity	Speed	RPM	Buffer	Wty	Model	Internal	External
Seagate	1050MB	9ms	5411	512K	5yr	ST31230N	\$519	\$579
NEC	1083MB	11ms	4090	256K	3yr	D3827	\$389	\$449
Conner	1080MB	9ms	5400	256K	5yr	CFP1080S	\$469	\$529
Micropolis	2050MB	8.5ms	7200	512K	5yr	MC4221	\$949	\$1009
Micropolis	2050MB	A/V Gold	7200	512K	5yr	MC4221AV	\$999	\$1059
Micropolis	2050MB	WIDE SCSI	7200	512K	5yr	MC4221W	\$1059	\$1199
Conner	2147MB	9ms	5400	512K	5yr	CFP2105S	\$879	\$939
Conner	2147MB	9ms	7200	512K	5yr	CFP2107S	\$969	\$1029
Seagate	2147MB	9ms	5411	512K	5yr	ST32430N	\$889	\$949
Seagate	2147MB	8ms	7200	512K	5yr	ST32550N	\$989	\$1049
Seagate	2147MB	WIDE SCSI	7200	512K	5yr	ST32550W	\$1159	\$1259
Seagate	4290MB	9ms	5400	512K	5yr	ST15230N	\$1289	\$1349
Seagate	4290MB	8ms	7200	1024K	5yr	ST15150N	\$1479	\$1539
Seagate	4290MB	WIDE SCSI	7200	1024K	5yr	ST15150W	\$1590	\$1690
Micropolis	4294MB	8ms	7200	512K	5yr	MC3243	\$1329	\$1389
Micropolis	4294MB	A/V Gold	7200	512K	5yr	MC3243AV	\$1419	\$1479
Micropolis	4294MB	WIDE SCSI	7200	512K	5yr	MC3243W	\$1459	\$1599
Conner	4294MB	9.5ms	7200	512K	5yr	CFP4207S	\$1399	\$1459
Micropolis	9100MB	12ms	5400	512K	5yr	MC1991	\$2139	\$2239
Micropolis	9100MB	A/V Gold	5400	512K	5yr	MC1991AV	\$2249	\$2349
Micropolis	9100MB	WIDE SCSI	5400	512K	5yr	MC1991W	\$2299	\$2499
Seagate	9090MB	11ms	5400	1024K	5yr	ST410800N	\$2589	\$2689

CD ROM DRIVES

Brand	Model	Speed	Transfer	Buffer	Internal	External
Sanyo	SH254S	190ms	600KB/sec	256K	\$229	\$279
Toshiba	XM3601	155ms	660KB/sec	256K	\$329	\$379
Plextor	6Plex	145ms	900KB/sec	256K	\$559	\$609

We also stock Pioneer disk changers, Sony, and NEC drives.



M-F 8-8 Sat 9-3 Central

Local (713) 534-2630

Fax (713) 534-6580

TTY (Deaf Line) 1-800-473-0972

No International orders accepted.

CODE MW08

MasterCard

Discover

VISA

AMERICAN EXPRESS

2201 Pine Drive

Dickinson, Texas 77539

Internet <http://phoenix.net/~megahaus>

Prices and specifications subject to change. Some exceptions may apply to low price guarantee. All trademarks are registered trademarks of their respective companies. Returns must be in new condition, and may be subject to restocking fee. Shipping is not refundable. Personal checks held for clearance. © MegaHaus 1995

Now Order Apple® Macintosh® Hardware By Mail



J&R COMPUTER WORLD

One of America's Largest Authorized Apple Dealers

Authorized
Catalogue Reseller

PORTABLE COLOR PRINTING

**Hewlett-Packard
DeskWriter 320
with Color
Cartridge &
Sheet Feeder**

- Portable inkjet printer
- Resolution enhancement
- 600 X 300 dpi

\$299⁹⁵

(HP C2636A)

**HEWLETT
PACKARD**
Authorized Dealer

**INCLUDES
COLOR
CARTRIDGE**



28.8bps

BEST BUY



**FastMac V.34
28.8 Data/Fax Modem**

- 28,800bps data and 14,400bps fax transfer rate
- Maximum throughput of up to 115,200bps with V.42bis/MNP 5 data transfer
- Includes cables and software
- Made in the USA

\$139⁹⁹

(FSM FMACV34)



**MicroNet Advantage
External 200MB
SyQuest® Drive**

- Provides the advantages of primary storage, archiving, file transport & backup
- Includes one cartridge, SCSI system cable & software
- 18ms access

\$499⁹⁹

(MNT ADV-SYQ200E)

External 270MB SyQuest® Drive

(MNT ADV-SYQ270E)

\$529⁹⁹

UMAX

**Umax
Vista-T630
High Speed
Flatbed Color Scanner**

- 600 x 300 dpi, 4800 dpi (max)
- 3-pass, 24-bit color
- SCSI 2
- Includes VistaScan, Color-It, WordLink OCR, Corel Prof Photos CD, Kai's PowerPhotos CD

\$469⁹⁹

(UMX SOHOMAC)

**Hewlett-Packard
ScanJet IIC
Color Scanner**

**HEWLETT
PACKARD**
Authorized Dealer

- Ideal for both monochrome & color graphics & text
- 600 dpi resolution
- Fast 1-pass image scanning
- Includes Photoshop LE, OCR software and cables

\$919⁹⁹

(HP C2529A)

VOYAGER

**Voyager
Puppet Motel**

\$29⁹⁵

(VOM PUPPET-C)

CD-ROM



Microsoft®

**Microsoft
Word 6.01
Macintosh & PowerMac**

Limit One Per Customer

\$269⁹⁵

(MSM WORD6.01)



Intuit

**Intuit
Quicken 5.0**

\$44⁹⁵

(IUM QUICKEN5)



**Media Vision Reno
Portable CD-ROM**

- Double speed CD-ROM
- SCSI 2 • 180ms access time
- Works with AC adapter or battery
- Includes headphones, carrying case, AC adapter & cables

\$249⁹⁹

(MDV MV450-RENO)

**SPIRIT
TECHNOLOGIES**



- Quad-speed (150ms, 600KB/sec.) CD-ROM drive
- Koss stereo speakers
- Headphones
- Software includes Grolier's Multimedia Encyclopedia and Oceans Below
- Two-year warranty

\$399⁹⁹

(SIT CDR-4BUNDLE)

External Double-Speed CD-ROM Kit

(SIT CDR-BUNDLE)

\$229⁹⁹

Radius PrecisionColor 17"

- Sony Trinitron, 26mm dot pitch
- Supports built-in Macintosh video
- 1360x1024 with Radius card
- 1 year Worry Free Radius Warranty

\$949⁹⁹

(RAD PRECOLOR17)

SuperMac Thunder 24-GT Video Card

(SPM THUND24-GT)

\$1399⁹⁹

SuperMac Thunder IV GX-1152

(SPM THUND4-1152)

\$1899⁹⁹

RASTEROPS®
THE ART & SCIENCE OF COLOR

**RasterOps
ClearVue
20"**

- 20" Trinitron
- 640x480 to 1280x1024 resolution
- Digital LCD controls
- Anti-glare, anti-static Energy Star
- Supports built-in Macintosh video on Centris, Quadras and PowerMac

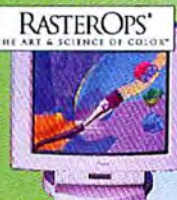
\$1699⁹⁹

(RAS CLEARVUE20T)

PaintBoard Prism-GT from RasterOps

(RAS PRISM-GT)

\$899⁹⁹



**24 Hours A Day,
7 Days A Week,
Anywhere In The USA**

1-800-221-8180

Call Now

**For Our
Macintosh
Catalogue
with a Full
Line of Mac
Hardware
& Software
at
Discount
Prices**



FAX: 1-800-232-4432

MAIL ORDERS

J&R Computer World Dept. MW0895 • 59-50 Queens Midtown Expressway • Maspeth, Queens NY 11378 DO NOT SEND CASH.

CALL for shipping information. Corporate Accounts Welcome 1-800-221-3191

Not responsible for typographical or pictorial errors. Some quantities may be limited. All merchandise brand new, factory fresh and 100% guaranteed!

Circle 282 on reader service card



We're not like the other We'll give you more



Power Macintosh[™] Systems



\$4299

**Power Macintosh 8100/100
with CD-ROM Drive**
16MB RAM, 1GB HD,
includes Ethernet.

\$9499

Complete System Includes:

- Power Mac 8100
- RadiusThunder IV GX-1600
24-bit graphics accelerator
w/ DSP's
- Radius 21-TXL Display,
Extended Keyboard
Lease for \$343/month*

All Macs aren't created equal.

At Express Direct we do more than take orders and ship boxes. We add value:

- Custom configurations to fit your needs and budget
- Free installation of memory, video cards and system software.
- Free quality testing before shipment, so all you have to do is plug it in.
- Toll-free technical support for the life of your system.

Now with
FREE
HSC Live Picture
A \$999 Value!
offer expires 8/15/95



\$2499

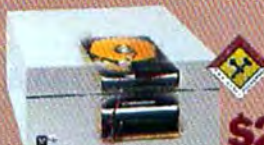
PowerLook 30-bit, one-pass scanning at
600x1200 dpi with interpolation to 9600 dpi.
Shown with optical transparency adapter.

UMAX

UC 1260 1200 to 9600 dpi, 24-bit color	\$799
PowerLook with transparency adapter	\$2969
NEW Vista S6 600 to 4800 dpi, 1 pass	\$599
NEW Vista S8 800 to 6400 dpi, 1 pass	\$749

Pick Your Own Software Bundle
Available only with scanner purchase.

Pro Bundle	\$199
Full Photoshop, Kai's Power Tools & more	
LE Bundle	\$79
Photoshop LE, OmniPage Direct OCR & more	



\$2899

2GB SledgeHammer FMF Wide Disk Array
Optimizes digital video recording & playback.
Includes SCSI JackHammer.



SledgeHammer 4100FMF	\$4649
4GB Wide disk array, includes SCSI JackHammer	
HammerDisk 1300FMF	\$3099
1.3GB Optical Drive	
HammerDisk PE230	\$1029
230MB Optical Drive	
HammerDAT 16GB	\$1529
8-16GB DAT Drive, 44MB/min speed	
New Hammer CD-R 2X	\$1799
Reads & writes CD-ROMs, also available in 4X.	



\$5499

SelectPress 1200 12"x19" full bleed & tabloid
size pages at camera-ready 1200 dpi on paper.
With Ethernet and 160 MB internal hard drive.



**GCC
TECHNOLOGIES**

SelectPress 600Pro	\$3999
12"x19", 600 dpi w/ 16MB RAM, 160MB HD	
SelectPress 600	\$3299
12"x19", 600 dpi, PostScript level 2	
Elite 600	\$1399
600 dpi w/ 4MB RAM, 10ppm, optional Ethernet	
NEW Elite XL808	\$2949
11"x17", 800 dpi, full bleed, 285 fonts, 8ppm ltr.	
NEW Elite XL1208	\$3949
11"x17", 1200 dpi, full bleed, w/ ethernet.	

We stock a complete line of quality products from all of the above manufacturers & more.

1-800-765-0020

Order Toll Free M-Th 8am-7pm, Fri til 6pm, Sat 10am-2pm (CST) • 24hr Fax • Customer Service Hotline: **1-800-236-3059**

**Get it
Direct!**

Apple, the Apple logo, Macintosh, Macintosh Quadra and Power Macintosh are trademarks of Apple Computer, Inc. Prices are subject to change without notice. A 2% 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, cannot be returned after it has been opened. All warranties on Macintosh or Apple brand products sold by Express Direct will be honored 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.

than a sales pitch.



Great Price-Free Advice.

At Express Direct you'll get more than just a great deal on a Mac system and peripheral. You **get the advice of an expert**. Someone who understands the products and the needs of graphic professionals like you. Someone who's done their homework and knows what they're talking about. Not an order-taker like you get with other mail-order companies.

Plus we only carry **top-notch products** from the industry's best manufacturers. No garbage. You demand quality and so do we. And remember high quality doesn't have to mean high cost. We offer **the most competitive pricing**. Plus we'll help you find the right system and peripherals to fit your budget.

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. Best of all, our superior support and advice comes at no extra cost to you. So, call Express Direct today and **get more for your money**.

express direct

2720 N. Paulina Ave.
Chicago, IL 60614

Call to receive a FREE catalog!

Phone: 1.800.765.0020 Fax: 312.244.3080

\$2179



\$2999

Radius 21-TXL Display, 21" Diamondtron display and Thunder IV GX-1600 with 4 built-on DSP's to accelerate Photoshop.

radius

PrecisionColor 17, 17", Energy Star \$1029
PressView 21T 21", 1600x1200 dpi, includes hood and calibrator. \$3149
Thunder IV GX-1600 \$2879
Up to 1600x1200 dpi CMYK accelerator w/ 4 built-on DSP's to accelerate Photoshop.
Thunder IV GX-1152 \$1949
Same features as GX-1600 but up to 1152x870 dpi.
VideoVision Studio 2.0 \$3749
VideoVision ProPak \$8649
Combines VideoVision Studio 2.0 w/ Studio Array.

\$1059



ScanMaker IISRP 24-bit color, 600x1200 dpi true optical resolution (Interpolates to 2400x2400 dpi). Includes full Photoshop & OmniPage OCR.

MICROTEK

ScanMaker IISRP 600 to 1200 dpi, with OmniPage OCR. \$519
ScanMaker IISRPX 600 to 1200 dpi, with full Photoshop and OmniPage OCR. \$879
ScanMaker III 36-bit color, 1200 to 2400 dpi, with full Photoshop and DCR color calibration. \$2499
ScanMaker III Transparency Adapter \$149
ScanMaker IIHR 1828 to 3656 dpi for slides and film. \$999



• Unlimited toll-free technical support



• Authorized sales & service



International Orders Shipped Daily

Fax: 312.244.3081

Phone: 312.244.3000



Leasing available for those who qualify.

ABOVE 50% COST

BUSINESS LEASING

- Any established business can lease
- Purchase options are available
- Warranted equipment for lease term
- Quick approvals & deliveries
- Flexible terms • No Down Payment
- Low fixed monthly payment • Aggressive pricing



Lease
\$88
48 mo

Small Business Station

PowerMac 7100/80, 8-700 w/CD
15" Multiscan Display
Extended Design Keyboard



Lease
\$179
48 mo

CyberMac 81 Workstation

PowerMac 8100/100AV, 16-1000 CD
20" Multiscan Display
Extended Design Keyboard

Demon Workstation 8110



PowerMac 8100/110, 16-2000 CD
Supermac 21T•XL, 1600x1200 Color
Display

Lease
\$448
60 mo

Thunder IV/GX 1600
VideoVision 2 Pro Pak
w/4.2 GB Array
Premiere 4 & VideoFusion
Ext KB, Apple Design Speakers

FREE

14 CD-ROMs
with any System Purchase
(limited quantity)

New PowerMacs

Tsunami, 120 MHz w/4x CD	call
Nitro, 100 MHz w/4x CD	call
TNT, 80 MHz w/4x CD	call
Catalyst 6300, 100 MHz	call
Crusader 6300, 75 MHz	call
Trailblazer (LC 5300)	call
Dragon Kid (LC 580)	call

PowerMac

	Cash	Lease
6100/66, 8-350	1497	56
6100/66, 8-350 w/CD	1669	65
6100/66AV, 8-350 w/CD	2095	79
6100/66, 16-500CD/DOS	2487	89
7100/66, 8-500 w/CD	2197	82
7100/80, 8-500	2395	89
7100/80, 8-700 w/CD	2677	99
7100/80AV, 16-700 CD	3159	113
8100/100, 8-700	2995	105
8100/100, 16-1GB w/CD	3689	131
8100/100AV, 16-1GB CD	3867	139
8100/110, 16-2GB w/CD	5199	185

WGServe6150, 16-700	2677	97
w/CD & Internet Srvr for WWW		
WGServe8150, 16-1000	4677	159
w/CD, & Internet Srvr for WWW		
WGServe9150/120 MHz	call	--

Performa 6115CD	2149	86
LC630, 16-500 w/DOS	call	--



Monitors

		Lease
Apple 20" Multiple Scan	1849	67
Apple 17" Multiple Scan	889	32
Apple 15" Multiple Scan	449	14
Apple 14" Color Plus	295	11
Supermac 21•TXL	2095	73
Supermac Pressview 21 T	2699	105
Supermac 20 Plus	1478	55
Radius IntelliColor/20e	1977	64
Radius PrecisionColor 17	977	36
Sony 20SE1 w/adaptor	1869	69
Sony 17SF1 w/adaptor	909	34
Sony 15" SF w/adaptor	477	19
Sony 1425S, 14" Trinitron	339	17
RasterOps Clearvue 20T	1839	62
RasterOps 20T Plus	1988	72

Powerbooks

150, 4-120	939	47
520, 4-240	1667	57



520c, 4-160	1889	66
520c, 12-320 w/modem	2697	86
540c, 4-320	2787	105
540c, 12-500 w/modem	4047	127
PCMCIA expansion mod	477	--
280, 12-240 w/modem	2550	91
280c, 4-320	2987	106
280c, 12-320 w/modem	3299	124
RasterOps MiniDock	109	--

Printers

GCC WriteMove II 129 --
*(with any Powerbook purchase)
360x360 dpi, Laser-quality, ATM
included, on-screen page preview

Specials
on all GCC Printers



		Lease
GCC SelectPress 1200	4269	149
GCC Elite XL1208	4269	123
GCC Elite XL616	2599	98
GCC ColorFast II	4099	117
(33-bit color digital film recorder)		
GCC Elite XL808	2729	99
GCC Elite XL608	2199	83
StyleWriter II	166	--
Color StyleWriter 2400	589	18
HP 4MV	2699	87
HP 5MP	1049	42
LaserWriter 16/600	1895	69
LaserWriter Select 360	1299	39

Portable Col & Printer \$189

Video Boards

		Lease
Thunder IV/GX1600	2569	93
Thunder IV/GX1360	1999	73
Thunder IV/GX1152	1829	66
Radius P•Color Pro 24X	619	28
Radius P•Color 24XK	449	15
Radius P•Color 24XP	239	15
Radius Thunder 24GT	1269	48
Radius VIDEO VISION v2	3350	119
w/Premiere v4 & VideoFusion		
Supermac GX1600	1969	72
Supermac GX1360	1499	53

Receive these FREE 14 CDs and SAVE \$284

22-95	The Orchestra
9-95	Great Business Jokes
9-95	Word Tales
22-95	The Animals
19-95	Oceans Below
9-95	Funny
49-95	Grolier's Encyclopedia v6.0
16-95	The View From Earth
9-95	Macintosh Product Registry
22-95	World Atlas
22-95	US Atlas
19-95	Capitol Hill
49-95	Space Shuttle
22-95	Desert Storm

Scanners

		Lease
Agfa StudioScan II	877	33
Agfa Arcus II w/transp.	2599	94
HP ScanJet IIIcx	939	34
UMAX Vista S6 Pro	739	28
UMAX Vista S8 Pro	869	31
UMAX 1260 Pro	919	35
UMAX Powerlook	2529	91
Microtek Scanmaker III	2675	88
Microtek IIHR	999	37

Hard Drives

SyQuest 200c w/cart	577
SyQuest 270 w/cart	568
1 GB Conner1080	425
1 GB Quantum Atlas	529
2.1 GB Quantum Empire	899
4.3 GB Q•tum Grand Prix	1329
2.1 GB Seagate Barracuda	1069
2.4 GB Seagate Barracuda	1095
4 GB Seagate Barracuda	1495
9 GB Seagate Fast SCSI-2	2899
2.1 GB Micropolis (7200)	1019
3.1 GB Micropolis	1195
4.3 GB Micropolis (7200)	1499
9 GB Micropolis	2599
Heavy Duty Enclosures	79
(w/double-shielded 50-50 pin cable)	

Arrays from FWB

SledgeHammer4100 Wide	3729
SledgeHammer8200 Wide	5169
SledgeHammer17400 W	8399
SCSI JackHammer	599

DAT from FWB

(Bundled with Retrospect)	
HammerDAT2000	1297
HammerDAT5000	1389
HammerDAT16G	1459
HammerDAT48G	3545
AutoLoader	
HammerDLT20G	4869
(Digital Linear Tape Drive)	
HammerDLT Blank2	75

CD Recordable & MO

Pinnacle RCD 1000	1649
HHB 680 MB blank CDR	11
(Life Span: 100+ years)	
Pinnacle Tahoe 230	777
Pinnacle Travel-Pak	119
Pinnacle 1.3 GB Sierra	2199
Pinnacle 2.6 GB Sierra	4349
Pinnacle Orarray, 4-drive	9333
Magneto-Optical System	
(5-8 MB/sec transfer rate)	

DigiCore

Over 2600 Apple products to choose from — call for unlisted products
All Major Credit Cards Accepted — CODs Available



Due to publication time constraints prices may vary •
All Prices Reflect CASH DISCOUNT • No Sales Tax EXCEPT in CA •
Live Operator on duty—NO VOICE MAIL • 24 hr FAX LINE •
Non-Defective Returns or Shipped Orders may be subject to Restocking Fee •
Shipping and service fees are non-refundable •
Lease prices are approximate based on 36 months (on approved credit) •
All products carry a 1 yr minimum manufacturer's warranty on parts and labor unless otherwise specified •

Order Toll-Free

800-858-4622

ph 818-785-2800
fx 818-785-3100

DigiCore Inc
15500 erwin st. #2002
van nuys ca 91411

Circle 269 on reader service card

Professional Service...

- Over 10 years experience in the Hard drive market!
- Extremely knowledgeable sales and technical support staff.
- Complete line of products available from major manufacturers
- Always call for the most competitive pricing on all products!

CD ROM DRIVES

NEC 2VMac	\$245
320ms access, 300Kb/sec transfer, 1 year warranty	
Chinon CDA525 Dual Speed	\$225
280ms access, 300Kb/sec transfer, 1 year warranty	
Chinon CDA535 Dual Speed	\$245
220ms access, 300Kb/sec transfer, 1 year warranty	
NEC 3Xp	\$395
240ms access, 500Kb/sec transfer, 1 year warranty	
NEC 4Xe	\$495
220ms access, 600Kb/sec transfer, 1 year warranty	
Plexor QuadSpeed	\$499
235ms access, 600Kb/sec transfer, 1 year warranty	
TOSHIBA QuadSpeed	\$299
120ms access, 600Kb/sec transfer, 1 year warranty	

DIGITAL LINEAR TAPE DRIVES

Quantum DLT

Model	Capacity	Trans.Rate	Media	Price(Ext)
DLT2000	20GB	2.5MB/sec	DLT20	3995
DLT4000	40GB	3MB/sec	DLT40	Call!

Ideal backup solution for network servers & highend workstations & systems!

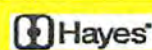
MODEMS



Sportster	110
14.4/14.4bps, DataFax	
Sportster	248
V.34 28.8 with fax	
Sportster	175
V.34 PCMCIA 14.4	
Sportster	335
V.34 PCMCIA 28.8	
Courier	405
V.34 / Dual STD with fax	



PM14400HCIV32	98
14.4/14.4bps, DataFax	
PM288HCIV34	209
28.8bps, DataFax	



ACCURA14.4	115
14.4/14.4bps, DataFax	
ACCURA 28.8	208
14.4/14.4bps, DataFax	
OPTIMA14.4	375
14.4/14.4bps, DataFax	
OPTIMA28.8	425
14.4/14.4bps, DataFax	
OPTIMA28.8 Pocket Mac	425
14.4/14.4bps, DataFax	



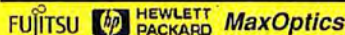
SupraFAXModem	99
14.4bps, DataFax	
SupraFAXModemV34	229
28.8bps, DataFax	

REMOVABLE DRIVE CARRIERS



- Provides ability to easily remove and transport data.
- Ideal for disk array environments.
- Compatible with single ended, narrow differential, and dual wide SCSI disk drives.
- SCSI ID select number is clearly displayed on front panel of the receiving frame.
- Key locked to prevent untimely or unauthorized removal of the drive carrier.
- 5 year warranty.

OPTICAL DRIVES



Capacity	Model	Access	Int.	Ext.
1.3 GB	HP1716T	23.5ms	2235	2295
230 MB	M2512	30ms	525	585
1.3 GB	Tahiti II	18ms	2335	2395

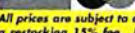
SCANNERS

Nikon	Scantouch	1299
	Transparency Adapter	599
	Coolscan 35mm film scanner	1399
UMAX	UC630/1260	675/1240
	Vista-S6	760

HARD DRIVE CABINETS

Zero Footprint MicroBay	\$75
Full Height Multi Bay Cabinets	\$89
	\$139
	\$CALL

Two, four, six, and eight bay cabinets available. All cabinets come with a 25-50 pin Mac system cable and a power cable. 1 year warranty on all cabinets.



Business Hours

8:00am-7:00pm (CST) Mon.-Fri.

All prices are subject to change without notice. Returned orders are subject to a restocking 15% fee. International customers pay all shipping charges. All shipping charges are non-refundable. To return merchandise call for an RMA number. All RMAs must be returned within 10 business days of issuance.

Free Shipping on Fridays!

HARD DRIVES



Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
LPS 170 MB	14 ms	3600	128K	2 Year	135	195
LPS 340 MB	12 ms	4500	128K	2 Year	169	229
Traiblazer 420 MB	11 ms	4500	128K	3 Year	185	245
DSP3053 535 MB	9.5 ms	5400	512K	5 Year	220	280
Maverick 540 MB	14 ms	3600	128K	2 Year	215	275
Fireball 540 MB	10 ms	5400	128K	3 Year	220	280
Lightning 730 MB	11 ms	4500	128K	2 Year	255	315
Traiblazer 850 MB	11 ms	4500	128K	3 Year	270	330
Fireball 1080 MB	10 ms	5400	128K	3 Year	475	535
Grand Prix 2100 MB	9.5 ms	5400	512K	5 Year	915	975
Atlas 2.1 GB	9 ms	7200	1024K	5 Year	920	990
Grand Prix 4200 MB	8.5 ms	7200	512K	5 Year	1155	1215
Atlas 4.3 GB	12 ms	7200	512K	5 Year	1475	1535
Capacity	Size	Access	Cache	Warranty	Int.	Ext.
Daytona 256 MB	2.5"	17ms	128K	1 Year	225	325
Daytona 341 MB	2.5"	17ms	128K	1 Year	295	395
Daytona 514 MB	2.5"	14ms	128K	1 Year	415	515

MICROPOLIS MICROPOLIS

Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
M4221 2.1 GB	8.5 ms	7200	512K	5 Year	935	995
M1936 3.6 GB	11 ms	5400	512K	5 Year	1225	1325
M43243 4.3 GB	8.5 ms	7200	512K	5 Year	1335	1395
M1991 9.0 GB	11 ms	5400	512K	5 Year	2170	2270
M4221W 2.1 GB	8.5 ms	7200	512K	5 Year	1025	1085
M3243W 4.3 GB	8.5 ms	7200	512K	5 Year	1435	1495
M1991W 9.0 GB	11 ms	5400	512K	5 Year	2270	2370
M4221AV 2.1 GB	8.5 ms	7200	512K	5 Year	985	1045
M1936AV 3.6 GB	11 ms	5400	512K	5 Year	1275	1375
M3243AV 4.3 GB	8.5 ms	7200	512K	5 Year	1425	1485
M1991AV 9.0 GB	11 ms	5400	512K	5 Year	2265	2365
M4221WAV 2.1 GB	8.5 ms	7200	512K	5 Year	1075	1135
M3243WAV 4.3 GB	8.5 ms	7200	512K	5 Year	1525	1585
M1991WAV 9.0 GB	11 ms	5400	512K	5 Year	2365	2465

LT Super Capacity External Storage

3.5" Stackable/Removable Disk Subsystems

M2100 2.1 GB	8.9 ms	7200	512K	5 Year	Call for the most
M4200 4.2 GB	8.9 ms	7200	512K	5 Year	competitive prices!

SUMMER SPECIALS

Quantum 170MB	Int. \$135 Ext. \$195
3600 RPM, 14 ms seek, 128K cache, 2 year warranty	
Quantum 340MB	Int. \$165 Ext. \$225
4500 RPM, 12 ms seek, 128K cache, 2 year warranty	
Quantum 535MB	Int. \$225 Ext. \$285
DSP 3053, 5400 RPM, 9.5 ms seek, 512K cache, 2 year warranty	
IBM 728MB	Int. \$255 Ext. \$315
Lightning 730, 4500 RPM, 11 ms seek, 128K cache, 2 year warranty	
Fujitsu 1.0 GB	Int. \$495 Ext. \$555
M1606SA, 5400 RPM, 9 ms seek, 5 year warranty	
Micropolis 4221 2.0 GB	Int. \$935 Ext. \$1015
M4221, 5400 RPM, 9 ms seek, 512K cache, 5 year warranty	
Seagate 4.0GB	Int. \$1455 Ext. \$1515
ST15150N, 7200 RPM, 8.5 ms seek, 1024K cache, 5 year warranty	

Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
Hawk 2LP 1.2 GB	ST1320CN 9.5ms	5400	512K	5 Year	\$525	\$585
Hawk 4 4.2 GB	ST1520CN 9ms	5400	512K	5 Year	1325	1385
Barracuda 2.4 GB	ST1355CN 8ms	7200	1024K	5 Year	1045	1105
Barracuda 4.2 GB	ST1515CN 8ms	7200	1024K	5 Year	1455	1515
Barracuda 2.4 GB	ST1355CN 8ms	7200	1024K	5 Year	1095	1155
Barracuda 4.2 GB	ST1515CN 8ms	7200	1024K	5 Year	1475	1535
Elite 9 GB	ST4108CN 11ms	5400	512K	5 Year	2950	3050



Capacity	Seek	RPM	Cache	Warranty	Int.	Ext.
M2664 530 MB	10ms	5400	512K	5 Year	220	280
M1606 1.0 GB	10ms	5400	512K	5 Year	495	555
M2915 2.1 GB	10ms	5400	512K	5 Year	925	985

Products Direct

- DIRECT REPLACEMENT from the factory on all defective hard drives for the life of the warranty.
- All product extensively tested before shipping!
- Full line of brackets to ensure plug and play convenience.

REMOVABLE STORAGE



Capacity	Seek	RPM	Int.	Ext.
88 MB	sq5110c 20ms	3200	300	360
200 MB	sq5200 18 ms	3200	420	480
270 MB	sq5270 13.5ms	3200	420	480

2 Year Warranty on all SyQuest Drives
SyQuest drives come complete with a cartridge (Formatted or Unformatted) and the latest SCSI 4.3 compatible software.



Capacity	Model	Warranty	Price
44 MB	SQ400	5 year	\$41
88 MB	SQ800	5 year	47
105 MB	SQ310	5 year	53
200 MB	SQ2000	5 year	75
270 MB	SQ327	5 year	63

SCSI-2 ACCELERATORS

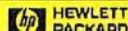
Atto

Silicon Express Fast SCSI-2 525
SCSI 1 & 2 support transfer rates up to 10.0 MB/sec, supports multiple block sizes, takes advantage of parallel processing capability, ideal for graphic design, multimedia applications and more!

Silicon Express 4 895
Fast/Wide 16BIT SCSI 2 accelerator card for Apple's NuBus based computers. Supports fast/wide SCSI 2 (16 Bit) transfer rates up to 20MB/sec, and fast SCSI 2 (8 Bit) transfer rates up to 10 MB/sec. Full 16 Bit wide support for the latest drives and disk arrays. Fully compatible with all existing SCSI 1 drives. Formatting software is included. 5 Year Warranty.

Remus RAID Software Call

TAPE BACKUP DRIVES



2.0 GB	\$835	\$885
HP35470, 15MB/min., 4mm media, 1 Year warranty		
3-5 GB	995	1055
HP35480, 45MB/min., 4mm media, 1 Year warranty		
4-10 GB	1225	1285
HP1533, 60MB/min., 4mm media, 1 Year warranty		
20-50 GB Auto Tape Loader	3195	3295
HP1553, 60MB/min., 4mm media, 1 Year warranty		

Exabyte

2-5 GB	1425	1495
8205, 265KB/sec., 8mm media, 1 Year warranty		
7-14 GB	2250	2310
8505XL, 500KB/sec., 8mm media, 1 Year warranty		

All tape backup drives include 1 piece of media and Retrospect backup software.

MEMORY PRODUCTS

Always call for the most competitive pricing on memory!

Memory	Centris & Quadra
2x8x80	4MB 60/70ns
4x8x80 60/70ns	8MB 60/70ns
4x8x80FX	16MB 70ns
16x8x80LowProfile	32MB 60ns
16x8x80 FX	VRAM 256K/512K

Powerbook Memory

520,520c,540,540c
4MB,8MB,16MB,32MB
140,170,160,165c,180,180c,Duos
4MB,6MB,8MB,10MB
12MB,14MB,20MB

Lifetime warranty on all memory products!!!



AWARD WINNING PRODUCTS

DISPLAYS

TWENTY ONE INCH DISPLAYS

Retail \$2599

\$1499*

Supports 1600x1200 pixel resolution

Radius PrecisionColor Display 21

- 1600x1200 to 1024x768 • Flat screen
- Razor sharp .28 dot pitch Ideal solution for professionals requiring maximum screen area, color accuracy, and sharpness.
- *With qualifying videocard, accelerator, or computer purchase

SuperMac PressView 21

\$2899

Radius 21 inch Grayscale Display

\$799

RasterOps 21 inch Grayscale Display

\$899

TWENTY INCH DISPLAYS

TWO PAGES FOR THE COST OF ONE!

Retail \$1999

\$999*

Best Screen Uniformity!

While Supplies Last!—Your Choice of...

Radius PrecisionColor Display 20v

- Multiple resolutions 1280x1024 to 640x480
- Mac/PC compatible
- Works with most any Macintosh built-in video
- "Best Overall Screen Uniformity" — MacUser

SuperMac or E-Machines 20

\$999*

- 1152x870 to 1024x768 • Flat screen
- Shadow Mask Tube • Built in video support

*With qualifying videocard, accelerator, or computer purchase

Radius 20 inch Grayscale Display

\$699

Retail \$2399

\$1699*

The #1 Selling 20 inch Trinitron!

Radius IntelliColor Display 20

Limited Quantities!

- Top rated 20" Trinitron, Best Money Can Buy
- MacUser, MacWorld, MacWeek Editor's Choice
- 1600x1200 to 640x400

*With qualifying videocard, accelerator, or computer purchase

SEVENTEEN INCH DISPLAYS

Retail \$1299

\$699*

Editor's Choice!

SuperMac/E-Machines T1611MR

Limited Quantities!

- High Grade Studio Trinitron Series
- .25mm multi-resolution • Editors Choice
- 1024x768 to 640x480 resolutions

SuperMatch 17T

\$799*

Radius PrecisionColor Display 17

\$CALL

*With qualifying videocard, accelerator, or computer purchase

PIVOT DISPLAYS

\$399

With purchase of video card.

Radius Color Pivot LE

We have cards for SE/30, LC, IIsi, Nubus, and Quadras

Precision Color Pivot

\$599

Grayscale Pivot

\$399

Radius Full Page Display

\$299

VIDEO CARDS

21" RESOLUTIONS

24 BIT

PCI Cards

\$CALL

Radius PrecisionColor 24X

\$599

Radius PrecisionColor Pro 24X

\$699

All Thunder IV's

\$CALL

All Thunder II's

\$CALL

Thunder 24 (DSP available)

\$899

SuperMac Ultima LX

\$1299

with DSP acceleration

RasterOps Horizon 24

\$1499

RasterOps 24XLTV

\$1499

RasterOps PaintBoard Pro

\$899

RasterOps PaintBoard Turbo XL

\$799

RasterOps Prism GT

\$CALL

8 BIT

Radius PrecisionColor 8XJ

\$399

SuperMac DoubleColor LX

\$399

SuperMac Spectrum 8/24 PDQ

\$399

20/19" RESOLUTIONS

24 BIT

PCI Cards

\$CALL

SuperMac Spectrum 24 Series V

\$599

Radius PrecisionColor 24XK

\$499

Radius PrecisionColor Pro 24XK

\$599

SuperMac Futura MX

\$499

RasterOps PaintBoard Lightning

\$CALL

RasterOps Prism 24

\$CALL

8 BIT

SuperMac Spectrum 8 Series III

\$199

17/16" RESOLUTIONS

24 BIT

Radius PrecisionColor 24XP

\$199

Radius PrecisionColor Pro 24XP

\$CALL

SuperMac Futura SX

\$299

SuperMac Futura II SX w/Ethernet

\$399

APPLE VIDEO CARDS

Apple 8+24

\$CALL

Apple 8 Bit

\$99

ACCELERATORS

68040 BLOW OUT! \$299**

Daystar Products

\$CALL

Radius Rocket 33MHz w/FPU

\$399**

Radius Rocket 40MHz w/FPU

\$499**

Stage Two Rocket 40MHz w/FPU

\$899

-Includes SCSI II Booster and RocketShare

SCSI II Booster (up to 4x faster)

\$249

PhotoBooster for Rocket

\$299

RocketShare

\$299

**With purchase of any Rocket peripheral

UP TO 80% OFF!

VIDEO CARDS

24 BIT VIDEO
RADIUS/SUPERMAC/APPLE
Grab 'em while supplies last!

Stop wasting valuable time and money waiting on slow screen redraw! Upgrade your Mac or PowerMac to **ACCELERATED PHOTO-REALISTIC 24-bit video performance!**

Radius PhotoBooster

\$199
 Retail \$999



- Twin AT&T 3210 66MHz DSPs
- Accelerates Photoshop Filters
- Up to 10x faster than a Quadra 950
- MacUser Editor's Choice

Photoshop Deluxe Edition
Thunder DSP daughterboard
Radius PhotoEngine

\$299
\$299
\$CALL

Radius PowerView

\$199



Allows most PowerBooks and the Classic II to support displays and projectors.

SuperMac SuperView

Similar to Radius PowerView but also supports TV!

\$299

SuperMac Simply TV

Allows big screen TV use with LC series, Performa, Quadra, or Color Classic!

\$CALL

MULTI MEDIA

Spigot II Tape

\$499!

Full Motion Video - Lowest Price Ever!

VideoSpigot Card from \$99*

retail price \$599

VideoVision Studio Upgrade

\$CALL

VideoVision Studio

\$CALL

VideoVision Studio Array

\$CALL

TrueVision Targa 2000

\$CALL

VideoSpigot Nubus/LC/Ilisi

\$99*

Spigot and Sound/VideoSpigot Pro

\$299/399

MacRecorder

\$149

Adobe Premiere

\$99**

**With computer or video purchase *With purchase of Premiere



\$199
 from

QUADRA BLOW OUT!

Macintosh Quadra 605/LC 475 4/0

- Lowest price ever! • NEW with 1 year warranty!
- 50/25 MHz 68LC040 processing power
- Built-in video supports up to 21" color monitors
- 4MB RAM with Burst-Mode access (expandable to 36MB)
- MultiMedia ready—Just plug in CD-ROM • Supports stereo sound
- Call for complete system discount! *CPU Only

"Never before has Apple offered so much performance for so little money!"

MW ★★★★★

"It's hard to go wrong buying one..." — MacWorld

\$599*



MAC CPUs

PowerMacs **\$CALL**
Quadra 630 **\$CALL**
Quadra (all other models) **\$CALL**
PowerBooks/Duos **\$CALL**
All Apple Parts **\$CALL**
 24 hour turnaround available

PRINTERS

TABLOID LASER PRINTER

QMS 860 Hammerhead
600-1200 dpi

- Full-Bleed 11"x17"
- PostScript Level 2
- 8ppm heavy-duty Canon engine



from
\$1999

Xante Accel-A-Writer 8200 **\$CALL**

QMS Color Laser-all models **\$CALL**

Hewlett-Packard 4MV **\$CALL**

GCC SelectPress 1200 **\$4999**

- 1 year factory warranty • true 1200x1200 dpi resolution for camera ready output • 12"x19" tabloid printing • 270MB internal hard disk • 285 PostScript fonts



"Best Output" — MacUser

"Consistently good output" — Seybold Reports

GCC WriteMove II **\$199***



• MacUser — 4 1/2 mice portable printer only
 • MacWeek — ★★★★★ *with CPU purchase

LaserWriter OEM Apple PostScript **\$499**

Circle 20 on reader service card



Monday thru Friday 9AM to 8PM CST
 Saturday 10AM-4PM Sales Dept. Only

Domestic Sales 800.375.9000

Fax 817.754.2345

Consultants/Dealers 817.754.2131

International Sales 817.754.2120

800/375-9000

CRA Systems, Inc.

300 South 13th St., Waco, TX 76701

Se hace pedidos internacionales.
 Nous acceptons des commandes internationales.
 Internationale Handlerkonditionen.

Prices reflect 2% cash discount. Not liable for typographical errors. All shipping charges for COD orders to be secured by credit card. Dealers and consultants call for quantity pricing. We ship anywhere.

MacWAREHOUSE®

Over 6,000 products for your Mac! Overnight delivery only \$3.00!

Update to System 7.5



for only \$99

Plus receive your choice of an Apple watch or Conflict Catcher 3 FREE!

Now has 50 powerful enhancements to power up your Mac including Enhanced Finder, increased cross-platform capabilities, and much more! Publisher: Apple Computer, Inc.

Ask for item # SYS 0022 (3.5" disk) SYS 0023 (CD-ROM)

Update to System 7.5 today and get your choice of an Apple watch or Conflict Catcher 3 FREE!

For Apple watch, ask for item # AAA 0143. For Conflict Catcher 3, ask for item # AAA 0142.



*With purchase of any System 7.5. Limit one per customer. Valid only in the U.S. Offer expires 7/31/95 or while promotional supplies last.

HP DeskWriter 540 Printer



Our lowest price color-ready printer!

Now only \$299

Ask for item # INP 0423

DeskWriter with optional color kit shown. Color kit sold separately.

Manufacturer: Hewlett-Packard

QuarkXPress 3.31

Powerful new version!

FOR AS LOW AS \$589

QuarkXPress for Power Mac. Ask for item # \$659.95 DTP 0122. Comes on CD-ROM—no disks included.

QuarkXPress 3.31. Ask for item # DTP 0110 \$589



SIMMS!

1MB for as low as \$49.95. Ask for item # CNP 0022.

Next to buying a new Mac, installing additional (or larger) SIMMs in your current Mac is the single best investment you can make! Call for details.

DOOM II

An action-packed blast-fest! Now available for Mac!

\$49.95

Ask for item # ENT 0903

Publisher: GI Interactive



Discover a new dimension in storytelling!

The Lion King

\$29.95

Ask for item # EDU 1089

Publisher: Disney Software



CD-ROM drive required



Get 10 CDs for one low, low price!



- ✓TIME's Man of the Year
- ✓Instant Calendar
- ✓Who Killed Sam Rupert?
- ✓Dinosaur Safari
- ✓Parenting
- ✓Key Gourmet
- ✓Key Clipmaster 5000
- ✓Key Fonts
- ✓Key Photo Clips
- ✓Wild Places

all for only \$29.95*

*Shipped in promotional packaging.

Ask for item # BBD 0177

The Ultimate Desktop Publishing Bundle!

Over 23,500 images and typefaces all for only

\$49.95*

Ask for item# BND 0483



This unbelievable CD-ROM bundle includes: Corel Gallery, Corel Professional Photo Sampler, PhotoLibrary, Media Clip's WorldView, Key ClipMaster Professional, Paintbrush ClipArt Library & Key Fonts Professional!

Alamo 301
Blackford SSI
Brioche Caps
Bronte
Chicagohot
EyeChart
Goudy SSI



*Shipped in promotional packaging.

Conflict Catcher 3

The Industry standard for Startup file management just got better!

Upgrade for only \$39.95

Upgrade UPG 0161 \$39.95

Full version UTI 0645 \$69.95

Publisher: Casady & Greene



Adobe PageMaker 5.0 with FREE Extensis PageTools & Adobe Type On Call!



Upgrade no low as \$149*

Upgrade UPG 0151 \$149

PageMaker 5.0 DTP 0130 \$549

*Proof of ownership required. Call for details. Products shipped in promotional packaging. Offer good through 7/31/95 or while supplies last.

Order toll-free 24 hours a day, 7 days a week! 1-800-255-6227

The Mac SuperStore™

Authorized Apple Reseller

TaskForce

CLIP ART FOR MACINTOSH

1,000 IMAGES

CD-ROM & diskettes included.

Ask for item #
GRA 0978

ONLY \$54

Publisher: New Vision Technology

Adobe Photoshop 3.0

upgrade only

\$149*

Includes 2 BONUS CD-ROMs!

The Photoshop Deluxe CD includes: stock photography, user tutorial, Adobe Acrobat Reader 1.0, and more!

The Adobe Type on Call CD includes: Adobe Type Reunion, over 2,000 encrypted fonts, Adobe ATM, and More!

Adobe Photoshop 3.0 Upgrade* \$149

Adobe Photoshop 3.0 Full Version GRA 0916 \$559

* Proof of ownership required. Call for details.



Now, get a new Power User 4X
Blazing Fast
CD-ROM DRIVE
exclusively from MacWAREHOUSE for only

\$249!

LOWEST PRICE EVER!

PLUS

Get the NEW! 1995 Grolier Multimedia Encyclopedia on CD-ROM!

POWER USER Quad-Speed Multi-session CD-ROM Drive Kit BND 0678..... **\$249**

The 1995 Grolier Multimedia Encyclopedia EDU 1186..... **\$59⁹⁵**

The 1995 Grolier Multimedia Encyclopedia with The Animals! 2.0 and Atlas Pack FREE BBD 0162..... **\$49⁹⁵***

*with the purchase of a CD-ROM drive from Mac, Micro or CD-ROM Warehouse within the last 90 days.

Ask for item#
BND 0678

Ask for item#
EDU 1186

AS LOW AS \$49⁹⁵*

PLUS 2 BONUS CD-ROMS!

THE ANIMALS! 2.0 & ATLAS PACK

*With purchase of a CD-ROM drive. Products shipped in promotional packaging.

ORDERING INFORMATION

To order, call toll-free

1-800-255-6227

(1-800-ALL-MACS)

Call 24 hours a day, 7 days a week.

Inquiries: 908-367-0440 FAX Your Order to: 908-905-9279

Compuserve Code: GOMW

NEW! Express Customer Service Number:

1-800-925-6227

MacWAREHOUSE

1720 Oak Street • P.O. Box 3031 • Lakewood, NJ 08701

©1995 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 U.S. 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 warranty. Defective software replaced immediately. Hardware replaced or repaired at our discretion.
- Some products may have system requirements. Call for details.
- Sales tax: CT residents add 6%, NJ residents add 7%, Ohio residents add applicable tax.

SHIPPING

- All orders add \$3.00 per order up to 10 lbs. Heavier shipments are extra. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day)
- Orders placed by 12:00 MIDNIGHT (EST) (weekdays) for "in-stock" items ship same day (during system failure, etc.) for overnight delivery.
- C.O.D. orders ship via UPS (Blue Label) if you are more than 2 days from us via UPS (Ground). Change to \$6.00 (shipping included for shipments up to 10 lbs.; additional shipping charges will apply for shipments over 10 lbs.)
- 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.

©Copyright 1995 Micro Warehouse, Inc. MacWAREHOUSE® is a division of Micro Warehouse, Inc. MacWAREHOUSE® and Micro Warehouse® are registered trademarks of Micro Warehouse, Inc. Item availability and price subject to change without notice. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc.

Circle 150 on reader service card

2 FREE BONUSES!

1

The Power User's Tool Kit ... a collection of

powerful programs compiled exclusively for MacWAREHOUSE customers. Some of the programs are shareware, so you can

try them free of charge—some authors ask that you pay a small fee (\$8-\$25). You pay only \$2.00 shipping and handling. **Ask for Item # AAA 0141.**

2

Full-Year Subscription...

to your choice of MacWAREHOUSE, MicroWAREHOUSE, Data CommWAREHOUSE

(networking products), or CD-ROM WAREHOUSE catalog. Just fill in and mail the coupon below.

FREE CATALOG SUBSCRIPTION

MW0895

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to: 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name _____

Address _____

Apt. _____

City _____

State _____

Zip _____

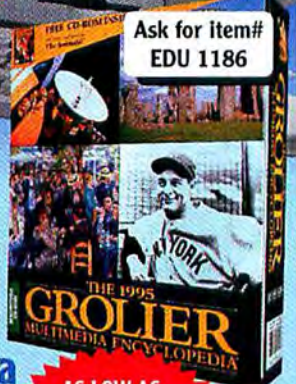
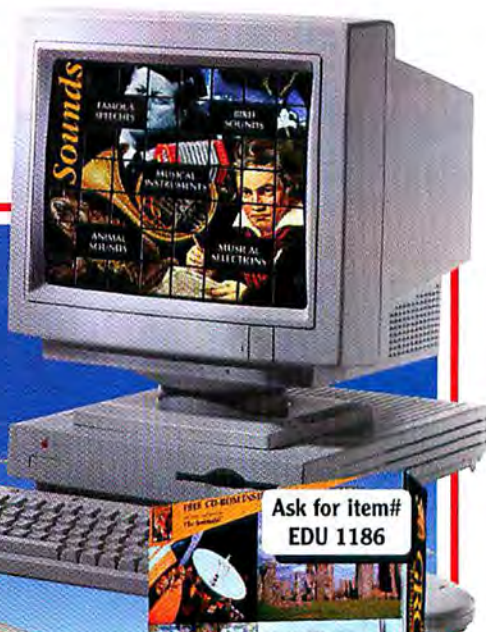
(Expect to receive your first issue within 4-6 weeks.)

☐ Yes, send me my FREE Power User's Tool Kit. Enclosed is my check for \$2.00 to cover shipping and handling.

☐ **MacWAREHOUSE®**

☐ **MicroWAREHOUSE®**

☐ **Data CommWAREHOUSE™** ☐ **CD-ROM WAREHOUSE™**



DIRECTTech

MICROPOLIS

Seagate

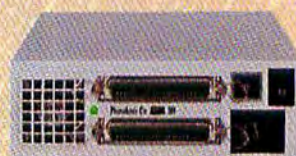
hp HEWLETT
PACKARD

Quantum

SyQuest



Phaser Enclosures can
also be set on end.



PhaseLock Termination™

All Phaser-I Enclosures feature PhaseLock Termination, the latest in active termination technology, exclusively from DirectTech. Put an end to your SCSI headaches. PhaseLock monitors and regulates your SCSI chain and eliminates any termination problems.

NOW
WITH ACTIVE
TERMINATION

Kiss Your SCSI Troubles
Goodbye

THE ALL NEW (STACKABLE) PHASER LINE OF ENCLOSURES

A DIRECTTech EXCLUSIVE...AVAILABLE FOR ALL 3.5" EXTERNAL DRIVES

HARD DRIVES

ALL DRIVES ARE PREFORMATTED, TESTED AND PACKAGED
WITH SCSI MANAGER 4.3 COMPATIBLE DRIVERS. EXTERNAL
DRIVES INCLUDE CHOICE OF 25-50 OR 50-50 PIN CABLE.

Capacity	Model No.	Mechanism	Size	Seek	RPM	Warranty	Internal	PHASER-I
365 MB	DT-365LT	Quantum	3.5"	11 ms	4500	2 yrs	\$170	\$240
540 MB	DT-540MV	Quantum	3.5"	11 ms	3600	2 yrs	\$205	\$275
730 MB	DT-730LT	Quantum	3.5"	11 ms	4500	2 yrs	\$269	\$339
1.0 GB	DT-1080AL	Quantum	3.5"	9.5 ms	7200	5 yrs	\$590	\$665
1.05 GB	DT-31230	Seagate	3.5"	9.0 ms	5400	5 yrs	\$515	\$595
2.0 GB	DT-3221	Micropolis	3.5"	8.5 ms	7200	5 yrs	\$950	\$1,025
2.0 GB	DT-32150	Quantum	3.5"	8.0 ms	7200	5 yrs	\$990	\$1,065
2.0 GB	DT-2490	IIP	3.5"	9.0 ms	6400	5 yrs	\$1,100	\$1,185
2.1 GB	DT-32550	Seagate Barracuda	3.5"	8.0 ms	7200	5 yrs	\$1,050	\$1,125
2.1 GB	DT-32550W	Seagate Barracuda Wide	3.5"	8.0 ms	7200	5 yrs	\$1,199	\$1,299
4.3 GB	DT-3243	Micropolis	3.5"	8.5 ms	7200	5 yrs	\$1,395	\$1,475
4.3 GB	DT-15150	Seagate Barracuda	3.5"	8.0 ms	7200	5 yrs	\$1,499	\$1,579
4.3 GB	DT-15150W	Seagate Barracuda Wide	3.5"	8.0 ms	7200	5 yrs	\$1,599	\$1,799
4.3 GB	DT-4280	Quantum	3.5"	8.0 ms	7200	5 yrs	\$1,195	\$1,275
9.0 GB	DT-1991	Micropolis	5.25"	12 ms	5400	5 yrs	\$2,275	\$2,375
9.0 GB	DT-410800	Seagate Elite 9	5.25"	11 ms	5400	5 yrs	\$2,550	\$2,650

AUDIO/VIDEO TUNED HARD DRIVES

Capacity	Model No.	Mechanism	Size	Seek	RPM	Warranty	Internal	PHASER-I
1.05 GB	DT-31230AV	Seagate	3.5"	9 ms	5400	5 yrs	\$565	\$645
2.0 GB	DT-3221AV	Micropolis	3.5"	8.5 ms	7200	5 yrs	\$1,000	\$1,080
2.1 GB	DT-32550AV	Seagate Barracuda	3.5"	8.0 ms	7200	5 yrs	\$1,100	\$1,180
4.3 GB	DT-3243AV	Micropolis	3.5"	8.5 ms	7200	5 yrs	\$1,395	\$1,475
4.3 GB	DT-15150AV	Seagate Barracuda	3.5"	8.0 ms	7200	5 yrs	\$1,550	\$1,630
9.0 GB	DT-1991AV	Micropolis	5.25"	12 ms	5400	5 yrs	\$2,499	\$2,599
9.0 GB	DT-410800AV	Seagate Elite 9	5.25"	11 ms	5400	5 yrs	\$2,600	\$2,700

SyQUEST

INCLUDES ANDERS
FORMATTING SOFTWARE
AND ONE CARTRIDGE

Capacity	Model No.	Internal	PHASER-I
88 MB	SQ5110C	\$305	\$365
200 MB	SQ5200	\$420	\$480
270 MB	SQ3270	\$420	\$470

TAPE

INCLUDES A FREE
COPY OF REFORMAT
AND ONE TAPE

Capacity	Model No.	Format	PHASER-I
2 GB	IIP-35470	4mm	\$995
4-8 GB	Sony-5000	DDS-2	\$1,165
4-8 GB	HP-1533A	DDS-2	\$1,360
5-10 GB	Exabyte-8505	8mm	\$2,275
10-20 GB	DLT-2000	DLT	\$3,599

OPTICAL

INCLUDES ANDERS
FORMATTING SOFTWARE
AND ONE CARTRIDGE

Capacity	Model No.	Seek	PHASER-I
230 mb	Fujitsu	30 ms	\$675
1.3 GB	IIP-C1716	23 ms	\$2,099
1.3 GB	Maxoptix T-III	18 ms	\$2,199

CD ROM

INCLUDES SOFTWARE

JVC Personal Archiver (2X)	\$1,699
Call about 4X drives.	
Make Your Own CDs!	
Includes Software and Cabling	

SPECIAL!!!

HERE'S YOUR BEST BUY.

The Seagate 1.05 GB with a 9ms seek time.
and a five year warranty.
You can't beat this drive.

\$515.00

ORDER TODAY!
(Internal Configuration)

DISK ARRAYS

Capacity	Model No.	Red Level	External
2.0 GB	DT-31200-2AR	0, 1	\$ Call
4.0 GB	DT-32550-2AR	0, 1	\$ Call
8.0 GB	DT-15150-2AR	0, 1	\$ Call

These arrays are perfect for Videovision.

MEDIA

Type	Price	Type	Price
Syquest 44	\$42	Optical 128 MB	\$26
Syquest 88	\$48	Optical 230 MB	\$30
Syquest 105	\$54	Optical 1.0 GB	\$100
Syquest 200	\$76	Optical 1.3 GB	\$95
Syquest 270	\$60		

CALL: 1-800-279-5520

INTERNATIONAL ORDERS CALL: (612) 941-2616 • FAX ORDERS: (612) 942-0430

220 August 1995 MACWORLD

Circle 298 on reader service card

DirectTech Systems, Inc. • 7625 Golden Triangle Drive, Suite R • Eden Prairie, MN 55344

800-572-4305

30 DAY MONEY-BACK

INT'L: 612-937-9604

FAX: 612-937-6285

HOURS: M-F 8:00-6PM CST



"Direct Connections provided excellent technical support." **MacWorld July '95**
 "Direct Connections' array offered the best performance per dollar of the drives tested." **Digital Video Oct. '94**
 "Your next option is to locate...highly visible digital video suppliers like Direct Connections." **NEWMEDIA June '95**
 "I tried...Direct Connections...configurations without encountering any problems" **Video Pro April '95**
 "This array is the one to beat." **Ken Grey Writer for WIRED, Computer User, MovieMaker, Computer Video, and Digital Video Magazine.**
 "Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." **MacWorld April '95**



HARD DRIVES

Seagate Elite 9 gig **\$2595.**

2 YEAR WARRANTY

FUJITSU

CAPACITY	SIZE	ACCESS	RPM	INTERNAL	EXTERNAL
530MB	3.5"	13MS	5400	\$ 209	\$ 269

Seagate

5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	RPM	MODEL	EXTERNAL
1.2GIG	3.5"	9MS	5400	ST31230N	\$ 645
2.5GIG	3.5"	8MS	7200	Barracuda 2 LP	\$ 1115
2.5GIG	3.5"	8MS	7200	Barracuda 2 WIDE	\$ 1199
2.4GIG	3.5"	9MS	7200	ST12450W Dual Head	\$ 1555
4.1GIG	3.5"	8MS	7200	Barracuda 4	\$ 1559
4.3GIG	3.5"	9MS	5400	ST15230N	\$ 1215
9.0GIG	5.25"	11MS	5400	Elite 9	\$ 2695

CONNER

5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	RPM	MODEL	EXTERNAL
1.2GIG	3.5"	9MS	5400	CFP1080S	\$ 515
2.1GIG	3.5"	9MS	5400	CFP2105S	\$ 915
2.1GIG	3.5"	8MS	7200	CFP2107S	\$ 1015
4.2GIG	3.5"	9MS	7200	CFP4207S	\$ 1475

Quantum

5 YEAR WARRANTY

CAPACITY	SIZE	ACCESS	RPM	MODEL	EXTERNAL
2.1GIG	3.5"	9.5MS	7200	XP32150S LP	\$ 999
4.3GIG	3.5"	9MS	7200	XP34280S	\$ 1855

HITACHI

CAPACITY	SIZE	ACCESS	RPM	INTERNAL	EXTERNAL
1.0	3.5"	9MS	6300	\$ 585	\$ 645

CD RECORDERS

Yamaha 4 speed recorder

- Multimedia
- Archiving
- Distribution
- In-house publishing
- Back-up
- Image Data handling

\$3395.



"We recommend the Yamaha CDE 100"
 -MacWorld Mar. '95



The new Sony 1.3GB half-height has 4MB of cache and 3600rpm making this the fastest Optical drive in the market today! Call for comparisons against the competition.

Sony's latest technology →

OPTICAL DRIVES

1.3 GB EXTERNAL **\$1949**

INCLUDES ONE CARTRIDGE

1 YEAR WARRANTY

CAPACITY	MODEL	EXTERNAL
230MB	Fujitsu	\$ 575
1.3GB	NEC	\$ 1599
1.3GB	Sony 4MB Cache	\$ 1949
1.3GB	Ricoh Turbo	\$ 2175
26GB	Sony Juxbox	\$ 6395

TAPE BACK-UP

\$3675.



With 2.5mb/sec sustained transfer, the DLT2000 is perfect for digital video or pre-press with large data files.

2 Year Warranty

INCLUDES TAPE + RETROSPECT SOFTWARE

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
1.3-2GIG	DC DAT	4MM	\$ 709	\$ 769
1.3-4GIG	DC DOUBLE DAT	4MM	\$ 839	\$ 899
4.0-8GIG	Connor 4326 DDS-2	4MM	\$ 1089	\$ 1149
4.0GIG	Sony 5200 DDS-2	4MM	\$ 939	\$ 999
4.0-8GIG	Sony 5000 DDS-2	4MM	\$ 939	\$ 999
7.0-14GIG	Exabyte 8505XL	8MM	\$ 2135	\$ 2195
10-20GIG	Quantum DLT (DIGITAL LINEAR)	1/2	\$ 3575	\$ 3675
INCREDIBLE 2.5MB/SEC TRANSFER RATE				
-140GIG	Exabyte-10h Library	8MM		\$ 4999

Our Top rated RAID Systems include a Nubus accelerator card, Remus RAID software, and all cabling and termination.

RAID SYSTEMS

FROM 1 TO 84 GIG



"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." **MacWorld April '95**

- 2.0GIG RAID Level 0. Perfect for highspeed requirements. **\$ 2199**
- This Array is the one to beat!! 4.0 GIG Barracuda 2 Wide RAID. **\$ 3599**
- 6.0 GIG Fast and Wide. Fastest RAID for Video Vision Users. **\$ 4499**

VideoVision Studio \$ 3649

Atto Silicon Express IV **\$799**
 accelerator card

Full screen and full motion recording and playback with JPEG hardware compression and decompression.

radius

MEDIA



128MB Optical	\$ 25	90M Tape	\$ 10
230MB Optical	\$ 29	112M Tape	\$ 15
650GIG Optical	\$ 79	120M Tape	\$ 18
1.3GIG Optical	\$ 99	CD ROM 10 Pack	\$ 99
SYQUEST 44MB	\$ 42	SYQUEST 88MB	\$ 48
SYQUEST 200MB	\$ 76	SYQUEST 270MB	\$ 61



COMPUTER DISCOUNT WAREHOUSE™

Call for your free
Macintosh® catalog
today! **CDW®** features
a full line of Apple® Power
Macintosh®, Performa® and
PowerBook® computers
and Macintosh-compatible
peripherals and software.



800-509-4CDW

FREE INSTALLATION WITH CPU PURCHASE!



8MB MEMORY UPGRADE

Supercharge your Macintosh's
performance with a
Simple Technology RAM upgrade.

8MB upgrade for
Power Macintosh®
6100, 7100, 8100, 5200 75

\$299.95 CDW 39711

If you don't see it, call! CDW carries a complete line of Simple Technology memory upgrades for Macintosh computers, PowerBooks, printers and more.



**Tru-Form
Ergonomic
extended keyboards**



The new Tru-Form keyboard
features an ergonomic design
and built-in wrist support for
comfort and ease of use.

- 105 key layout with separate numeric keypad → 12 function keys → Split space bar
- Optional integrated, touch sensitive two button pointer.

Tru-Form **\$89.77** CDW 53222

Tru-Form with pointer **\$99.98** CDW 53223



**HEWLETT
PACKARD**

HP DeskWriter 660C

Color Inkjet Printer

- Print speed: up to 4 ppm (monochrome); 1.5 ppm (color)
- 16MHz Motorola 68000 CPU
- 512KB RAM standard
- User-selectable resolution: 600 x 600 dpi; 600 x 300 dpi or 300 x 300 dpi
- Resolution Enhancement Technology (RET)
- HP ColorSmart color optimization and management
- AppleTalk RS-422A serial interface
- Includes 100 sheet and single envelope feeders
- 3 year warranty
- H-PC 2164A



ONLY \$465.23 CDW 53420

NASDAQ

BUY WITH CONFIDENCE
CDW® IS A NASDAQ
TRADED COMPANY

TICKER SYMBOL: CDWQ
D & B listed SA1
Duns 10-762-7952

No surcharge for credit cards



Credit Card charges are not subject to any late payment. Payment is collected as the order is shipped. Please allow 30 days for payment. The cost of financing is 0.25% (APR) of the order total. Financing charges will be \$10 per month. Payment is due by the 15th of the month. For more information, see our website at www.cdwware.com. We reserve the right to change our credit policies without notice. All prices are subject to change. © 1995 Computer Discount Warehouse, Inc.

Top-Selling Macintosh® Software

Adobe	
Dimensions V2.0	124.50
Gallery Effects Vol. 1	37.66
Home Publisher V2.0	44.27
Illustrator V5.5 + CD	375.90
Pagemaker V5.0A	559.27
Persuasion V3.0	249.51
Photoshop V3.0.1	558.27
Premiere V4.0	504.15
Streamline V3.0	125.23
Type Basics	121.45
Type Manager V3.8	29.43
TypeSet Value PK	29.39

Apple System 7.5 upgrade	96.40
Ares Fort Hopper	39.27
Ares Fontmonger V1.5	89.53
Avery MacLabel Pro	45.58

Broderbund	
Carmen Sandiego/World DLX	39.15
Carmen Sandiego/World DLX CD-ROM	44.74
MYST CD-ROM	49.11
Prince of Persia	29.24
The PrintShop Deluxe V1.1	13.80
Typesetter V2.0	122.32

BestWare MYOB Accounting V5.0	119.44
Caere OmniScan	295.50

Claris	
ClarisDraw V1.0	245.41
ClarisWorks V4.0	118.11
ClarisWorks V4.0 CPU bundle	63.48
ClarisWorks V4.0 vers upgrade	66.48
FileMaker Pro V2.1	89.99
FileMaker Pro V2.1 comp upgrade	111.07
Impact V1.0	130.26

CA Cricket Graph III V1.5	85.29
Caere OmniPage Direct V2.0	58.06
Caere OmniPage V5.0	297.17
Casady & Green Conflict Catcher III	59.18
Connectix RAM Doubler V1.5	54.32
Corel Gallery V1.0	31.95

Dantz	
DisMIt Direct V1.0	29.60
DisMIt Pro V1.1	69.31
Retrospect V2.1	135.59

HSC	
HSC Kai's Power Tools V2.1	ONLY \$111.54 43812

Delrina	
DelrinaFax PRO V1.5.1	52.78
Fax PRO V1.5.1 CPU bundle	24.16
Opus & Bit Screen Saver	29.36

Dataviz MacLink+PC Connection	115.59
Dataviz Virex V5.5	59.40
DCA Crosstalk	112.42
Delta Point DeltrasGraph Pro V3.0	125.23
Deneba Canvas Power Graphics bundle	283.29
Deneba Canvas V3.5 + CD	253.57

Entertainment	
A.D.A.M. Nine North Miracle CD	33.07
A.D.A.M. The Inside Story CD	36.87
Berkeley After Dark V3.0	29.00
Berkeley Disney Screen Saver	27.79
Berkeley Star Trek Screen Saver	28.21
Electronic Arts Chuck Yeager	35.60
Electronic Arts PGA Tour Golf II CD	38.26
LucasArts Loom	17.93
LucasArts Secret of Monkey Island	19.46
Maxis A-Train w/Construct Set	29.00
Maxis EL Fish	6.66
Maxis SimAnt	18.38
Maxis SimCity 2000	38.97
Maxis SimCity Classic	23.91
Paramount Jump Raven CD	38.97
Paramount Luronic CD	38.97
Pygmalion Learnings	24.01
Sierra Hyperia Classic	27.79
Spectrum Halo Iron Helix CD	56.80
Spectrum Halo Super Tetris	29.30
Spectrum Halo Tetris	23.65
STING Interactive Tech Manual CD	38.14
Velocity Dev Spectre VR	34.07
Virgin 7th Guest CD	42.63

Fractal Design	
Dabbler V1.0	58.73
Painter V3.1	299.98
Poser V1.0	89.60
Sketcher V1.0	48.52

Farallon Timbuktu Pro V1.0	127.02
FrameMaker V4.0	557.16
FWB Hard Disk Toolkit Personal V1.7	49.72
Gryphon Morph V2.0	139.26

HSC	
Kali's PowerTools V2.0	102.04
KPT Bryce V1.0	111.42
KPT Converter V1.0	111.30
Live Picture V2.0	635.51
Power Photos V1.0	91.23

Symantec	
Norton Utilities V3.1	ONLY \$93.07 46110

Insignia	
Soft PC V3.0	99.70
Soft PC with Windows	297.73
Soft Windows Power Mac V1.0	263.62

Inline WinTucker V3.0	44.26
Intuit QuickBooks V5.0	41.85
Kent Marsh Fokkerbolt V1.02	69.91

MacPlay	
Alone in the Dark	35.01
Battlechess	16.24
Caesars Palace	19.90
Flashback	37.26
Frankenstein CD	47.24
Mac Pak CD	25.43
Mac Gift Pack	37.67
Marlo Teaches Typing CD	29.00
Marlo's Game Gallery	25.31
Peter Gabriel XPLORA 1 CD	46.36
Star Trek 25th Anniversary	34.20
Wolfenstein 3D	37.01

Microsoft	
Cinemania 1995 CD	49.42
Encarta 1994 CD	85.18
Excel V5.0	291.06
Excel V5.0 upgrade	112.11
Flight Simulator V4.0	39.38
FoxPro V2.6	69.88
Office V4.2	438.25
Office V4.2 vers upgrade	259.08
PowerPoint V4.0	291.06
PowerPoint V4.0 comp upgrade	112.75
Project V3.0 upgrade	131.14
Project V4.0	413.52
Word V6.0	288.52
Word V6.0 vers upgrade	113.64
Works V4.0	84.74

Macromedia	
Director Multimedia Studio bundle	1339.79
Director V4.0	786.44
Fontographer V4.1	308.77
Freehand V5.0	373.46
Freehand V5.0 comp upgrade	148.98
Freehand V5.0 vers upgrade	148.98
Graphic Design Studio bundle	626.46

Novell	
WordPerfect V3.1	96.00
WordPerfect V3.1 CD	96.00
WordPerfect V3.1 comp upgrade	96.00
WordPerfect V3.1 vers upgrade	56.00

Casady & Greene	
Conflict Catcher 3	ONLY \$59.18 53335

NOW Software	
Now Contact V3.1	59.73
Now Contact/Up to Date bundle	86.31
Now Up to Date V3.0	59.86
Now Utilities V5.0	76.51

QuarkXPress PMac V3.3.1 CD	639.23
QuarkXPress V3.3	569.50

Symantec	
ACT! V2.0	154.86
MacTools Pro V4.0	92.84
Norton Utilities V3.1	93.07
SAM AntiVirus V1.0	64.30
Suitcase V2.1	59.56

Software Ventures MicroPhone Pro	131.91
Bestware MYOB Accounting V5.0	72.21

If You Find a Better
Price, Call CDW®
Before You Buy
(800)509-4CDW

NASDAQ

BUY WITH CONFIDENCE
CDW® IS A NASDAQ
TRADED COMPANY

TICKER SYMBOL: CDWQ
D & B listed SA1
Duns 10-762-7952

No surcharge for credit cards



Credit Card charges are not subject to any late payment. Payment is collected as the order is shipped. Please allow 30 days for payment. The cost of financing is 0.25% (APR) of the order total. Financing charges will be \$10 per month. Payment is due by the 15th of the month. For more information, see our website at www.cdwware.com. We reserve the right to change our credit policies without notice. All prices are subject to change. © 1995 Computer Discount Warehouse, Inc.

**CDW® TELEPHONE
HOURS**

Sales 7:00-4:00 CDT Mon-Fri
9:00-5:00 CDT Sat.
Tech Support for Customers
8:00-7:00 CDT Mon-Fri
9:00-5:00 CDT Sat.

Free technical
support for CDW®
customers

WHY PAY RETAIL? CDW® SELLS FOR LESS AND SERVICES YOU BETTER!

COMPUTER DISCOUNT WAREHOUSE™



Monitors

NEC

XV15 15" flat square	429.88
XV17 17" flat square	709.43
XE15 15" flat square	539.50
XE17 17" flat square	998.43
XE21 21" flat square	1979.74
XP15 15" flat square	579.63
XP17 17" flat square	1236.86
XP21 21" flat square	2447.49

MAGNAVOX

CM2080 14" 25mm	249.31
CM4015 15" 25mm	356.95
CM4018 17" 25mm	629.38
20CM40 20" 31mm	1069.44

SONY

CPD-1425 14" Trinitron	319.65
15E17 15" Trinitron	459.65
17E17 17" Trinitron	879.40
209E1 20" Trinitron	1895.00

Radius

PrecisionView 17 17"	599.00
PrecisionColor Display/17 17"	955.86
SuperMatch 17T 17"	824.76
SuperMatch 17 XL 17"	779.59
SuperMatch 21T XL 21"	2149.53
IntelColor Display 20 20"	1873.70
PressView 17 SR 17"	1099.81
PressView 21T 21"	2829.86

Graphics/Video Boards

Radius

PhotoEngine	836.96
Thunder/24 GT	1349.00
Thunder IV GX 1152	1919.22
Thunder IV GX 1360	2379.96
Thunder IV GX 1600	2699.76
VideoVision Studio V2.0	3699.00

CPU Upgrades

DAYSTAR

PowerPro 601 65MHz	1646.74
PowerPro 601 80MHz	1773.96
Turbo 601 65MHz	965.09
Turbo 601 100MHz	1659.74
PowerCard 601	634.80

Newer Technology

PowerClip dock accelerator	128.95
Power MacCache 256KB	189.89
PowerClip/Power MacCache bundle	299.44

Networking

Dayna

Daynaport SCSI/Link Coax	249.95
Daynaport SCSI/Link PB-T 10BT	209.27
Daynaport SCSI/Link PB-3 Combo	205.60
Etherprint APL Bridge BNC/AUI	319.00
Etherprint-T APL Bridge RJ45/AUI	318.50
Etherprint-T APL Bridge BNC/RJ45/AUI	355.40

FARALLON

EtherWave AAUI Transceiver 10BT	94.79
EtherWave AUI Transceiver 10BT	97.87
EtherWave LC-F Adapt. w/FPU 10BT	169.74
EtherWave NuBus Adapt. 10BT	169.74
EtherWave Adapt. (PwrBk. Classic) 10BT	247.92
EtherWave Printer Adapt. 10BT	244.46
EtherMac SCSI-TP (PowerBook) 10BT	273.74
EtherMac SE-C Combo	144.06
Ether10-T transceiver RJ45/AAUI	49.09
Ether10-T transceiver RJ45/AUI	62.61
LocalPath V1.0 8 user	129.22
PhoneNET Connector DIN-8	27.69
PhoneNET Connector DIN-8 10pk	186.23

Communications/Modems

Global Village

PowerPort Gold 14.4K	239.85
PowerPort Platinum V.34	325.96
Teleport Gold II 14.4K	104.71
Teleport Platinum V.34	227.59

PRACTICAL PERIPHERALS

14.4 external mini-tower w/fax	93.48
28.8 V.34 external mini-tower w/fax	179.35
MacClass PCMCIA 14.4	177.14
MacClass PCMCIA 28.8	337.97

Supra

Express 14.4	97.29
144LC	129.95
28B V.34	209.60
144PB PowerBook	156.22
288PB PowerBook	286.64

Robotics

MacFax Sportster 14.4	115.57
MacFax Sportster V.34	248.33

CD-ROM Drives

NEC MultiSpin 2V Mac kit	193.61
NEC MultiSpin 4XE	478.05
NEC MultiSpin Mac software kit	39.99
Pioneer 4Plex quad-speed Mac kit	495.81
Sony quad-speed external	322.97

Storage Devices

iomega

Zip drive 100MB SCSI external	199.95
100MB Zip disk	19.95
100MB Zip disks, 3 pack	49.95
100MB Zip disks, 10 pack	149.95
Bernoulli Transportable 90MB	282.22
Bernoulli Transportable 150MB	423.21
Bernoulli Transportable 230MB	454.44
Bernoulli insider 230MB	419.78

MITAC

203MB external SyQuest drive	542.60
270MB external SyQuest drive	523.52

FUJITSU

DynaMO 230MB 3.5" mag optical	638.44
-------------------------------	--------

Magnetic Media

88MB SyQuest cartridge, 5yr	48.79
105MB SyQuest cartridge, 5yr	58.20
200MB SyQuest cartridge, 5yr	78.89
270MB SyQuest cartridge, 5yr	83.57
90MB iomega Bernoulli cartridge 5PK	401.21
150MB iomega Bernoulli cartridge	93.33
230MB iomega Bernoulli cartridge	99.81
3M 230MB 3.5" optical, Mac format	43.31

CDW carries Canon, IBM, Maxtor, Micropolis and Seagate SCSI hard drives. Call for details.

Input Devices

ALPS

Alps GlidePoint	69.46
-----------------	-------

Microtek

ScanMaker II	465.93
ScanMaker IIS	499.76
ScanMaker IISPK	849.85
ScanMaker IHR	1039.39
ScanMaker III	2399.89

RELISYS

AVEC 2400 MAC Design	444.12
Re44816 MAC/TE	929.65
Re44830 MAC/TE	1214.99
Re49612 MAC/TE	1393.53
Re49624 MAC/TE	1654.18

Wacom

4x5 ArtPad ADB, with stylus	145.00
6x8 ArtZ ADB, cordless pres stylus	282.32
12x12 UD-series, cordless pres stylus	489.00

Call for Wacom bundling

Printers

EPSON

Stylus Color 720 dpi Color Ink Jet	509.53
------------------------------------	--------

HEWLETT PACKARD

DeskWriter 540	209.45
DeskWriter 650C	465.23
LaserJet 5MP	1053.43
LaserJet 4M Plus	1957.13
LaserJet 4SI MX	4234.22
LaserJet 4MV	2636.09
DeskJet 1200C	1599.77

TEXAS INSTRUMENTS

microLaser 600	854.28
microLaser Pro 600 PS23	1197.66
microLaser PowerPro 12ppm	1593.91

Power Backup

TIME LIFE

BC PERS 280	99.33
BC PERS 420	138.91
BC500 Personal	173.09
BC500 LAN	177.51
BC675 Pro	231.43

Smart Series-CALL!

Memory

Simple Technology memory upgrades

PowerBook 180 4MB	CALL
PowerBook 180 8MB	CALL
PowerBook 180 16MB	CALL
PowerBook 230 4MB	CALL
PowerBook 230 8MB	CALL
PowerBook Duo 14MB	CALL
PowerBook Duo 20MB	CALL
PowerBook Duo 28MB	CALL

CDW carries the complete Simple line-up. Call for configurations not listed here.

HOT modems at low **CDW®** prices!



Global Village TelePort Gold II

◆ Data: V.32bis (14.4K bps) ◆ Fax: 14.4K bps send and receive ◆ V.42bis and MNP5 data compression ◆ V.42 and MNP2-4 error correction ◆ Includes award-winning GlobalFax™ V2.5 software ◆ 5 year warranty



ONLY

\$104.71 CDW 47425

ONLY

V.34

Practical Peripherals V.34 MiniTower Data/fax modem

- ✓ 28.8K bps data (V.34 and V.FC)
- ✓ 14.4K send receive fax
- ✓ Backwards-compatible with 14.4K and 9600 bps modems
- ✓ V.42 error control, V.42bis data compression
- ✓ Caller ID support
- ✓ Includes Macintosh serial cable and software
- ✓ Lifetime limited warranty, technical support 7 days a week

ONLY

V.34

\$179.35 CDW 48144

\$93.48 CDW 42669

SupraFAXModem™ 288 Now with FLASH ROM!

TOP SELLER

The SupraFAXModem™ 288 offers 28,800 bps data speeds with a maximum throughput of 115,200 bps! Supports V.34 and V.FC. Send or receive faxes at up to 14,400 bps. Includes FLASH ROM for convenient firmware and feature upgrades. Also included: FAXcilitate™ 1.6, MicroPhone™ LT and CompuServe® Information Manager software, CCL scripts for ARA™, and cables.



ONLY

V.34

\$209.80 CDW 49056

ALPS GLIDEPOINT

Alps GlidePoint The next generation in pointing devices

Plugs into standard ADB port. Very reliable—almost no moving parts, no cleaning required. Three programmable buttons. Limited lifetime warranty.



ONLY \$69.46 CDW 51450

ClarisWorks V4.0

The #1 choice for integrated software

- New features include:
- 3 New Assistants: Mail Label, Home Finance and Certificate
 - FastReports™ for quick database searching, sorting or custom reporting
 - Drag-and-Drop ReadyArt Libraries
 - Built-in HTML translator

Now



Version upgrade **\$66.48** CDW 54579

ONLY \$118.11 CDW 54580

CDW Computer Centers, Inc.
1020 E. Lake Cook Rd.
Buffalo Grove, IL 60089-1900

INTERNET: info@cdw.com

Hardware, Peripherals and Software at Discount Prices

800-509-4CDW

FAX (708) 465-6800

©1995 CDW® Computer Centers, Inc. MW1308

Free memory & peripheral installation with CPU purchase

WHY PAY RETAIL? CDW® SELLS FOR LESS AND SERVICES YOU BETTER!

Circle 2 on reader service card

MACWORLD August 1995 223

CDW® YOUR COMPLETE SOURCE FOR HARDWARE & PERIPHERALS

THE MAC SOLUTIONS HOUSE

Configure Your Own
System Package or
Choose A Bundle Below

DISCOUNT WAREHOUSE

0 DOWN

Self Employed and New &
Established Business Leasing



Power Mac 8100/100 SuperSystem

- Power Macintosh 8100/100MHz w/ 40MB RAM, 1 GB Hard Drive, CD ROM Drive, 16-Bit Sound
- 20" Multi-Res Trinitron Monitor
- Epson ES 1200C 30-Bit Color Scanner
- NEW! HP 4MW Laser Printer
- PhotoShop 3.0 • Keyboard • Claris Organizer, ABC Bundle & Cables

FREE! CLARIS ORGANIZER with All System Purchases!

7100/80 Publishing System \$189 p/m*

- PowerMac 7100/80 40/1GB/CD
- SuperMac 17" Trinitron Monitor
- TI 600dpi Laser
- Microtek HSPX Scanner w/PhotoShop, OCR
- Extended Keyboard, Mouse & Cables

NEW! Power Mac 6100/66 8/350 HD/CD ROM w/14" Color Monitor, Ext. Keyboard, Mouse, Claris Organizer \$2195/\$579 p/m

NEW! Power Mac 7100/80 8/700 HD/CD\$2795**

NEW! Power Mac 6100/66 8/350 HD/CD\$1785**

*price when purchased with our monitor and keyboard

FREE Color Inkjet Printer
w/Every Lease Over \$10,000!

COMPARE OUR DRIVE PRICES w/Our COMPETITORS!

350MB Hard Drive.....	Inr \$158/Ext \$239
730MB Hard Drive.....	Inr \$249/Ext \$309
200MB Syquest w/Cartridge.....	\$479

NEW HIGH END PERIPHERALS!

SCANMATE Drum Scanner & ColorQuartet CMYK.....\$13,395/\$343 p/m

OPTIMA 4 GigaByte to 20 GigaByte Fast Wide RAID System.....\$CALL

SCANNERS, MONITORS, PRINTERS, etc.

MICROTEK ScanMaker III 36-Bit Scanner w/FullPhotoShop.....\$2299

MICROTEK ScanMaker II 24-Bit Scanner (600dpi).....\$450

TRINITRON 20" Multi-Res Monitor.....\$1495

RADIUS VideoVision Studio 2.0 (PowerMac/Mac).....\$3495

OPTIMA 8GB DAT Drive w/PhotoShop and DeskTape.....\$1595

OPTIMA DeskTape Software (makes DATs appear on DeskTap).....\$295

TEXAS INSTRUMENTS MicroWriter 23 LASER PRINTER.....\$649

MEDIAVISION PORTABLE CD ROM BUNDLE.....\$349

call about CD RENTAL club!

More Than 10 Years Computer Experience

ADVANCE BUSINESS CENTER

July 1995

NEW! POWERBOOK 540c Power Package!

THE ULTIMATE, TOP OF THE LINE POWERBOOK POWERBUNDLE AT AN AMAZING PRICE!

- PowerBook 540c (33MHz iLDC40, 12MB RAM, 525MB Hard Drive, 640x480 Color Active Matrix Screen, Two Intelligent Batteries)
- FAXModem
- Targus Deluxe Carrying Case
- HP DeskWriter 320
- Port. B/W & Color Printer
- ABC DELUXE PowerBundle: Synetec GreatWorks, Connectix CPU, Norton Utilities, Hard Drive Utility Software, and a Surge Suppressor

PowerBook 520c Color Power Package (same as above, but w/ PowerBook 520c 8/160, one battery).....\$2869/\$799 p/m

PowerBook 150 8/120HD + FAXModem.....\$529 p/m

MAC CLONES in stock

NEW! "Quatro" Mac & PowerMac Clone Systems

QUATRO 850 4/500 (25MHz i4040).....\$999

QUATRO 850 4/500 (40MHz i4040).....\$1399

POWER PC 8100/100 Compatible (100 MHz).....\$2899

POWER PC 8100/110 Compatible (110 MHz).....\$3190

*per month on ABC Lease or Finance Plan

Advance Business Center • 23510 Telo Avenue, Suite 5, Torrance, CA 90505

1 (800) 723-8262

(310) 325-1422 • International: (310) 325-2687

1 (800) 723-8262

fax: (310) 325-4073

Circle 225 on reader service card



\$199
Photoshop 3.0.1
(Full Version) With Purchase of
Scanner or Wacom Tablet

DIGITAL AXIS INTERNATIONAL

17" Trinitron PowerMac Compatible	\$669
with 24 bit Accelerated Card	\$919
Ikegami CF-17A 17" Multi-Sync	\$799
Ikegami CT-17 17" Trinitron Multi-Sync	\$1099
Ikegami CT-21B 21" Flat Multi-Sync	\$2199

EA Research 24 bit Accelerated, Lifetime Warranty	
EAsycolor 24 1152 Graphics Card	\$1099
EAsycolor 24 1360 Graphics Card	\$1449
EAsycolor 24 1600 Graphics Card	\$1999

Kodak PCD 225	\$CALL
Kodak XLS Ribbon / Paper	\$139 / \$69
Other XLS / ColorEase Consumables	\$CALL
JVC Personal RomMaker	\$CALL
MacroMedia Director	\$789

UMAX SCANNERS

BizCard Reader Mac	\$239
NEW Gemini Dual Lens, One-Pass Scanner	\$1489
Vista T-630 600dpi Three-Pass Scanner	
with PhotoShop LE and Word Link OCR	\$499
Vista S6 600dpi One-Pass Scanner	\$589
Vista S8 800dpi One-Pass Scanner	\$729
UC 1260 1200dpi	\$789
UMAX Transparency Adapter	\$399
PowerLook 1200dpi One-Pass Scanner	\$2199
Transparency Adapter for PowerLook	\$449

Painter 3.0 \$269
With Purchase of Scanner or Wacom Tablet

WACOM Pressure-sensitive Graphics Tablets

12" x 18" Standard / Electrostatic	\$659 / \$795
12" x 12" Standard	\$499
6" x 8" ArtIZ	\$299
4" x 4" ArtIPad	\$149



International Dealers Welcome



DIGITAL



INTERNATIONAL

800-247-4678
512-329-7001

Fax 512-327-0921

5000 Plaza on the Lake, Ste. 250, Austin, TX, USA 78746

DIGIAXIS@ONR.COM

Wire transfer, COD accepted. Credit card fees may be assessed.
Prices subject to change without notice. UPS, FedEx, DHL 2-day
to Europe.

1-800-258-2622

1-800-CLUBMAC

1-800-258-2622

SyQuest 5 YEAR WARRANTY
ON GENUINE SYQUEST CARTRIDGES

Qry 1 Qry 10 Qry 20

S198 1010	44MB	\$43ea	\$42ea	\$41ea
S198 1011	88MB	\$48ea	\$47ea	\$46ea
S198 1012	200MB	\$76ea	\$74ea	\$72ea
S198 1013	105MB	\$55ea	\$53ea	\$51ea
S198 1014	270MB	\$62ea	\$61ea	\$60ea

* Warranty after first year, handled by SyQuest

ClubMac 3.5" 270MB Removable
\$468
C109 1004

FREE CARTRIDGE

ClubMac 3.5" Removable
C109 1004 ClubMac 270MB Removable.....\$468

ClubMac 5.25" Removables
C109 1002 ClubMac 88MB Removable.....\$349
C109 1003 ClubMac 200MB Removable.....\$468

ClubMac 5.25" 200MB Removable
\$468
C109 1003

NOW FORMATS 44MB & 88MB!

FREE CARTRIDGE

Quantum 2.5" POWERBOOK DRIVES

Model	Capacity	Part No.	Internal	Part No.	External
Daytona	341MB	Q030 1041	\$299	C109 1119	\$419
Daytona	514MB	Q030 1002	\$399	C109 1109	\$519

3.5" ENTRY LEVEL HARD DRIVES

Model	Capacity	Part No.	Internal	Part No.	External
Trailblazer	420MB	C109 1204	\$189	C109 1205	\$249
Lightning	540MB	C109 1150	\$219	C109 1100	\$279
Lightning	730MB	C109 1154	\$259	C109 1102	\$319

3.5" HIGH PERFORMANCE DRIVES

Model	Capacity	Part No.	Internal	Part No.	External
NEW Fireball	1.0GB	C109 1202	\$499	C109 1203	\$559
Atlas	2.1GB	C109 1112	\$979	C109 1111	\$1039
Grand Prix	4.3GB	C109 1159	\$1149	C109 1108	\$1209

Quantum GrandPrix 4.3GB
\$1149
C109 1159 Internal

Quantum Fireball 1080MB
1 GIG!
\$499
C109 1202 Internal

- Improved performance
- Data transfer rates up to 16.6 MB/sec
- 12ms average seek time
- 5,400 RPM rotational speed
- 128KB buffer size
- 500,000 hours MTBF

EPSON Stylus COLOR Inkjet Printer

Now you can print in vivid color with clarity never before possible in a personal color printer. At 360 dpi resolution blocks are blacker and at 720/360 dpi the color output is the sharpest available.

- Incredible 720 dpi color printing, optimized with special coated paper
- 360 dpi black print resolution
- Prints up to 16 million colors
- Includes Serial Interface, Mac driver software and a TWO Year Warranty

\$529
C107 1012

IntelliColor Display/20e

This Radius IntelliColor Display/20e is part of the next generation in professional two-page color displays. It delivers unrivaled command of your desktop, from on-the-fly resolution switching to state-of-the-art color temperature control. Combined with Radius' IntelliColor software, it allows you to emulate 3 lighting conditions and superadjustable color temperature, so you get more accurate color representation. (R1016 1009)

R1016 1013	PressView 21T Display System	\$129
R1016 1015	SuperMatch 21T XL	\$139
R1016 1009	IntelliColor Display/20e	\$179
R1016 1013	PressView 17-SR Display System	\$189
R1016 1002	PrecisionColor Display/17	\$99
R1016 1007	PrecisionView 17	\$25

VideoVision Studio 2.0
With JPEX hardware compression and decompression for full-screen, full-motion recording and playback from a hard disk, VideoVision Studio combines the power and flexibility of the Macintosh with the ease and accessibility of video tape. **\$3699**
R1013 1018
R1013 1020
R1013 1026
R1013 1045

Thunder Series GRAPHIC ACCELERATORS

These Thunder IV GX cards extend the 24-bit resolution of the Macintosh's built-in video. Accelerated 24-bit color, built-in Photoshop acceleration, GDI acceleration, hot-key resolution switching, zoom and pan, color composer and 10-bit DAC add up to make these cards the number one choice for image processing, compositing and illustration.

as low as \$1899

R1012 1011	Thunder IV GX-1152 24-bit support 1152 x 870	\$1899
R1012 1016	Thunder IV GX-1360 24-bit support to 1360 x 1024	\$2289
R1012 1019	Thunder IV GX-1600 24-bit support to 1600 x 1200	\$2799
R1012 1022	Thunder/24 GT 24-bit support to 1152 x 870, Photoshop optional	\$329

radius

Thunder IV GX-1152 24-bit support 1152 x 870
\$1899

Thunder IV GX-1360 24-bit support to 1360 x 1024
\$2289

Thunder IV GX-1600 24-bit support to 1600 x 1200
\$2799

Thunder/24 GT 24-bit support to 1152 x 870, Photoshop optional
\$329

Scanners EPSON

Epson ES-1200 Pro Mac Scanning System

HIGH DETAIL 4800 DPI, 30-BIT COLOR SCANNING MADE AFFORDABLE.

- 600 x 1200 dpi scanning resolution (up to 4800 dpi via interpolation)
- Epson's "TruePass" scanning technology
- Scans over ONE BILLION colors
- 8.5" x 11.67" scanning area
- Built-in image processing features
- Increased image quality with 30-bit color scanning

\$1269
E845 1032 Epson ES-1200C Pro-MAC \$1269
E845 1034 Transparency Unit \$655
E845 1038 Automatic Document Feeder \$465
E845 1033

NEC

17" MultiSync XV17
\$759
N026 1022

VALUE SERIES

N026 1023	14" MultiSync XV14	\$319
N026 1015	15" MultiSync XV15	\$435
N026 1022	17" MultiSync XV17	\$759

ENTERPRISE SERIES

N026 1026	15" MultiSync XE15	\$549
N026 1027	17" MultiSync XE17	\$999
N026 1010	21" MultiSync XE21	\$989

PROFESSIONAL SERIES

N026 1036	15" MultiSync XP15	\$599
N026 1039	17" MultiSync XP17	\$1229
N026 1011	21" MultiSync XP21	\$2439

Modems SupraFAXModem

S140 1302	Supra Express 14.4 Plus	\$99
S140 1307	SupraFAXModem 28.8 MC V.34	\$225
S140 1308	SupraFAXModem 28.8 PB V-Fast Class for PowerBooks	\$299

Supra Modems include a FIVE Year Warranty.

28.8 MC v.34
\$225

Acceleration DAYSTAR DIGITAL

100 MHz Turbo 601
\$1689

UP TO 100MHz

DayStar 66 MHz Turbo 601
Compatible with Mac IIx (0040 1039), IIx (0040 1045), IIx/iw/Performa 600 (0040 1051)
\$989

DayStar 100 MHz Turbo 601
Compatible with Mac IIx (0040 1043), IIx (0040 1050), IIx/iw/Performa 600 (0040 1052)
\$1689

66 MHz PowerCard 601
DO40 1040
\$635

66 MHz Turbo 6040 40MHz with 128K Cache
X040 1048
\$769

100 MHz PowerCard 601
X040 1043
\$1689

GLOBAL VILLAGE COMMUNICATION

TELEPORT PLATINUM

Easy-to-use Fax/Modem Features

- Fax/Voice Discrimination
- 14 Algs Send/Receive Fax
- 28.8 bps data communication
- Award-winning GlobalFax 7.5 Software
- FIVE Year Warranty

\$229

PowerPort INTERNAL

G050 1001	Mercury/PB Duos	\$325
G050 1002	Mercury/PB 5XXs	\$325
G050 1003	Mercury/PB 1XXs	\$325
G050 1007	Platinum/PB 1XXs	\$325

TELEPORT EXTERNAL

G050 1004	Gold II	\$139
G050 1005	Platinum	\$229

U-Robotics

The Intelligent Choice in Data Communications.

SPORTSTER 28.8 MAC&FAX

\$249

Sportster 14.4 Mac&Fax
C102 1003
\$119

Sportster 28.8 Mac&Fax
C102 1007
\$249

ClubMac

1-800-258-2622

Info, Sales (714)768-8130 • Tech Support (714)768-1490
24 Hour Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

Source Code 69895

WARRANTIES All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. No ClubMac products carry a 30 day money back guarantee when specified. RETURNS Call to RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

MAC BARGAINS\$

Buy with Confidence from MAC BARGAINS\$.

- A leading direct marketer of Mac products
- Over 2500 products in stock
- Most orders ship the next day
- Our goal is 100% customer satisfaction

Great Deals!

Only \$945

UC 1260 Pro w/Full Photoshop

- High-end color scanning without the high-end price
- 1200x600 dpi scanning (interpolation up to 2400 dpi)
- Easy-to-use, built-in SCSI interface and quick and painless maintenance procedures make every aspect of operation simple and complete
- FREE - Full version of Photoshop 3.0!

Umax #02175

Only \$299

PocketDrive 170MB

- The light-weight, compact LaCie PocketDrive is ideal for on-the-go users
- 17ms average access time; 128KB on-board cache
- ShockLock™ pivoting magnetic latch to protect drive mechanisms in transport
- DisCache™ technology for faster data access and retrieval rates
- WriteCache™ firmware for increased throughput rates

LaCie #93565



Only \$227

Teleport Platinum for Desktop Macs

- True V.34 modem communications
- Super-fast 28.8Kbps data transmission speed significantly reduces expensive on-line charges
- V.42bis data compression
- Recognizes voice, fax and Apple Remote Access (ARA)
- Includes award-winning GlobalFax OCR software

Global Village #01155

ACI US		
94322	4D Chart 1.0	\$214.98
96355	4D First 1.2	\$94.98
99044	4D Server 1.2 Version Upgrade	\$140.98
02646	4th Dimension 3.2	\$590.98
99043	4th Dimension 3.2 Version Upgrade	\$50.98

Adobe Systems		
93952	Acrobat 2.0	\$122.98
13894	Acrobat 2.0 for WorkGroups	\$399.00
95323	Acrobat Pro 2.0	\$376.98
94159	Design Kit for PageMaker 4.0 to 5.0	\$44.98
02623	Dimensions V2.0	\$121.98
95314	Foto V1.2 Single-User	\$55.98
92217	HomePublisher V2.0 Deluxe CD	\$64.98
92200	Illustrator 5.5 Cross Grade	\$134.00
05006	Illustrator V5.0 to 5.5 Upgrade	\$90.98
94941	Illustrator V5.5	\$361.00
91606	PageMaker 5.0 Mac/PowerMac	\$539.98
91616	Postscript V2.0 Mac/PowerMac	\$249.98
04342	Photoshop 5.0	\$550.98
95341	Photoshop 5.0 Upgrade	\$136.98
05702	Premiere V4.0 Upgrade	\$71.98
04670	Premiere V4.0	\$201.98
91600	Print Central 4.0	\$438.98
03971	Screenline V3.1	\$121.98
92216	SuperPaint V3.5 Deluxe CD	\$64.98
03950	Type On Call 4.0	\$42.98

Aladdin		
98501	SiDisc	\$61.98
05827	Swift Disk 3.5	\$59.98
98301	Axis Research Swift	\$519.98



Only \$194.98
Macro-Model 1.5
#97754

Alsoft		
00618	DeskExpress II 2.2	\$42.98
04543	Master Juggler 1.9	\$21.98
03552	Avery MacLabel Pro	\$49.98

Artifice		
92251	DesignWorkshop	\$399.98

ASD		
03286	FileGuard	\$136.98
03323	FileGuard Express Pack 10-User	\$794.98

Caere		
05161	OmniPage Direct V2.0	\$59.98
01036	OmniPage Pro V5.0	\$449.98

Casady & Greene		
91300	Conflict Catcher 3	\$64.98

Claris		
18052	ClassDraw Workshop	\$180.98
93424	ClassWorks V4.0	\$117.98
03478	FileMaker Pro V2.1	\$89.98
95734	Impact V1.0	\$129.98
04140	MacProject Pro V1.5	\$359.98
06525	MacWrite Pro V1.5	\$89.98

Connectix		
05546	PowerBook Utilities	\$53.98
06785	RAM Doubler	\$53.98

Corel		
65331	Corel GALLERY	\$31.98
02334	Corel Library 1	\$699.98
02023	Corel Professional Photo CD's - Call	\$118.98
	Checklist Graph 1.0	\$84.98

Dantz		
04722	DiskIt Pro V1.1	\$68.98
02586	Retrospect V2.1	\$134.98
04154	Retrospect w/Remote 10-Pack	\$244.98

Datawatch		
02077	Virex V5.5	\$59.98

Dataviz		
96007	MacLink Plus/PC Connect 8.0	\$113.98
96008	MacLink Plus/Translators Pro 8.0	\$93.98

Dolima		
97921	FastPro for Mac V1.5	\$53.98
17271	Intermission Screen Saver	\$27.98
97938	Opus & BII Screen Saver	\$27.98

DeltaPoint		
04805	DeltaGraph Pro 3.5	\$124.98
97780	DeltaGraph Pro 3.5 Comp. Upgr.	\$74.98

Deneba		
00903	Canvas V3.5	\$252.98

Elastic Reality		
98489	Elastic Reality for Power Mac	\$224.98

Entertainment		
94569	11th Hour: Sequel to 7th Guest-Virgin	\$54.98
99236	7th Guest-Virgin	\$41.98
02785	Art of Doom CD-SunStar Publishing	\$26.98
92863	Art of Doom CD-SunStar Publishing	\$36.98
05100	Art of Doom CD-SunStar Publishing	\$34.98
97125	AutoChase MacPlay	\$34.98
95573	AutoChase Enhanced-MacPlay	\$44.98
93909	Camryn Sandiego/USA Dix CD-Broadband	\$45.98
97732	Camryn Sandiego/Wend Dix CD-Broadband	\$49.98
97122	Castles II: Siege & Conquest-MacPlay	\$35.98
02848	Civilization-Microprose	\$42.98
03544	Conquest Valley-Microprose	\$42.98
02335	Deem II-GT Interactive	\$46.98

Falcon		
06394	Falcon MC-Spectrum Holobyte	\$40.98
06852	Iron Helix CD-Spectrum Holobyte	\$54.98
97127	Jump Raven-Paramount	\$37.98
05591	KidDesk-Edmark	\$29.98
04681	Leisure Suit Larry 6-Sierra On-Line	\$46.98
04686	Leisure Suit Larry 6-Sierra On-Line	\$46.98
97146	Leisure Suit Larry 6-Sierra On-Line	\$46.98
05592	More About Darq v1.0-Berkeley Systems	\$22.98
04063	More About Darq v1.0-Berkeley Systems	\$22.98
99237	More About Darq v1.0-Berkeley Systems	\$22.98
05518	Music Time v2.0-Pasport Designs	\$94.98
97733	MYST-Broderbund	\$49.98
97146	Night Trap-Ascom	\$47.98
97149	Polar Saber XPLORA 1-MacPlay	\$44.98
04473	PGA Tour Golf II-Electronic Arts	\$37.98
95423	Prince of Persia II-Broadband	\$34.98
97145	"Rock, Rap, and Roll" CD-Paramount	\$39.98
94441	Surrey's Science House-Edmark	\$32.98
04721	Smart-Mac	\$37.98
06822	Simple 2000-Mac	\$41.98
99216	Simple 2000-Mac	\$22.98
03800	Simple 2000-Mac	\$19.98
94267	Simple 2000-Mac	\$22.98
94563	Simple 2000-Mac	\$22.98
97197	Simple 2000-Mac	\$22.98
95426	Simple 2000-Mac	\$22.98
06804	Star Trek Screen Saver-Berkeley Systems	\$26.98
06519	The Disney Screen Saver Collection-Berkeley	\$26.98
04197	The Playroom 2.0-Broadband	\$29.98
97731	The Toybox and the Hare-Broadband	\$34.98
93785	Thinkin Things II-Edmark	\$39.98

Equilibrium		
96001	DeBabelizer Lite	\$82.98
96360	DeBabelizer Toolkit 1.6	\$249.98

Fractal Design		
00665	Fractal Design Painter 3.1	\$301.98
93967	Fractal Design Painter 3.1 Upgrade	\$137.00
93994	Fractal Design Painter 3.1 Upgrade from Painter 2	\$89.98

Frame Technology		
06994	FrameMaker V5.0 Upgrade	\$198.98
03582	FrameMaker V5.0	\$992.98

Farallon		
96800	Timbuktu Pro	\$126.98
96802	Timbuktu Pro 10-Pack	\$659.98
96801	Timbuktu Pro Twin-Pack	\$199.98

GDT Software		
00642	PowerPrint 2.5	\$83.98
94262	StyleScript	\$84.98
99506	Gryphon Morph V2.5	\$87.98

HSC Software		
06668	HSC Kall's Power Tools V2.1	\$113.98
95336	KPT 1.0	\$117.98
92243	KPT Converter 1.0	\$118.98
95336	KPT Suite Imaging (Bryce & KPT)	\$178.98
91629	Live Picture	\$625.00
91258	Vector Effects	\$99.98

Insigain		
03964	Access PC V3.0	\$74.98
06786	PopCD	\$42.98
94287	SchWindows for Mac	\$299.00
93471	SchWindows for Power Mac	\$287.98
93475	SchWindows for Power Mac CD-ROM	\$284.00

Intuit		
93222	QuickBooks 3	\$119.98
04230	QuickBooks 3	\$39.98

JIAN		
04257	BioPlanBuilder 5.0	\$78.98
01045	EmployeeManualBuilder 3.0	\$91.98
04996	LivingTreeBuilder 3.2	\$51.98
06827	Publicity Builder 2.0	\$84.98

Fractal Design Painter 3.1 Upgrade

#93967



Only \$137

Kent Marsh		
02259	Foldback V1.02	\$98.98
04581	NightWatch II	\$98.98

Kodak		
94825	Photo CD Access Plus	\$35.98

Leader Technologies		
05593	PowerMerge 2.0	\$78.98

Light Source		
99489	Photo 1.1.1 (Gray Scale)	\$132.98
06657	Photo 2.0	\$187.98

Lotus		
05507	1-2-3 V1.1	\$274.98

Macromedia		
04537	Fontographer V4.1	\$329.98
04180	Freehand 5.0	\$365.98
92267	Freehand 5.0 Competitive Upgrade	\$148.98
04182	Freehand 5.0 Upgrade	\$148.98
92269	Graphic Design Studio	\$649.00
97754	Macromedia 1.5	\$194.98
03838	Macromedia Director V4.0	\$789.98
97772	SoundEdit 16 CD	\$276.98

Mainstay		
01159	MacPlex 4.0	\$221.98
99023	MacPlex V2.0	\$169.98
93218	Plan and Track	\$191.98

Metrowerks		
92853	CodeWarrior Bronze	\$29.98
94281	CodeWarrior Gold	\$399.98

Microsoft		
96702	Chemistry 1995	\$49.98
95750	Encarta '95	\$29.98
02027	Excel V5.0	\$229.98
04545	Excel V5.0 Ver Upgr	\$130.98
04293	Flight Simulator V4.0	\$139.98
96956	FontPro V2.6	\$37.98
04027	Office V4.2	\$42.98
01220	PowerPoint V4.0	\$129.98
04161	Project V3.0	\$41.98
06184	Project V3.0 Upgr	\$119.98
04586	Word V6.0	\$274.98
06596	Word V6.0 Upgr	\$179.98
06750	Works 4.0	\$39.98

Microspot		
05641	MacPlot Plotter Professional 4.0	\$299.98

Microtec Software		
95417	French Assistant	\$49.98
95416	German Assistant	\$49.98
95415	Italian Assistant	\$49.98
95418	Spanish Assistant	\$49.98

MYOB		
04712	MYOB Accounting V5.0	\$79.98
95042	MYOB Accounting V5.0 w/Payroll	\$139.98

Nisus Software		
92236	Nisus Writer 4.0 Comp Upgrade	\$114.98
03479	Nisus Writer 4.0 for Mac	\$269.98
92238	Nisus Writer w/Language Key 4.0	\$269.98

New Software		
91229	Database Pro V4.0 Deluxe CD	\$439.98
00580	Now Up-to-Date V3.0	\$59.98
04191	Now Utilities V5.0	\$78.98
06712	TouchBase Pro V4.0	\$129.98

OSC		
04806	Org Plus 1.0	\$179.98

Peachtree Software		
02554	Peachtree Accounting	\$115.98
05745	Peachtree Insight Accounting	\$294.98

Pixar		
05568	Pixar Typestry V2.1	\$165.98

Quark		
04736	QuarkPress V3.31	\$569.98
95320	QuarkPress V3.31 for Power Mac	\$569.98

SoftWindows for Mac		
------------------------	--	--

For the Best Deals Around! 1-800-619-9091

MONITORS

Sony		
156 Multiscan 1561	\$444.90	
140 Multiscan 171	\$579.90	
150 Multiscan 205	\$1,033.00	
177 Multiscan GFD-1425	\$329.98	
Rastus		
2065 20" Monochrome	\$704.98	
2064 Full Page Display - Graphics	\$464.98	
2064 Half Page Display	\$1,099.00	
2067 Precision View 17"	\$649.00	
2100 SuperMatrix 17"	\$839.00	
2105 SuperMatrix 21" XL	\$2,008.00	

NEC		
146 NEC MultiSync 21" 14"	\$277.98	
147 NEC MultiSync 21" 15"	\$466.98	
1719 NEC XE 21" 21" Color Mtr	\$1,978.98	
1717 NEC XE15 15" Color Mtr	\$537.98	
1718 NEC XE17 17" Color Mtr	\$696.98	
1720 NEC XE 15 15" Color Mtr	\$658.98	
1721 NEC XE 17 17" Color Mtr	\$1,235.00	
1722 NEC XE 21" 21" Color Mtr	\$2,446.00	

1719 NEC XE 21" 21" Color Mtr	\$1,978.98	
-------------------------------	------------	--

VIDEO GRAPHICS BOARDS

Connectix		
884 QuickCam	\$97.98	
EA Research		
427 EASYCOLOR 24/1152 Accelerated Graphics	\$598.00	
428 EASYCOLOR 24/1360 Accelerated Graphics	\$1,429.00	
429 EASYCOLOR 24/1600 Accelerated Graphics	\$1,749.00	

Focis		
420 LapisColor 16 for LC	\$309.00	
420 LapisColor 16 for Nubus (7")	\$309.00	

Light Source		
420 ColorTron	\$1,149.98	

Radus

420 Photo Engine	\$209.98	
420 Precision Color 8K 8-bit	\$459.98	
420 PrecisionColor Pro 24K	\$1,067.00	
420 PrecisionColor Pro 24K	\$779.98	
420 Spectrum Power 1152	\$615.98	
420 Spectra Power 4V	\$749.98	
420 Thunder 24 V2.0	\$793.98	
420 Thunder IV GX 1152	\$1,999.00	
420 Thunder IV GX 1360	\$2,399.00	
420 Thunder IV GX 1600	\$2,799.00	
420 Video Spigot II	\$899.98	
420 VideoSpigot Studio 2.0	\$2,499.98	
420 VideoSpigot Studio 2.0 Pro	\$2,999.98	

XCED Technology

400 Color Fusion 24-bit LCD	\$489.93	
-----------------------------	----------	--

ACCELERATORS

DayStar		
168 PowerCard 66MHz	\$599.93	
171 PowerPro 100MHz	\$1,739.00	
350 PowerPro 601 66MHz Xal	\$1,349.00	
313 PowerPro 601 66MHz Xal w/1MB Cache	\$1,899.00	
164 Turbo 601 100MHz for iMac	\$1,739.00	
165 Turbo 601 100MHz for iMac	\$1,739.00	
166 Turbo 601 100MHz for iMac	\$1,739.00	
167 Turbo 601 100MHz for iMac	\$1,739.00	
168 Turbo 601 100MHz for iMac	\$1,739.00	

K S Labs

394 PowerMac 256K Cache Card	\$149.98	
395 PowerMac 610K 700 Booster	\$79.98	
396 PowerMac 610K 700 Booster	\$109.98	
397 Quadra and Centris Boosters	\$95.98	

Newer Technology

1686 MacClip for Centris/Quadra 610	\$139.98	
1687 MacClip for Quadra 800/840V	\$139.98	
1688 Power Clip for 610/710	\$127.98	

Networking

Asante		
501 10T FriendlyNet Adapter	\$52.98	
404 10T HUB/3 w/ 10T/NT Ports	\$223.98	
145 MacDown LC 10T	\$94.98	
146 MacDown LC 10T/NT	\$159.98	
147 MacDown LC 10T	\$104.98	
148 MacDown LC 10T/NT	\$109.00	
149 MacDown Nubus 10T/NT	\$117.00	
144 MacDown Nubus 10T/NT	\$117.00	
145 MacDown Nubus 10T/NT	\$117.00	
146 MacDown Nubus 10T/NT	\$117.00	
147 MacDown Nubus 10T/NT	\$117.00	
148 MacDown Nubus 10T/NT	\$117.00	
149 MacDown Nubus 10T/NT	\$117.00	

Dayna

826 Dayna Pocket SCSI Link 1 (10T/NT)	\$287.93	
825 Dayna Pocket SCSI Link 1 (10T)	\$235.93	
114 DaynaLINK Mobile Access Server VARA	\$1,899.00	
718 DaynaPORT Ext (10T/NT) DP2000	\$114.98	
726 DaynaPORT Ext (10T/NT) DP2002	\$159.98	
725 DaynaPORT Ext (10T/NT) DP2001	\$107.98	
724 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
723 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
722 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
721 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
720 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
719 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
718 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
717 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
716 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
715 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
714 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
713 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
712 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
711 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
710 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
709 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
708 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
707 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
706 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
705 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
704 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
703 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
702 DaynaPORT Ext (10T/NT) DP2000	\$107.98	
701 DaynaPORT Ext (10T/NT) DP2000	\$107.98	

Farallon

383 Ether 10T StarLine	\$568.98	
382 Ether 10T StarLine	\$168.98	
381 Ether 10T Transceiver (AAU/10T)	\$51.98	
380 Ether 10T Transceiver (AAU/10T)	\$64.98	
379 Ether 10T Transceiver (AAU/10T)	\$61.98	

99409 EtherWave AAU Transceiver	\$94.98	
99408 EtherWave AAU Transceiver	\$96.98	
99412 EtherWave LC Card	\$148.98	
99410 EtherWave Multi Printer Adapter	\$335.98	
99411 EtherWave Nubus Card	\$169.98	
99414 EtherWave PB or Slot-less Mac Adapter	\$252.98	
99408 PhoneNET DIN-8 to 10-Pin P210	\$104.98	
99402 PhoneNET DIN-8 to P210	\$26.98	
99401 PhoneNET Star Connector P210	\$14.98	

COMMUNICATIONS MODEMS

Global Village		
92131 OneWorld Combo - 2 Line (no modems)	\$1,274.98	
92132 OneWorld Combo - 2 Line (w/modems)	\$1,774.98	
92133 PowerPort Bronze	\$39.98	
92134 PowerPort Gold	\$195.98	
92135 PowerPort Mercury for PowerBook 130X	\$309.98	
92136 PowerPort Mercury for PowerBook 500X	\$339.98	
92137 PowerPort Mercury for PowerBook Duo	\$309.98	
92138 TelePort Gold II	\$105.98	
92139 TelePort Platinum for Desktop Macs	\$227.00	
92140 TelePort Mercury for Desktop Macs	\$279.98	

Practical Peripherals		
92139 MacClass MC1447-EZ PCMCIA	\$169.00	
92130 MacClass MC2887-EZ PCMCIA	\$359.98	
92131 MacClass MC2887-EZ v3.34	\$214.98	

ORA

Cell Cellular Data Link	\$188.98	
-------------------------	----------	--

Supra

93736 Supra Express 144 Plus	\$85.98	
93737 Supra FastModem 144C Ext - Mac	\$128.98	
93738 Supra FastModem 144PB Int - PowerBook	\$157.98	
93739 Supra FastModem 288 Ext - Mac	\$203.98	
93740 Supra FastModem 288 Int - Mac PB	\$285.98	
93741 Supra FastModem 528BIS (MC) w/ST Cable	\$173.98	

TI Systems

92410 DLE-400 4-Device Auto Fax/Modem Switch	\$94.98	
--	---------	--

US Robotics

93701 Mac & Fax Sportster 14.4	\$112.98	
93702 Mac & Fax Sportster 28.8 V34	\$247.98	

STORAGE DEVICES

Apple Hard Drives

93568 1080MB Ext HD	\$799.98	
93538 340MB Ext HD	\$432.98	

Fujitsu

91180 DynaMO 230MB Optical Drive	\$637.98	
----------------------------------	----------	--

IBM

93731 CD-ROM Toolkit	\$47.98	
93732 Hard Disk Toolkit	\$122.98	
93733 Hard Disk Toolkit - Personal Ed.	\$46.98	
93734 SCSI Assistant	\$69.98	

Imomga

93320 Imomga MacTransportable 230	\$452.98	
93321 Imomga MacTransportable 50 Pro	\$295.98	
93322 Imomga MacTransportable Multidisk 150	\$421.98	
91825 Zip Drive	\$198.00	

LaCie

93555 PocketDrive 1700MB	\$294.00	
93556 PocketDrive 2560MB	\$339.00	
93557 PocketDrive 680MB	\$199.00	
93558 Q Drive External 1080MB	\$744.00	
93559 Q Drive External 1400MB	\$999.00	
93560 Q Drive External 540MB	\$389.00	

Pincode Micro

92493 RCD 1000 Removable CD-ROM	\$1,599.00	
93302 Sierra 1.3GB Optical	\$2,199.00	
93301 Tapes 230MB Optical	\$749.00	

PLI

94112 Infinity 230MB Optical 3.5"	\$999.98	
93634 Infinity 230 Removable Drive	\$638.98	
96823 Infinity 270 Turbo S	\$1,099.98	
96821 Infinity MAX Optical 5.25 1.3GB	\$3,090.00	

Sony

92139 Sony Portable MD Data Drive	\$599.98	
-----------------------------------	----------	--

Internal HD

99609 Quantum 1GB	\$569.98	
99610 Quantum 270MB	\$199.98	
99611 Quantum 390MB	\$199.98	
99612 Quantum 730MB	\$275.98	
99613 Seagate 2.1GB Barracuda	\$999.98	

PowerBook HD

94074 256MB 2.5 Drive	\$249.98	
99176 340MB 2.5 Drive	\$299.98	

External HD

99927 Quantum 1GB	\$649.98	
99928 Quantum 270MB	\$245.98	
99929 Quantum 340MB	\$245.98	
99930 Quantum 540MB	\$295.98	
99186 Seagate 2.1 GB Barracuda	\$1,099.98	

Removable HD

91142 SyQuest 200MB w/o cartridge	\$471.98	
97399 SyQuest 270MB w/o cartridge	\$499.98	
95338 SyQuest 44-38MB w/o cartridge	\$312.98	

SCANNERS

AGFA

92135 Anus II	\$2,729.98	
92136 StudioScan	\$679.98	
92137 StudioScan II	\$679.98	

Epson

92176 Action Scanning System ES-500C	\$559.00	
92173 ES-1200C	\$949.00	
92110 ES-1200C Pro Scanning System	\$1,269.00	

Fujitsu

92706 Scan Partner Jr.	\$379.98	
------------------------	----------	--

Hewlett-Packard

92510 ScanJet 3P	\$434.00	
92501 ScanJet ILC	\$377.98	

Microtek

92603 3ST Slide Scanner	\$934.98	
92602 Automatic Document Feeder	\$359.98	
91541 ScanMaker II	\$449.98	
91540 ScanMaker IIG	\$329.98	
91539 ScanMaker IIR	\$279.98	
91538 ScanMaker IIS	\$249.98	
91537 ScanMaker IIS	\$249.98	

Nikon

92926 Coolscan	\$1,349.00	
91174 ScanTouch Flatbed	\$1,148.00	

Polaroid

91192 SprintScan 35mm	\$1,999.00	
-----------------------	------------	--

Relisys

91990 Rel 24/12IE w/Photoshop LE	\$779.98	
92138 Rel 24/12 w/Photoshop 3.0	\$1,559.98	
91978 Rel 9324T w/Photoshop	\$1,899.98	

Umax

91969 eScan Reader for Mac	\$229.98	
91968 eScan Reader for PC	\$299.98	
92175 UC 1250 Pro w/Full Photoshop	\$945.00	
91967 Vista 56 Pro w/Full Photoshop	\$779.98	
91966 Vista 56 Pro w/Full Photoshop	\$898.98	
91978 Vista-1630 Scanner	\$408.98	

INPUT DEVICES

Alps

92066 Alps Glidepoint for Mac	\$70.98	
-------------------------------	---------	--

Calcomp

92041 Drawing Slate 12x12 Coarse 4B Cursor	\$224.98	
91862 Drawing Slate II 12x12 w/Pressure Pen	\$249.98	
91869 Drawing Slate II 12x18 w/Pressure Pen	\$319.98	
91870 Drawing Slate II 6x9 w/Pressure Pen 3.0	\$469.98	
91864 Drawing Slate II 6x9 w/Pressure Pen	\$194.00	

Kensington

93

PRODUCT INDEX BUSINESS TOOLS



PRODUCT INDEX

Category Page No.

BUSINESS TOOLS228-231

Bar Code
LCD Panels
Medical
Point of Sale
Presentation
Projection Panels
Manufacturing
Real Estate

EDUCATIONAL & RECREATIONAL253-255

Astrology
Discount Software
Genealogy
Grading
Music
Religion

GRAPHICS256

Clip Art
Fonts

MOBILE COMPUTING & PDAS ...252

Security System

MULTIMEDIA & CD-ROM255

3D Modeling

Category Page No.

NETWORKING & COMMUNICATIONS252

BBS

PROGRAMMING & UTILITIES257

Languages

SERVICES & SUPPLIES257-258

Computer Insurance
Computer Repair
Data Recovery
Slides

SYSTEMS & PERIPHERALS231-247

Switch Box

UPGRADES & MEMORY ...247-252

Memory Upgrades

ACCOUNT MANAGERS: 800.888.8622

Carol Johnstone415.978.3152
Shannon Smith415.974.7414
Niki Stranz415.978.3105

DTP COORDINATOR:

Clayton Haberman415.978.3132

Active Buyers turn to Macworld, the Macintosh authority, to find the products they need.

Call 800.888.8622



Macworld Shopper Delivers

LIMITED ADVERTISING BUDGET?

Macworld Shopper offers a great way to reach 650,000 active shoppers.

A lifesaver for problem files

CanOpener \$125...\$59

Emergency access to all your Mac files!
Recover data from damaged files.
Read files your Mac can't open.
Search for missing information.
Grab text & pictures from any file.
Browse files fast. A lifesaver!

NEW Version 3.0! Supports PowerMac NATIVE!
Reads over 25 picture formats - including
DOS and Windows!

FREE SHIPPING!

Order TOLL FREE 1-800-552-9157
or FAX to 914-747-9115 or MAIL check to:

ABBOTT SYSTEMS 62 Mountain Rd.
Pleasantville, NY, 10570

CIRCLE 413 ON READER SERVICE CARD

Fast Systems 800-508-4444

Mail Order Tel: (508) 653-6911
Fax: (508) 650-1872

Distribution

EES Companies, Inc.

Point-of-Sale

- Order Entry
- Invoicing
- Fast Cash Retail
- Purchase Order
- Credit Card Processing
- Inventory Control
- Barcoding
- Multi-User
- Complete Systems Available

Demo Available

CIRCLE 600 ON READER SERVICE CARD

MacLandlord \$399

- Property management & bookkeeping program
- Easiest-to-use
- Tracks tenants, vacancies
- Prints checks, receipts, notices
- Income & expense statements
- Handles multiple properties
- Free telephone support
- 30 Day money-back guarantee
- \$199.0 for competitive upgrade

Labana Management Company
P.O. Box 2037
Dearborn, MI 48123
313/562-6247

BAR CODE PRO™

Create EPS graphics for your desktop publishing documents. Call for a free demo disk and get the information you need to make an intelligent purchasing decision for Mac or Windows.

800.619.0399
718.499.6293
or fax
718.768.3997



CIRCLE 450 ON READER SERVICE CARD

Creating
precision
bar codes is
as easy as
using a font!

PRINTBAR™ BAR CODE FONTS

- Compatible with virtually any Macintosh application.
- Choose from: • UPC/EAN/ISBN
- Code 39 • Interleaved 2 of 5
- POSTNET/FIM.
- 90-day money back guarantee.
- "This is the best product of its kind, and it's reasonably priced too!"
—MacUser review ★★★★★

EXTRA BONUS FREE

POSTNET & FIM
with any PrintBar Font purchase

4140 Mother Lane Dr., Ste. 100, Shingle Springs, CA 95682
916 672-0244 • Facsimile 916 672-1103

Scanning bar codes
is even easier!



CODESCAN 3000™ BAR CODE READER

- Comes complete with wand and 5 year warranty.
- Scans information directly into software application.
- Available with laser gun, CCD, badge slot, magstripe options.
- No software required.
- Ready to use in minutes!
- Money back guarantee.

Bear Rock TECHNOLOGIES

New model
now available!

Call the Bar Code Experts

800 232-7625

Take Control

Complete Systems Start at

\$2,799

Taking control of your business is easy with a system that has been designed and proven by thousands of retailers just like you. POS-IM provides full POS and Inventory Management functionality with the features you need at an outstanding price.

POS-IM

Point-of-Sale • Inventory Management

Ensign Systems, Inc.

(800) 409-7678 (801) 546-1616

The One That Apple® Uses

CIRCLE 417 ON READER SERVICE CARD

The Experts Choice for Barcoding!

Bar Code Generation

MacBARCODE

With a colour option that works. The highest precision barcoding package available for the Mac.

For Sheet-fed Labels

Easy to use, prints any label with barcodes, text, graphics, numbers and dates.

For Reel-fed Labels

Prints short-run labels on reels with barcodes, text, graphics, numbers and dates. Compatible with the full range of Zebra Printers.

Bar Code Readers

A complete line of bar code scanners starting at \$255

Call toll free **800 289 0993**

Computalabel

28 Green Street, Newbury MA 01951, Fax 508-462-9198

CIRCLE 544 ON READER SERVICE CARD

Power Tools for the Power Presenter

One stop shop for all major brands



SALES • LEASES • RENTALS

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back. Quick delivery via Fed-X or UPS.

Call for CATALOG **1 800 726 3599**

Panelight

101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST
VOICE: 415 772 5800 FAX: 415 986 3817

CIRCLE 578 ON READER SERVICE CARD

Presentation Sensation!

Computer Projection Panels from ASK.



Compare ASK to the competition. ASK gives you more colors, higher resolution and a smaller, lighter design. Plus ASK includes a wireless remote with mouse control.

Now compare price.



\$2,079

ASK Impact 256

- 256,000 colors
- Resolution up to 800 x 600
- Wireless remote with mouse control
- Compact, light design
- Free hard-shell attache case

Also available **ASK Impact 14**
• Active matrix, 1.4 million colors
• Upgradeable color palette & to video
• Mac & PC compatible
Only **\$2,699**

Call today— have it tomorrow!
30-day guarantee call for details.

1-800-290-4647

express direct

Express Direct 2720 N. Paulina Ave. Chicago, IL 60614 USA FAX (312) 244-3080

CIRCLE 403 ON READER SERVICE CARD

Project Wall-Sized Multimedia

Only \$3,799.

SPECIAL OFFER!

Introducing the **BOXLIGHT ProColor** 1500 Multimedia Projection Panel. Full-color, big-screen multimedia and video projection with built-in audio! Industry-leading performance at special introductory price of only \$3,799!



- ♦ Active-matrix color
- ♦ Built-in video & audio
- ♦ Rugged & portable
- ♦ PC & Mac Compatible
- ♦ Unbeatable price

Your direct source for all the bright answers.
♦ Widest selection
♦ Instant availability
♦ Overnight shipping
♦ 30-day guarantee

BOXLIGHT CORPORATION

17711 Ford Dr. N.E., Poulsbo, WA 98270
206-778-7931 • Payment: VISA, MasterCard, American Express, COD and Purchase Orders (some restrictions). Leasing and rental options available. 30-Day Money-Back Guarantee.

Call Today **1-800-762-5757**

CIRCLE 423 ON READER SERVICE CARD

24-Bit Accelerated Graphics Card For Entry Level Mac's

Color FusionTM, from Xceed Technology, is a unique new graphics card that allows you to add a larger monitor, up to 21", with more colors or shades of gray, or add a second monitor to your Entry Level Mac. Color Fusion will enhance the video capabilities of any Macintosh using the LC style PDS slot, including Apple's new 630 family of low cost Multimedia workstations, as well as any LC series, Performa series, Color Classic or Quadra 605.

- Compatible with all current Apple displays and most any VGA, SVGA and Multi-Sync monitors.
- Maximum resolution of 1280 x 1024
- 30-day money back guaranty
- Easy installation
- 5-year registered warranty
- Estimated street price of \$499⁹⁹

Ask your local dealer or a favorite mail-order company about Color Fusion, or call us direct at 1-800-XCEED-IT (800-923-3348) and ask for Ext. 408.

Even Little Mac's Deserve Big Color



45700 Shattuck Blvd. Cheshire, CT 06031
810 • 928 • 8030 Fax 810 • 593 • 5028

CIRCLE 473 ON READER SERVICE CARD

Integrate Macs with SGI/Sun/HP

Server to the Macs...

K-AShare—enables Macintoshes to use a UNIX host as an AppleShare file server.

K-FS—allows UNIX users to access AppleShare volumes on a Mac.

K-Spool—allows Mac and UNIX users to share PostScript printers anywhere on the network.

FullPress—provides integrated prepress file-sharing and print spooling, including OPI!

Convenient GUI!
No additional Mac software required.

XINET
2560 Ninth Street, #312
Berkeley, CA 94710
tel: 510.845.0555
fax: 510.644.2680
email: world@xinet.com

CIRCLE 408 ON READER SERVICE CARD

Make your computer both a Macintosh and a UNIX workstation.

MachTenTM is Berkeley BSD UNIX that runs on the Classic to the Power Macintosh! So in addition to the easy-to-use applications that make Macintosh the most personable computer around, you get a MACH-based UNIX with pre-emptive multitasking.

The Macintosh/UNIX integration is so strong that you can even use Mac programs and utilities on UNIX data, and UNIX programs and utilities on Mac files. MachTen's full internet protocol support ensures fast, easy client and server NFS, electronic mail, and file transfer with all TCP-based entities on your network.



The MachTen operating system combines the high-level functionality of a networked UNIX workstation with Macintosh's wide array of applications.

The UNIX development system includes the GNU C and C++ compilers and libraries for creating new applications or port existing ones. The Motif toolkit and suite of X clients and libraries make developing distributed applications a breeze.

And Tenon's high performance X Server lets you use your Macintosh or Power Macintosh as an X terminal.

For more information, or to order
Call 1-800-6-MACH-10

internet: info@tenon.com
http://www.tenon.com



1123 Chapala Street, Santa Barbara, CA 93101
Tel: 805-963-6983, Fax: 805-962-8202

©1994 Tenon Intersystems. All trademarks are the property of their respective owners.

CIRCLE 468 ON READER SERVICE CARD

ADOBE PAGEMAKER 5.0

MAC.....\$505
PWRMAC.....\$529

MS OFFICE V4.2

MAC.....\$429

SUMMER SOFTWARE BLOWOUT!!!

ADOBE ILLUSTRATOR 5.5\$359
ADOBE PHOTOSHOP 3.0.1\$525
ADOBE PREMIERE 4.0\$499
MS EXCEL 5.0\$285
MS POWERPOINT 4.0\$285
MS PROJECT 3.0\$389
MS WORD 6.0\$279
"CALL FOR PRODUCTS NOT SHOWN"

PAGE (800)886-0055
4665 MELROSE AVE. LOS ANGELES, CA 90029
BUSINESS HOURS (PACIFIC): M-F, 9am-6pm

CIRCLE 420 ON READER SERVICE CARD

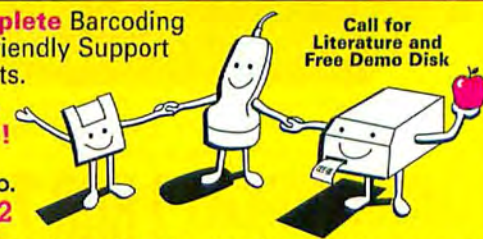
Join the Mac-Barcode[®] Family!

The Only **Complete** Barcoding System with Friendly Support from the Experts.

Simple, Fast and Accurate!

The
Mac-Barcode Co.
800-733-7592
U.S. and Canada

Internet:
75526.1556@compuserve.com
FAX 617-934-6233



Mac-Barcode ProLabel Software

SmartScanner SmartPen

Thermal Transfer Printer

• Intuitive & Easy to Use
• Readable Codes Guaranteed

• Rugged & Dependable
• No Decoder Box!

• Industrial Strength
• 203 or 300 dpi

CIRCLE 562 ON READER SERVICE CARD

Bar Coding



Call us for info

- Portable & Non-Portable Readers
- Radio Frequency Readers
- PostScript Bar Code Fonts

800-345-4220

WORTHINGTON
DATA SOLUTIONS



POINT OF SALE INVENTORY CONTROL Software & Hardware for:

- Retail
- Manufacturing
- Multi Location

Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth & Deposit Software
Compatible with most Mac POS Software
Interactive Catalog & Demos available on AOL
call, fax, or e-mail for a FREE CATALOG

(800) 622-7670 posdirect@aol.com

(618) 985-8237 TEL • (618) 985-3014 FAX

Dealer Inquiries Welcome
30 day MBG

VISA P.O.S. → DIRECT

CIRCLE 466 ON READER SERVICE CARD

Credit Card

Authorization & Electronic
Deposit Software

- Save hundreds, if not thousands of dollars.
- Automatically authorizes and deposits all credit card sales -- individually or in batches
- Integrate with your sales system with AppleEvents, AppleScript & import/export

MacAuthorize®

- Single and Multiple User Versions •
- POS Credit Developers since 1981

800/483-5526 • 408/274-1110

Tellan Software, Inc

CIRCLE 480 ON READER SERVICE CARD

SAVE BIG ON WP!

If you need a word processor, but don't need a zillion expensive features, you can save a ton of money by buying...

Scorpio!

It supports FULL COLOR, spell checks, runs on all color Macs, and is NATIVE on PowerMacs!

And the price is an amazing... **\$19.95**

(less than the sales tax on some WP programs!)

PLUS you also get... **FREE SHIPPING!**

Order TOLL FREE **1-800-552-9157**

or FAX to 914-747-9115 or MAIL check to:

ABBOTT SYSTEMS 62 Mountain Rd. Pleasantville, NY 10870

CIRCLE 431 ON READER SERVICE CARD

MAC SPOT

YOUR SPOT PRICE
POWER MACS

Power Mac 6100 ^{se} 8/0	1,369
Power Mac 6100 ^{se} 8/500/CD	1,749
Power Mac 7100 ^{se} 8/0	2,249
Power Mac 7100 ^{se} 8/500/CD	2,689
Power Mac 8100 ^{se} 8/0	2,769
Power Mac 8100 ^{se} 8/700/CD	3,199

PERFORMAS

Performa 630 4/250/FPU	749
Performa 575 8/250/CD	1,349
Powerbook 540C 4/320	2,799

WE ALSO CARRY APPLE PRINTERS, MONITORS AND KEYBOARDS.

1 800 680-1112

CIRCLE 482 ON READER SERVICE CARD

WE BEAT ANY PRICE!



POWER PC

- Quadras & Powerbooks
- DISPLAYS, SCANNERS
- PRINTERS, MODEMS

DEALERS AND INTERNATIONAL SALES OK

800-622-5557

(818) 225-9327

FAX

(818) 225-8627

22543 Ventura Blvd., Suite 226

Woodland Hills, CA 91364

CIRCLE 540 ON READER SERVICE CARD

Manufacturing



New Version

Inquire/Mac 1.6

- Bill of Materials Call 800 782-5682
- Purchasing Fax 714-830-5691
- Inventory Control Call for Demo!
- Custom AppleScript Links

OnBase Technology, Inc.

CIRCLE 479 ON READER SERVICE CARD

ELECTRONIC MEDICAL RECORDS

You ARE ready for a computerized medical chart. CARE4TH® PRO will revolutionize your practice. A mature, reliable, doctor-designed program, it feels like a chart, yet is astoundingly powerful. Hundreds of your colleagues in 43 states already know this. Single/network versions, Mac/Native PowerMac, starting under \$2800!

Med4th Systems, Ltd.

1165 West Green Tree Road

Milwaukee, WI 53217

414/351-1988

Fax: 414/351-1954

Power Macintosh

Your best deal!

Power Mac 6100 ^{se} 8/500	1,576
Power Mac 6100 ^{se} 8/350/CD	1,749
Power Mac 7100 ^{se} 8/500	2,399
Power Mac 7100 ^{se} 8/700/CD	2,939
Power Mac 8100 ^{se} 8/700	2,999
Power Mac 8100 ^{se} AV16/1000/CD	3,899
Performa 630 4/250/FPU	749
Performa 630 8/250/CD	1,049
Powerbook 540C 4/320	2,799

Apple PRINTERS

StyleWriter II	199
StyleWriter Color 2400	409
PLW 320	819
PLW 360	1,099
LW PRO 16/600	1,869

Apple MONITORS

14" Plus	279
14" AV	549
15" MULTISCAN	449
17" MULTISCAN	899
20" MULTISCAN	1,849

1 800 404-9976

MACNET

CIRCLE 543 ON READER SERVICE CARD

PHONET

Compatible

New LCII	\$450
LaserWriter Pro 630	\$1,599
14" .29 Color Monitor	\$199
Powerbooks	Call



Computer Marketing Corporation
1-800-416-6338 CST
615-831-1496

We Buy Macs! • \$100,000 available

CIRCLE 412 ON READER SERVICE CARD

UNBELIEVABLE LOW PRICES

HARD DRIVES (1 YR WNTY)

CAPACITY	INTERNAL	EXTERNAL
20MB	\$40	\$60
40MB	\$55	\$98
80MB	\$65	\$135
170MB	\$125	\$165
270MB	\$159	\$199
540MB	\$225	\$265
1080MB	\$500	\$540

FLOPPY DRIVES (90 DAYS WNTY)

800K-\$80 1.44MB-\$150

30 PIN	MEMORY	73 PIN
1MB 1X8-BONS	\$34	4MB 1X12 \$134
2MB 2X8-BONS	\$74	8MB 2X32 \$275
4MB 4X8-BONS	\$129	OTHERS CALL

KAHON, INC. 1-800-938-5060

22009 OLD CANAL RD. P.O. 714-637-5060

YORBA LINDO, CA 92687 FAX 714-637-5597

CORP. SCHOOL & GOVT. P.O. WELCOME

OVER 6 YEARS IN BUSINESS

CIRCLE 444 ON READER SERVICE CARD

MEDIASTORE

Serving America's Data Storage Needs...For Less

RECORDABLE CD BLANKS

74 Minute 4X Certified

OPTICAL CARTRIDGES

128MB \$17 230MB \$21 650MB \$45 1.3GB \$53

SYQUEST CARTRIDGES

44MB \$33 88MB \$37 105MB \$50 200MB \$70 270MB \$56

TAPE CARTRIDGES

4MM/90' \$6.99 8MM/112' \$6.99

FWB 2X \$1695

800-555-5551

CIRCLE 471 ON READER SERVICE CARD

FAST CASH

For All Macs & Peripherals

TOP DOLLAR PAID

CIT Mac Traders

(800)990-0995

(310) 576-2466 Mon.-Fri. 9 AM-6 PM

Sat. 10 AM-4 PM (P.S.T.)

CIRCLE 445 ON READER SERVICE CARD

WANTED:

USED MACS!

BUY • SELL • TRADE

Top \$ Paid Via FedEx Next Day Air!

Friendly, courteous service

from the Pacific NW!

PACIFIC COMPUTER EXCHANGE

PORTLAND, OR

1-800-790-3881

FAX 503-239-8424

CIRCLE 451 ON READER SERVICE CARD

<<<<<MAC FOR LESS>>>>>

•BUY•SELL•TRADE•NEW•USED•

Mac Ili from \$549

Performa 630 CD \$899

Performa 410 4/80 \$499

Performa 466 4/240 \$599

Mac SE/30 from \$499

Performa 550 CD \$799

PowerBooks (New & Refurb) . Lowest

PowerMacs (New & Refurb) . Lowest

Quadras & Centris . Instock

Macintoshes (All Models) . Call

MP-Computers

800-445-6767 Orders only

415.988.0661 Info & International

415.968.0509 Fax

MacBYTE

SERVING MACUSERS SINCE 1989

LOW & HIGH END

CUSTOM SETUPS

CASH FOR MACS

FAX 310-317-1583

BUY • SELL • TRADE

800-432-2983

Open Monday-Saturday

22775 PCH, Malibu, CA 90265

CIRCLE 428 ON READER SERVICE CARD

Power Macintosh CPUs

6100/66 8/500	\$1659
6100/66 16/1GB	\$2395
6100/66 8/500/CD	\$1799
6100/66 AV 8/500/CD	\$2239
6100/66 16/500/CD DOS	\$2495
7100/80 8/500	\$2559
7100/80 8/700/CD	\$2839
7100/80 40/700/CD	\$4059
7100/80 AV 16/700/CD	\$3389
8100/100 8/700	CALL
8100/100 16/1GB/CD	\$3899
8100/100 72/1GB/CD	\$5899
8100/100AV 16/1GB/CD	\$4099
8100/110 16/2GB/CD	CALL

QUADRA & PERFORMA

Q950 8/500	\$3085
Q630 4/520	\$979
Performa 6115CD BUNDEL	\$2225
Performa 630CD BUNDEL	\$1559

SCANNERS

Agfa Studio Scan II LE	\$839
Agfa Argus II Plus W/Transparency Adaptor & PhotoShop	\$2549
Apple Color One Scanner	\$795
HP ScanJet IIIc Color Scanner	\$959
U-MAX UC840	\$879
U-MAX PowerLook Color	\$2889
U-MAX UC1260 9600	\$1079
MICROTEK	CALL

APPLE WORKGROUP SERVER

AWS 6150/66 16/700/CD	\$2295
AWS 8150/110 16/1GB/CD/A.S	\$4998
AWS 9150/120 16/2GB/CD	\$5488

SPECIALS

Apple 15" MultiScan	\$449
IW Select 360 w/TONER	\$1229
StyleWriter II Ref	\$129
Newton Pad 120 (1MB)	\$579

PowerBooks

PB 150 4/120 w/ClarisWorks	\$959
PB 150 8/250/Modem	\$1429
PB 520 4/160	\$1699
PB 520 4/240	\$1749
PB 520 8/240/G.V. Mercury	\$2249
PB 520c 4/160	\$1959
PB 520c 4/240	\$2195
PB 520c 12/320/Mod	\$2859
PB 540c 4/320	\$2899
PB 540c 12/500/Mod	\$3589
Duo 280c 4/320	Call
Duo 280c 12/320/M	Call
Duo Dock II 1MB V-RAM, ETHER.	\$879

MODEMS

Global Village P.P. Mercury	\$329
-----------------------------	-------



Power Macintosh

The Business Macintosh

Apple's Most Powerful Desktop Computers

High Performance PowerPC RISC Processor

Plug and Play

High Speed Ethernet

High Performance Graphics

Sub-System and MultiMedia Features, including 16-bit stereo sound



Macintosh Plus

Apple's Most Popular Desktop Computer

High Performance PowerPC RISC Processor

Plug and Play

High Speed Ethernet

High Performance Graphics

Sub-System and MultiMedia Features, including 16-bit stereo sound



Macintosh SE

Apple's Most Popular Desktop Computer

High Performance PowerPC RISC Processor

Plug and Play

High Speed Ethernet

High Performance Graphics

Sub-System and MultiMedia Features, including 16-bit stereo sound



Macintosh SE/30

Apple's Most Popular Desktop Computer

High Performance PowerPC RISC Processor

Plug and Play

High Speed Ethernet

High Performance Graphics

Sub-System and MultiMedia Features, including 16-bit stereo sound



Macintosh Plus

Apple's Most Popular Desktop Computer

High Performance PowerPC RISC Processor

Plug and Play

High Speed Ethernet

Global Village P.P. Platinum	\$359
Global Village PP Duo Mercury	\$339
Global Village Teleport Gold II	\$129
Global Village Teleport Plat.	\$255
US ROBOTICS	CALL

Monitors

Apple 14" Plus	\$298
Apple 14" AV	\$549
Apple 15" M-Scan	\$449
Apple 17" M-Scan	\$979
Apple 20" M-Scan	\$1895

SONY

SONY CPD-425 14"	\$521
SONY Multiscan 15sf	\$438
SONY 17sf	\$869
SONY 17sc	\$995
SONY 20sc	\$1885

SUPERMAC/RADIUS

SuperMatch PressView 21T	\$3099
SuperMatch 21 T XL	\$2119
SuperMatch 17T Pro	\$819
Precision Color/17"	\$979
IntelliColor 20c	\$1959
Radius TPD 20 GS	\$819
Radius TPD 21 GS	\$989

NEC

NEC XV15	\$435
NEC XV17	\$749
NEC XP17	\$1219
NEC XE21	\$1979
NEC XP21	\$2419

VIDEO BOARDS

VideoVision Studio 2.0	\$3629
Spigot Power AV	\$739
Thunder IV GX.1600	\$2759
Thunder IV GX.1360	\$2259
Thunder IV GX.1152	\$1825
Thunder /24 GT	\$1349
PrecisionColor Pro 24Xk	\$679
PrecisionColor Pro 24XP	\$259

Printers

Personal LaserWriter 300	\$598
Personal LaserWriter 330	\$859
LaserWriter Select 300 (10PPM)	\$1229
LaserWriter 16/600 PS	\$1899
Color StyleWriter 2400	\$439
StyleWriter 1200	\$279
Color StyleWriter Pro	\$459
HP DeskWriter 540	\$309
HP DeskWriter 560c	\$499
HP Color Laser	\$5985
HP DESKJET 1200C/PS	\$1599
HP Laserjet 4 MV	\$2695
HP Laserjet 5 MP	\$1089
HP Deskwriter 320	\$319
TEXAS INSTRUMENTS	CALL



ASANTE

FriendlyNet 10Base-T Media Adaptor	\$55
FriendlyNet Thk/Thn Media Adaptor	\$55
HUB, 8-Port, 10Base-T, 8-RJ45, 1-BNC	\$229
HUB, 24-Port 10Base-T, 24RJ45	\$699
Micro AsantePrint, 10Base-T	\$285
Micro AsantePrint, Thk/Thn/10BT	\$309

DAYSTAR

DAYSTAR 100 MHZ TURBO 601	\$1659
DAYSTAR 66 MHZ TURBO 601	\$959
DAYSTAR TURBO 040	\$749

Quantum

	INT	EXT
365MB Lighting, 11MS, 3.5"	\$189	\$259
540MB Lighting, 11MS, 3.5"	\$229	\$299
540MB Maverick, 11 MS, 3.5"	\$219	\$289
730MB Lighting, 11 MS, 3.5"	\$259	\$329
2.1GB Atlas, 8.6MS, 3.5"	\$949	\$999
4.2GB Atlas, 8.6MS, 3.5"	\$1529	\$1599
340MB Daytona, 17MS, 2.5"	\$289	
514MB Daytona, 17MS, 2.5"	\$399	

Seagate

	INT	EXT
2.5GB Barracuda	\$1029	\$1098
4.3GB Barracuda	\$1489	\$1559
9.1GB Elite 9		\$3059

MEMORY SIMMS

All MACBASE memory simms carry life-time warranty. Please call for the most updated prices.	
PB 500 4/8/16/32 MB	CALL
POWERMAC 4/8/16/32 MB	CALL
QUADRA 4/8/16/32	CALL

EZQUEST

SyQuest 88MB Ext. kit	\$389
SyQuest 200MB Ext. kit	\$489
SyQuest 270MB Ext. kit	\$479
Cartridge 88/200/270 MB	\$49/\$78/\$72
HP DAT DDSII 8GB SCSI EXT.	\$1259

EPSON

EPSON ES-1200 Pro Mac	\$1249
EPSON Styles color inkjet	\$529

Custom Configuration & Business Leasing Available

MacBase USA (800) 951-1230

INTERNATIONAL (310) 498-1230, FAX (310) 498-0032

DEALERS INQUIRY WELCOME. RETURNED PRODUCTS ARE SUBJECT TO A RESTOCKING FEE. PRICES REFLECT C.O.D. ORDERS & SUBJECT TO CHANGE W/O NOTICE.

FOLLOW THE LEADERS.

MARTIN MARIETTA • SEGA • AMERICAN TOURISTER •
TURNER BROADCASTING • OLAN MILLS PHOTOGRAPHY •
GENERAL FOODS • PUBLICATIONS INTERNATIONAL LIMITED •
SOFTARC • MITSUBISHI • MOTOROLA • ELLE MAGAZINE

JOIN THESE INDUSTRY LEADERS IN PURCHASING YOUR COMPUTERS, SOFTWARE
AND PERIPHERALS FROM THE LEADER IN THE COMPUTER INDUSTRY — CDG.

WE CARRY MORE THAN 27,000 PRODUCTS FOR THE MAC AND PC



Expand Your Desktop

ArtMedia monitors are the best bargain in screen real estate today! The 20-inch ArtMedia monitor (above) features a flat Sony Trinitron® tube with a .31mm pitch, has a top resolution of 1600x1200, and costs just **\$1799!**

Artmedia's 17-inch monitors (right) have flat Sony Trinitron® tubes and a .25mm pitch. 1280x1024 resolution, **\$729**; 1600x1200, **\$949**.

The 15-inch model (right) also has a flat Sony Trinitron® tube, a .25mm pitch and a 1280x1024 resolution, for just **\$449**.

All ArtMedia monitors have a one year warranty extendable to three for only \$30.



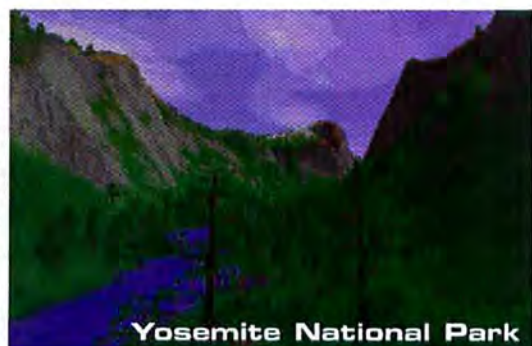
Expand Your System

CDG has everything you need to build your dream system. Our trained sales consultants understand your needs and can put together just the right computer, software and accessories from names such as Apple, IBM, Hewlett-Packard, Texas Instruments, Toshiba, Digital Equipment, Radius, NEC and hundreds more. Add to that our own quality GatorByte™ peripherals, from CD-ROMs to optical and SyQuest drives.



Expand Your Horizons

VistaPro from Virtual Reality Laboratories, Inc. lets you create — and fly through! — beautifully rendered landscapes. Choose from dozens of real locations or make your own, from Earth-like vistas to surreal alien worlds. Just **\$69.99** from CDG.



800-741-6227

Local/Int'l: 813-489-4338 • FAX: 813-489-4694

CDG Systems, Inc.

6225 Presidential Court, Suite F
Fort Myers, Florida 33919

Call For
Your Free
DIGITALVisions
Catalog!



Authorized Distributor



All prices are subject to change.

Internet E-mail: cdgsys@gate.net • AppleLink: cdg.sys • Visit our Web page at www.cyberstreet.com/cdg/cdg.htm

CIRCLE 416 ON READER SERVICE CARD

COMPUTER GRAPHIC & NETWORKING

We custom configure and test your system. Specialized in Pre-Press, Publishing, Digital Video products. WE BUY • SELL • TRADE Competitive Leading Rates are Available FREE MOUSE PAD WITH EVERY ORDER

PowerMacs	Powerbooks	Upgrades	Printers	Hi-End	VideoCard
8100 110/16-2GB \$5199 8100 100/40-2GB 4769 8100 AV 24-700 3880 8100 40-1GB CALL 8100 80/100/110 8-0 CALL 7100 40-1GB 3725 7100 16-700-CD 3065 7100 16-700- AV 3195 7100 8-0 CALL 6100 16-500-CD 2089 6100 24-500-Dos Card CALL 6100 8-0 CALL	540c 20-815 \$3995 540c 12-320 3145 540c 36-540 CALL 520c 12-340 2449 520c 20-540 2895 520 8-320 1940 520 8-160 1755 Demo Powerbooks 180 8-160 Call 145 - 170 -160-165c CALL 170 4-160 1085 Duo 230/250/270 CALL Custom Configuration are available	Q/Cirs 650 to 7100/80 \$1599 Quadr 840 to 8100/100 1940 Q840/800 to 8100/110 2295 Mac II Ci to 7100 1425 Q/Cirs 660AV to 7100 CALL Quadr 950 to 9150 899 Quadr 610 to 6100/66 875 PB 180 to 520c 799 PB 180C TO 540C CALL All PowerBook Upgrade CALL Si-LCII-Q700 to Power PC CALL Call for DEMO units & Upgrades	Select 360 1099 Personal 300 395 HP L.J. 4 or 5 M CALL ProB10 20PM 2435 Call for NewGen - QMS Demo Macs 8100/80 8-500 2445 Q950 16-500 2550 Q840 1890 Call for add'l Demo units Server 3150 (4 Nubus) 2190 Q650/660AV/CI CALL	Power Mac 8100 /100 40MB RAM - 2GB HD 20" Monitor Extended Keyboard \$6690 Power Mac 7100/80 40MB RAM - 1GB HD-2Vram 17" Monitor Ext Keyboard Mouse Pad \$4890 Performa All Preforms are available Call for latest prices 6115 \$2445	Video Vision Studio 2.0 \$CALL Prec. Color Pro 24X 699 Thunder II GX 1600 Demo 999 Thunder IV GX 1600/1360 CALL Call for: SuperMac-RasterOp We Pay Top \$\$\$ For Your Mac & TRADE YOUR MAC FOR NEW ONE Prices are subject to change.

TEL: 310-441-4771 10922 Pico Blvd. Los Angeles, CA 90064 Fax: 310-441-4770

CIRCLE 432 ON READER SERVICE CARD

MAC CITY COMPUTERS

QUALITY SERVICE AND VALUE SINCE 1987
NO SALES TAX OUTSIDE CALIFORNIA
WE GUARANTEE LOWEST PRICES
Prices are Subject to change without notice!

INTERNATIONAL ORDERS
VISA & MC AMERICAN EXPRESS
C.O.D. Welcome

SALES (800) 505-8991
Tel: (818) 505-8991
Fax: (818) 505-8992
11026 Ventura Blvd STUDIO CITY, CA 91604

POWER MAC	
8100/100 16-1G CD 3999 8-700 3199	8100/110 16-2G CALL 144-2G
7100/80 8-700 CD 2799 40-500 3550	7100/80 AV 16-700 CD 3299 48-2G Call
6100/66 8-350 CD 1799 8-350 1579	6100CD/66DOS 16-500CD 2439 8-250 CD Call
8100/100 AV 8100/100 8100/80 8-0 / 16-500 CD 7100/66AV 16-500 CD 7100/66 8-0 / 16-500 CD 6100/60 8-0 / 8-250	16-1G CD 4199 8-0 2999 Call Call Call Call

Powerbook	
540C 4-320 2849 20-500 3179 20-500 3649	8-160 NEW 12-320 LOW 4-160 PRICE
150 4-120 979 Duo 280c 4/320 2999 Duo 280/270c Call G.V. Mercury FAX 315 4MB RAM 169 8MB RAM 329 16MB RAM 599 32MB RAM Call Call for lowest prices	

Mac Performa	
Per 475 979 Per 630cd Call Per 635cdv 1899 Per 6115 2340	
Quadra	
Q630 4-250 959 Q605 4-160 w/soft Call Q650/Q610/Q950 Call	
HARD DRIVES	
CONNER 2.1g 799 CONNER 1g 469 QUANTUM 700 299 QUANTUM 540 239 QUANTUM 350 189 QUANTUM 170 129 160mb /PB 149 340mb /PB 119 Apple 300i cd int 319 Apple 300i cd ext 249 apple cd multi kit 299	

Monitor	
Apple 14" PLUS 269 Apple 15" 465 Apple 17" Multi 949 Apple 20" Multi 1899 SONY Sony 1781i 879 Sony 17i 439 Sony 154i 379 Sony 20SE 1795 RADIUS Rad prec 21" flar 1969 Rad 20c 20" 799 Nec 3v 15" 469 Nec xp17 1229 Nec xp17 Call Nec xp21 2029 SUPERMAC Sup 17T 849 Sup 21TXXL 2099 Thunder IIgx 1360 2239 244k 739	
Printer	
Pro 630 1799 Pro 16000 Call Select 360 1249 Select 320 859 Stylwriter II 189 Color 2400 439 Stylwriter color pro 569 HP HP 4ML 1279 HP 4MP 1899 HP 4MPlus 2719 HP Deskwriter 560c 489 HP Deskwriter 540 294 HP D.W 320 304	
Scanners	
Microtek 35T 959 Microtek 11hr 999 Microtek lisp 769 Umax UC40 669 Umax UC 1200SE 2486 AGFA Arcus II 2892	

WE SELL ONLY BRAND NEW PRODUCTS

CIRCLE 442 ON READER SERVICE CARD

Power Mac Tsunami & TFI Call 8100/110 16-2GB w.CD 4899 8100/110 16-0 3795 8100/100 8-700 2695 8100/100 16-700 w.CD 3395 8100/100AV 16-1GB w.CD 3895 8100/80 8-1GB 2695 8100/80 16-1GB w.CD 3195 7100/80 8-700 2495 7100/80 16-700 w.CD 2895 7100/80AV 16-700 w.CD 3195 7100/66 8-700 w.CD 2095 7100/66AV 16-700 w.CD 2695 6100/66 8-500 1619 6100/66 16-500 w.Dos Card 2549	Performa 475 4-250 Lowest Price Call 630 4-250 w. FPU 895 630 8-250 w.CD 1229 638 8-350V/TV/CD 2229 6115 CD 8-350/CD Call 550 CD 5-160/CD 895 575 CD 5-250/CD 1029	POWERBOOKS 540C 4-320 Call 540C 12-320 Fax/Modem 3395 540C 12-500 Fax/Modem 3895 520C 4-240 1995 520 4-240 1549 150 4-120 895 270C/280/280C Call 514/810MB F. PB. 360/549	WACOM Tablets New Line of Tablets with Erasing UltraPen In Stock! Call for the best price! ArtPad II 4X5 w/Dabber 165 ArtZ II 6X8 329 ArtZ II 12x12 449 ArtZ II 12x18 699 ArtZ II 12x18 Electro 799 UltraPen w-pencil/Ink 99 SGI Kit for the above 150 Quantum Hard Drives SCSI 2.5" & 3.5" in stock. Fireball 1.08GB SCSI 425	radius SUPERMAC VideoVision Studio 2.0 Call Thunder IV GX 1600 2499 Thunder 24 V3.0 499 SuperMatch 20" C+ 799 LeMans GT 799 Precision Color Pro 24X 499 Precision 24XK/XP 259/199 Precision Color 21" 1499 Pivot 15" Color 350 SuperMatch 17T 17" 749 IntelliColor 20e 1849 PressView 21T 2999 E Machine E-20 599 Studio Array 4GB Upgrade 2499	Printers & Scanners Apple Pro 810 800dpi 2495 Apple 16/600 PS 600dpi 1945 Apple Select 110/360 499/1129 HP LaserJet 4M 1269* New HP LaserJet 5MP 1049 D.W. 560C/540 459/289 New D.Writer 660C 499 HP DeskJet 1200C PS 1599 HP ScanJet IIIc 929 Kodak 450GJ Digital 395 Digital SprintScan 35 1899
---	--	--	---	--	---

SOFTWARE
 Adobe Illustrator 5.5 325
 Adobe Photoshop 3.0i 479
 Aldus Pagemaker 5.0a 399
 Microsoft Office 4.2 350
 QuarkXpress 3.3 645
 Other Software Call

TRUEVISION TARGA 2000
 Video Capture & playback
 card from Truevision
 delivers the highest quality
 video available
 in a desktop
 system. **\$4099**

COMPU.D
 Internet Address: 74673 1503@COMPUSERVE.COM
 Dealers (818) 780-9457
 Export (818) 787-0816

Dealers & Resellers
 Call for complete product list & volume discounts.
FAX Back (818) 787-4548
IBM TOSHIBA COMPAQ

* All prices reflect cash order only & are subject to change without notice.

CIRCLE 434 ON READER SERVICE CARD

DATA MICRO COMPUTER Dealers & International Sales Welcome! 800-345-1234 TEL: (310) 398-3300 FAX: (310) 391-2488 3847 Grand View Blvd. Los Angeles, CA 90066 -Dealers & consultants call for best current prices! -We will meet or beat your best prices! -Next & same day shipping available! -Visa & Mastercard accepted. -All prices are 5%+rest *Verified! -No sales tax for outside of California orders. *Prices subject to change without notice!	PowerPC 6100/66 8/350 1577 8/350CD 1777 16/500DOS 2426 16/500CD 2195 16/1g/cd 2325 7100/80 8/350 2497 8/700CD 2797 32/700CD 3597 32/200CD 4277 AV16/500CD 3297 8100/100 8/700 3149 16/1G/cd 3849 40/2G/cd 5095 72/4G/cd 7070 AV16/1G/cd 4140 AV40/2G/cd 5540 11/16/2G/cd 5550	QUADRA'S 605 4/160 749 605 8/160 915 630 4/500 995 610 8/230 CALL 930/8/230 2895 930/72/1G/cd 3475 930 1364G/cd 7850 Duo Dock II CALL	PowerBook's 150 4/120 995 520 4/160 1595 520c 4/160 1095 520c 12/320M 2095 540c 4/320 2097 540c 12/320M 3597 540c 12/500M 3697 Duo Dock II CALL	PRINTERS StylWriter II 109 StylWriter color 2400 485 Pro 630 1795 Select 360 1095 GCU WriteMove II Portable Printer \$185 * Smaller than HP 320* 2642/4/CD SuperMac 20" Trinitron, Extended Keyboard, Fax modem Package Price: 8100/100 \$12,658. 8100/110 \$13,729. Lease Per Month \$324. \$351.	HP HEWLETT PACKARD LaserJet 4M 1265 LaserJet 4M Plus 1895 LaserJet 4MV 2695 LaserJet 4MV/220v 2795 Laser 5MP 1085 Deskwriter 560c 485 LaserJet 5MP 1079 2642/4/CD SuperMac 20" Trinitron, Extended Keyboard, Fax modem Package Price: 8100/100 \$12,658. 8100/110 \$13,729. Lease Per Month \$324. \$351.	UMAX Vista 56Pro 747 Vista 58Pro 835 Vista 58Pro 1045 Vista 7600 1045 PowerLook 2005 Microtek ScanMaker IIR 987 ScanMaker IIR 987 ScanMaker IIR 987 17T Trinitron 697 17XL Color 677 21" Color 995 20TXXL Color 1495 Pressview 21" 3027 Thunder 24GT 1297 Thunder 4cx1152 1877 Thunder 4cx1360 2247 Thunder 4cx1600 2777 Thunder IIgx cards CALL	radius Precision 17" 978 Intelicolor 20E 1849 Video Vision Studio 3577 Video Vision Pro 3577 Media 100 CALL radius Telecast Please call! FARGO Primera Pro Color 1295 Pictura 310 3395 Post Script Option 345 AGFA Studio-Scan II 795 Arcus Plus II 2495 Agfa Horizon 16775 PixelCraft Prolmagor 4000 2127 Prolmagor 7000 7745 Prolmagor 8000 8995 17" MultiScan \$ 585.
---	--	--	--	---	--	--	---

CIRCLE 464 ON READER SERVICE CARD

TEL : 818-901-6250

All units are bench tested before shipping.
Call us for custom configuration
& many other items not listed.

MONITORS

Apple MultiScan 15" Display..... \$395
MultiScan 17" /20".....\$895-1895
Radius PressView 21T/21TXL.....\$2995-1975
PrecisionColor 17"/Intelli20e.....\$995-1995
NEC Multi XE21/ XP17/ XE15.....\$2040-1294-567
Sony Multiscan 15SF/17SF/20SE\$449-899-1869

Radius VIDEO CARDS SuperMac
Spigot Power AV/PrecisionC. 24XK.....\$747-719
Video Vision Studio v2/ P/Color 24X.....\$3255-898
Stage 2 Rocket/ Thunder 24GT.....\$1699-1345
Thunder IVGX 1152/1360.....\$1899-2259
Thunder IVGX 1600.....\$2795
◆ **Powershop** image accelerator.....\$3225

PRINTERS

Apple Stylw C2400/ Color Pro.....\$453-594
Select 360/ 16/600ps.....\$1289-2225
HP 5MP/ 4MV/ 1200 C/PS.....\$1075-2746-1593
Kodak 450GL Digital C./ ColorEase.....\$1835-5349
GCC Select Press 600Pro/ 1200.....\$4685-5895
We also carry NewGen,Fargo,Texas Instrument.

• Due to publication time advertised prices may vary. All prices includes cash discount.
• All products carry one year minimum manufacturer's warranty on parts and labor.
• Non-Defective Returns or Shipped Orders may be subject to 15% Restocking fee.
• All Returns must have an authorization Number (RMA).
• Shipping and service fees are non-refundable.
• No Sales Tax Except in CA. Business hours are 8am to 6pm Mon-Fri.

MACMAN

COMPUTER WAREHOUSE

POWERMAC 8100
8100/110 24MB/2GIGHD/CD.....\$5795
8100/110 40MB/2.4GIGHD/CD.....\$6349
8100/100 16MB/700MBHD/CD \$4595
17" Color Monitor&Apple Ext. KyBd
8100/100 40MB/2GIG HD/CD.....\$4995
8100/100AV 16MB/1GIG HD/CD.....\$4090

POWERMAC 7100/6100
7100/80 40MB/1GIG HD/CD \$4595
Apple 15" Monitor&Apple Ext. KyBd
7100/80 16MB/500HD.....\$2855
7100/80 AV 32MB/700HD/CD.....\$3995
6100/66 24MB/500MB HD/CD \$3050
Apple 15" Monitor&Apple Ext. KyBd

POWERBOOK
150 4/120 or 8/120 with 14.4 fax/mod.....\$985-1395
520C 4/160 or 12/500w/modem.....\$1995-2895
540C 20MB RAM/500MB HD \$3795
Global Mercury 19.2 F.M w/Carring Case
Duo 280C 4/320-12/320w/modem.....\$3095-3719
Call for the updated price on any configuration!

To Order Call Toll Free
800-931-2001

FAX : 818-901-6260

Wholesale Prices To Public!
Networking, Service & Repair Available
Fax Your Order 24 Hours A Day!

6100/66 16MB/500MB HD/CD/DOS \$2995
Apple 15" Monitor&Apple Ext. KyBd
6100/66 8MB/500MB HD/CD \$2199
Apple 14"+ Monitor & Ext. KyBd

OPTICAL/STORAGE
PinnacleMicro Sierra 1.3-Tahoe 230.\$2090-825
PinnacalMicro RCD 1000.....\$1495

DRIVE	CAPACITY	SPEED	INT	EXT
Conner	1080MB	11ms	\$479	\$549
Quantum	2GB Atlas	8.6ms	\$875	\$955
Seagate	2.4GB Barracuda	8ms	\$955	\$999
	4.2GB Barracuda	8ms	\$1295	\$1395
Lowest Prices on Memory!!! Call Now!				
8MB 72pin 70ns/60ns.....			\$297	\$309
16MB 72pin 70ns/60ns.....			\$497	\$499
32MB 72pin 70ns/60ns.....			\$999	\$1010

SCANNERS
Kodak RFS 2035 Plus Film Scanner.....\$6735
Arcus II Plus w/Trans.....\$2475
AGFA StudioScanII/wTrans.....\$1195
Nikon Scantouch 1200/ CoolScan.....\$1095-1185
Epson Actionscanning/ ES-1200C...\$Call-1249
We also carry Umax/Microtek/HewlettPackard.

MACMAN International Orders welcome
COMPUTER WAREHOUSE
16116 Sherman Way
Van Nuys, CA 91406
Tel:818-901-6250 FAX:818-901-6260

CIRCLE 455 ON READER SERVICE CARD



TEL. (818) 719-9200
FAX. (818) 719-9115
PROFESSIONAL INC.
MAC PROFESSIONAL INC.
• No Tax Outside CA. • Dealers & International Orders Welcome •
6430 Variel Ave. #105, Woodland Hills, CA 91367 • 1YR. Warranty

POWER BOOKS			PRINTERS		
540c	12/320	3333	CLR STYLEWTR PRO	475	
540c	20/320	3555	STYLEWTR 1200	255	
540c	12/500	3555	STYLEWTR II	219	
540c	20/500	3777	LASER SELECT 360	1150	
540c	20/800	3999	LASER 16/600 PRO	2125	
540c	36/800	4555	HP 5MP	1085	
520	8/240	1945	HP 4MV	2727	
520	12/320	2195	HP 1200 CPS	1595	
520c	8/240	2395	GCC 608	2450	
520c	12/320	2650	GCC 808	2935	
520c	20/500	3075	GCC 1208	3835	
540	12/240	2395	FARGO PICTURA 310	3555	
540	8/320	2395	FARGO PR PRO	1375	
540	20/500	2995	TI	CALL	
QUADRAS			EPSON STYL PRO XL NEW	CALL	
			EPSON COL STYLUS	495	
			CITIZEN NOTEBK II COL	225	
605/630/950	CALL		STAR COL PRINTER	195	

POWER MACS

	8 / 0	8 / 500	16 / 700	24 / 1000	40 / 2.0 GB	72 / 2.4 GB	136 / 4.0 GB
6100 / 66	1475	1675	1995	2495	3395	4295	—
6100 / dos	—	—	2444	2895	—	4995	—
7100 / 80	2350	2495	2844	3344	4195	5150	7650
7100 / 80AV	2750	2895	3195	3695	4495	5555	7495
8100 / 100	2975	3150	3444	4295	4844	5644	8344
8100 / 100AV	3295	3495	3744	4244	4994	6150	8644
8100 / 110	4250	4444	4695	4950	5950	6950	9750

• APPLE CD 300 I PLUS ADD \$240 • QUAD SPEED APPLE CD ADD \$325 • 1 MB V RAM ADD \$75 • 2 MB V RAM ADD \$150 •
PRICES ARE C.O.D. AND ARE SUBJECT TO CHANGE WITHOUT NOTICE
• NEXT DAY AIR AVAILABLE • VISA MASTERCARD AMEX ACCEPTED

SCANNERS		PERFORMA		APPLE MONITORS		RADIUS	
PIXEL CRAFT 4000	2125	630 / 635	1535	FULL PAGE	339	PIVOT 17"	CALL
PIXEL CRAFT 7000	7995	637 / 638	CALL	15" MONITOR	474	PRECI 17"	987
PIXEL CRAFT 8000	9995	6112 / 6115	CALL	17" MONITOR	978	INTELI 20"	1929
AGFA ARCUS II	2575			20" MONITOR	1877		
AGFA STUDIO SCAN II	825						
SYQUEST		PINNACLE MICRO		SONY		SUPERMAC	
200 / 270 MB	495	OPTICAL TAHOE 230	777	1425	320	17T	777
EZ-DRIVE	209	OPTICAL SIERRA 1.3	2095	17SF	899	17XL	795
88 / 44	389	RECOD. RCD 1000	1647	17SE	1075	20PLUS	1495
				20SE	1895	21TXL	2095
						PRESSVIEW 21T	2998

• WE SPECIALIZE IN CUSTOM MADE CONFIGURATIONS • SINCE 1988 • BUSINESS LEASING AVAILABLE •

CIRCLE 495 ON READER SERVICE CARD



We Carry New Products Only!

Ask for free CD Title with complete system

PowerMac 8100, 110MHz, PowerPC 601 RISC Processor

136MB Memory/4GB Seagate Barracuda SCSI II Dr./Apple CD Plus \$10099-**C83902**

72MB/2GB/Apple CD Plus/4MB Vram/Supercard 21TXL Monitor 9399-**C57167**

(AV)/40MB Memory/2GB HD/Apple CD Plus 6779-**C72222**

PowerMac 8100, 100MHz, PowerPC 601 RISC Processor

40/4GB Seagate Barracuda SCSI II Dr./4mb vram/20" monitor/Keyboard 7499-**C06205**

AV/40MB/1GB/CD 4999-**C04910**

24/700MB/CD 3999-**C12261**

40/2GB/CD 4899-**C37566**

72/4GB/CD 6699-**C20016**

PowerMac 7100, 80MHz, PowerPC 601 RISC Processor

24/2GB/2vram/17" Monitor/AppleCD/Extended keyboard 5099-**C46829**

(AV)/16MB/700/CD 3395-**C21453**

72/2GB/CD 5499-**C69377**

24/700MB/CD 3399-**C50420**

16/700MB/CD 3199-**C85658**

PowerMac 6100, 66MHz

Package Deal 2895-**C55263**

16/500MB/CD/17" ColorMonitor/Keyboard 2099-**C68667**

16/500/14" Mnt/CD/kybrd 2479-**C78770**

24/730/15" Mnt/CD/kybrd 3019-**C04533**

24/1GB/15" Mnt/CD/kybrd 3259-**C14513**

24/500MB/Dos Card/CD 2855-**C18099**

APPLE POWERBOOKS

Ask for your free MS word 5.1 with purchase of every PowerBook

PowerBooks 150

8/120/19.2 Fax/Modem 1469-**C81453**

8/240/19.2 Fax/Modem 1699-**C20283**

12/240/28.8 Fax/Modem 1789-**C79929**

PowerBooks 520C, 25 Mhz, 68LC040

8/240/19.2 Fax/Modem 2679-**C59839**

12/320/19.2 Fax/Modem 2959-**C59839**

20/500/19.2 Fax/Modem 3419-**C23875**

PowerBooks 520, 25 Mhz, 68LC040

8/160/19.2 Fax/Modem 2059-**C13245**

12/240/19.2 Fax/Modem 2477-**C46808**

20/320/19.2 Fax/Modem 2849-**C74124**

PowerBooks 540C 33 Mhz, 68040

8/320/19.2 Fax/Modem CALL-**C74703**

20/500/19.2 Fax/Modem CALL-**C35769**

36/500/19.2 Fax/Modem CALL-**C95588**

Apple Printers

Personal 320 895-**P21014**

Select 360 1199-**P37078**

LaserWriter 16/60Ops 2298-**P39170**

StyleWriter II 219-**P48885**

Color StyleWriter 2400 449-**P19480**

StyleWriter 1200 259-**P75790**

Color StyleWriter Pro 595-**P48439**

Apple Monitors

14" Color Plus 298-**M23703**

Multiple Scan 15" 479-**M15537**

Adapter/ non PowerMac 39-**M02861**

Multiple Scan 17" 944-**M86587**

Multiple Scan 20" 1979-**M74539**

UMAX® Scanner

Adapter/Feeder 489-**S65227**

PowerLook w/transpa 2799-**S90799**

UC1260/Photoshop 899-**S58789**

UC1260/Photoshop LE 799-**S96257**

Vista S8/Photoshop 875-**S02708**

Vista S8/Photoshop LE 775-**S21456**

Vista T630/Color It & OCR 529-**S13162**

Vista T630/Color It & OCR 489-**S74608**

Vista S8/Photoshop 729-**S81011**

Vista S8/Photoshop LE 644-**S55512**

Gemini GD16 Pro 1499-**S07481**

Gemini GD16 LE 1399-**S93551**

NEC Monitor

14 MultiSync XV14 335-**M72189**

15 MultiSync XV15 439-**M76261**

15 MultiSync XP15 649-**M91206**

15 MultiSync XE15 549-**M89941**

17 MultiSync XV17 759-**M15132**

17 MultiSync XP17 1229-**M73738**

17 MultiSync XE17 999-**M59284**

21 MultiSync XP21 2439-**M99406**

21 MultiSync XE21 1979-**M20912**

TO ORDER CALL 800-223-4622

Apple External CD ROM (DoubleSpeed) ... \$219-**H42488**
While supplies last

LOW RATE BUSINESS LEASING IS AVAILABLE

Hours: Mon-Fri, 7AM to 6PM

Value Business Leasing

FMV 36MONTH 60MONTH

\$1000 \$34/Month \$24/Month

\$2000 \$67/Month \$47/Month

\$3000 \$100/Month \$71/Month

\$4000 \$130/Month \$90/Month

\$5000 \$162/Month \$113/Month

\$6000 \$195/Month \$135/Month

\$7000 \$227/Month \$158/Month

\$8000 \$260/Month \$180/Month

\$9000 \$292/Month \$203/Month

\$10,000 \$325/Month \$226/Month

\$11,000 \$349/Month \$243/Month

\$12,000 \$381/Month \$265/Month

\$13,000 \$413/Month \$287/Month

MICROTEK Scanner

Bit/PhotoShop Through Emulation

III/PhotoShop 2369-**S07423**

Transparency Adapter 139-**S94917**

IIS/PhotoShop 879-**S28000**

IIS/PhotoShop LE 529-**S13521**

II HR W/PhotoShop 459-**S23421**

II HR W/PhotoShop LE 999-**S24681**

II HR W/PhotoShop LE 819-**S86541**

IIG 328-**S03003**

Slide Scanner 35T 939-**S42546**

Slide Scanner 45T 5299-**S57771**

Automatic Document Feeder 388-**S36933**

Transparency Adapter, IIXE, IIS, IISX

II, IIHR 509-**S57910**

radius Monitors

Portrait 15" Pivot (832x624) 566-**R00703**

Precision 17" Flat 979-**M94302**

Precision20e 1855-**M13305**

2 page 21GS 1099-**M69343**

Press View 21T 2969-**M01101**

SuperMatch 21TXL 2095-**M16419**

SuperMatch 17T PRO 888-**M55977**

SuperMatch 20Plus 1454-**M07914**

Press View 17T CALL-**M09866**

PhotoEngine 839-**V40628**

Precision Color Pro 24XK 999-**V18929**

Precision Color 24XP 279-**V79121**

Precision Color 24XK 769-**V16817**

Precision Color 24X Pro 999-**V35026**

Spectrum power 1152 495-**V57166**

SpectrumSeries V 24 Bit 655-**V12831**

Thunder IVGX 1152 1859-**V20748**

Thunder IVGX 1360 2249-**V87212**

Thunder IVGX 1600 2779-**V25538**

Thunder 24 GT 1289-**V76376**

Sony Monitor

17SF 889-**M46189**

WE HAVE THE BEST PRICES ON MEMORY ANYWHERE

MAC 72 PIN SIMMS

4K Refresh (CENTRIS, QUARDA)

4MB 32bit 72pin 70ns 149-**S69507**

4MB 32bit 72pin 60ns 159-**S10600**

8MB 32bit 72pin 70ns 289-**S08858**

8MB 32bit 72pin 60ns 299-**S07685**

16MB 32bit 72pin 70ns 459-**S44472**

16MB 32bit 72pin 60ns 469-**S64220**

32MB 32bit 72pin 70ns 955-**S27040**

32MB 32bit 72pin 60ns 959-**S49942**

2K Refresh (POWERMAC)

4MB 32bit 72pin 70ns 149-**S06893**

4MB 32bit 72pin 60ns 159-**S41479**

8MB 32bit 72pin 70ns 289-**S58982**

8MB 32bit 72pin 60ns 309-**S56288**

16MB 32bit 72pin 70ns 499-**S42853**

16MB 32bit 72pin 60ns 519-**S92196**

32MB 32bit 72pin 70ns 995-**S26023**

32MB 32bit 72pin 60ns 1025-**S62045**

STANDARD 30 PIN MEMORY

1MB 8bit 30pin 70ns 39-**S78812**

4MB 8bit 30pin 70ns 149-**S35895**

16MB 8bit 30pin 70ns 533-**S51851**

16MB RADIUS ROCKET 559-**S83534**

PowerBook 500 Series

4MB RAM Module 169-**S10689**

8MB RAM Module 332-**S23995**

16MB RAM Module 599-**S68882**

32MB RAM Module 1199-**S42291**

PowerBook 150

4MB 169-**R23374**

6MB 249-**R24299**

8MB 319-**R27024**

SCSI Hard Drives

WE HAVE THE BEST PRICES ON HARD DRIVES ANYWHERE

Every item is double-checked for quality assurance

Quantum

Daytona PowerBook Drive (2.5")

Capacity Access Internal

341MB 17ms 319-**H94789**

514MB 17ms 419-**H40937**

Quantum 3 1/2 inch Lighting (Low Profile)

Capacity Access External

730MB 11ms 329-**H16961**

Quantum 3 1/2 inch Empire (Low Profile)

Capacity Access External

1080MB 9.5ms 629-**H26053**

2100MB 9.5ms 929-**H78749**

Quantum 3 1/2 inch Atlas (Half Height)

Capacity Access External

2100MB 9.5ms 949-**H46704**

We carry both Internal and External drives

External Drives come with SCSI Cable & Terminator

SILICON EXPRESS

Silicon Express IV 855-**U18111**

DAT DRIVES

EXABYTE Tape Drives

8205, 2-GB, 263kb/s, 8mm 1366-**T38128**

8505XL, 7-17GB, 8mm 2125-**T51178**

4200CI, 2-GB, 4mm 1049-**T75096**

Retrospect 2.1 99-**T13609**

Exabyte 4mm DAT 90/120 Meters 15/21

Exabyte 8mm DAT 112 Meters 13

SONY Tape Drives

SDT 5000M 8GB(Compression) 4mm 999-**S16110**

SDT 5200M 4GB 4mm 949-**S73533**

Retrospect 2.1 99-**T42564**

Sony 4mm 90/120 12/12

Digital Video

Radius Video Vision ProPak 7999-**D59870**

Radius Video Vision Studio 2.0 3399-**D29399**

Radius Studio Vision Studio Array 4444-**D67834**

Radius SpigotPower AV 749-**D91055**

Radius Spigot Pro AV 1249-**D89917**

Big Mac

Computers, Inc.
Division of WCN

Power Books

540C	20/500M	4295
540C	12/320M	3495
540C	36/800M	5095
520C	8/240	2495
520C	20/800M	3585
150	4/120	935
150	8/320	1835
520	8/320	1975
280C	12/320M	3695
Upgrade Card to 5000 Ser.		CALL

Quadra's

650	16/500CD	2925
950	0/0	1999
950	16/500DAT	3495
630	4/500	1050
630	20/850	1695

WorkGroup Server

6150/66	16/700.CD(W/4.1)	2787
8150/110	16/1GB.CD(W/4.1)	5150
9150/120	16/2GB.CD	5762
95	16/500.DAT	3495
80	16/1GB.DAT	3195
Apple Share 4.0		495

Performa's

6200		CALL
5115CD	8/350.CD	2195
638CD	8/350.CD.TV	1899
630CD	8/250.CD	1575
630	4/250	1250
578	8/320.CD	1650
577	5/320.CD	1495
575	5/250.CD	1399

Apple Monitors

Apple 20" Multiple Scan	1849
Apple 17" Multiple Scan	910
Apple 15" Multiple Scan	449
Apple 14" Color Plus	295

Apple Printers

Style Writer II	169
Color Style Writer 2400	450
LaserWriter 16/600	1895
LaserWriter Select 360	1150
LaserWriter Select 320	875

SONY

Sony 20SE1 w/adaptor	1869
Sony 17SF1 w/adaptor	909
Sony 15" SF w/adaptor	477
Sony 1425S, 14" Trinitron	339

Radius/SuperMac

Thunder IVGX 1600	2595
Thunder IVGX 1360	2175
Thunder IVGX 1152	1820
SuperMac 171	879
Precision Color 17	989
Intelli Color 20E	1875
SuperMac 21TXL	2050
PressView 21T	3050
Radius Vision Studio V2.0	3350
Video Vision ProPack	7895

GCC Printer

GCC SelectPress 1200	5699
GCC Elite XL1208	3599
GCC ColorFast II	5999
GCC Elite XL808	2899
GCC Elite XL608	2199

Any
Custom Config.
Available

CALL for NEW **PCI MAC's** & **PowerBook 5000 Series**

Drives

Pinnacle RCD 1000	1695
Zip Drive	199.95
Pinnacle Tahoe 230	895
SyQuest 200c w/cart	577
Radius 4GB Pro Array	4795
Apple 700MB HD	275
Apple 500MB HD	235
Apple 340MB 2.5"HD	395
Toshiba 800MB 2.5"HD	650
Apple 1GB HD	595
4GB Grand Prix	1295
2.4GB Seagate Barracuda	1050
9GB Seagate	2895

Scanners

AGFA Studio Scan II	825
AGFA Horizon	16400
AGFA Arcus Plus II	2525
AGFA ProColor Premier	CALL
Umax Color Look	2879
PixieCraft (Xerox) 4000	2095
PixieCraft (Xerox) 7000	7950
PixieCraft (Xerox) 8000	9995
ScanMaker III	2550
ScanMaker 2HR	1050
ScanMaker 2SP	810
UMax 1260 Pro	1075
UMax UC840	850
Epson 1200C	1250

POWER MAC'S

	8/0	8/700	16/1GB	24/2GB	72/4GB	136/4GB
6100/66	1420	1670	2220	2895	4420	N/A
7100/66	1690	1890	2490	3150	4840	6490
7100/80	2295	2495	3150	3795	4995	6995
7100/80AV	2595	2795	3450	4095	5295	7295
8100/80	2495	2695	3350	3995	5195	7195
8100/100	2700	3095	3695	4460	5995	7995
8100/100AV	3100	3295	3895	4660	6195	8195
8100/110	4195	4445	5025	5655	6895	8995
8100/110AV	4395	4745	5225	5855	7095	9195

APPLE CD 300I PLUS ADD \$225. • SOFTWINDOW ADD \$150. • 1MB V-RAM ADD \$75.

HP Products

DeskWriter 540	299
DeskWriter 560C	489
DeskWriter 320	299
LaserJet 4ML	989
LaserJet 4MP	1199
LaserJet 4M+	1889
LaserJet 4MV	2699
LaserJet 5MP	1049
ScanJet IICX	935
ScanJet IICX	830
HP SureStore 2000DAT	2995
4GB DAT Back-up	1295

New Arrivals

Radius Telecast	CALL
QuickTake Camera	655
ZIP Drives	199
Paper Port	349
Apple CD 600 External	325
Yamaha Speakers SS1010	299

Memory

72Pin Quadra, PowerMac, Cent.LCIII	
4/8/16/32MB 70ns	149/289/529/999
4/8/16/32MB 60ns	159/330/559/1050

Parts

8100/110 Logic board	2395
7100/80 Logic Board	1595
Quad.800/840 L.Board	1195/1595
Quad. 950/650 L.Board	1495
Generic Mouse	29
Super Floppy	199
Soft Window	100
Apple CD 300e Plus	217
Apple Ext. Keyboard II	119
Apple Std. Keyboard	69
Power Supply 8100/7100	275
PowerBook 500 Battery	120
GEO Port.	130
System 7.5 on CD	25
External Case I/CD300+	25

Demo Mac's

8100/110AV	8/0	3695
Quadra 840AV	8/230	2199
Quadra 800	8/230	1795
Quadra 950	0/0	1999
II Ci	4/80	550

Exchange Your MAC

TO 8100/110AV	7100/80
From	
800/840	\$1920 \$1490
650/950	2095 1530
900/610	2750 1795

Grolier Encyclopedia & San Diego Animal CD's \$10 ea.

Exchange any old MAC to NEW POWER MAC

10837 SANTA MONICA BLVD. LOS ANGELES, CA 90025
Tel: (310) 470-7099 • Fax: (310) 470-8099

Adult CD's

Call for FAX list

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 & limited quantity • All prices shown are C.O.D. Prices

Toll FREE: (800) 761-1999

CIRCLE 453 ON READER SERVICE CARD



Phone: 800-801-4622

Phone: 310-533-1177

Fax: 310-533-0501 / Email: Microoutlet@aol.com

C.O.D. / MasterCard / Visa / Discover
AmericanExpress

PowerMac		
POWERMAC 604s	CALL	
6100/66	8/500	\$1599
6100/66	8/500/CD	1799
6100/66	16/500/DOS	2475
6100/66	16/1GB/CD	2395
7100/80	8/500	2525
7100/80	8/700/CD	2795
7100/80	16/1GB/CD	3375
7100/80	16/2GB/CD	3795
7100/80AV	16/700/CD	3295
8100/100	8/700	3100
8100/100	16/700/CD	3595
8100/100AV	16/1GB/CD	4125
8100/110	16/2GB/CD	5295

PowerBook		
150	4/120	\$ 945
150	8/120	1115
520	4/160	1565
520	12/160	1865
520	12/160/FM	2165
520C	4/160	1965
520C	12/320	2475
520C	12/320/FM	2795
540C	4/320	2895
540C	12/320	3195
540C	12/320/FM	3525
540C	12/500/FM	3725
540C	36/500/FM	4595

Quadra		
605	4/160	\$ 679
630	4/250	945
630	8/250	1095
950	8/0	2750

Monitors		
Apple ColorPlus 14"		\$280
Apple Multiscan 15"		449
Apple Multiscan 17"		910
Apple Multiscan 20"		1925
Sony CPD15SF1 15"		449
Sony CPD17SE1 17"		859
Sony GDM17SE1 17"		1035
Sony GDM20SE1 20"		1950
NEC XV15 15"		449
NEC XE17 17"		999
ViewSonic 15ES 15"		369
ViewSonic 20PS 20"		1499
SuperMatch 21TXL		2149
Intellicolor 20(e) 20"		1899

CD Rom		
Pinnacle RCD1000		\$1565
Verbatim 74min. CD (qty. 10)		105
Apple 300iPlus		269
Apple 300ePlus		259
Apple 600e	CALL	
NEC 4X External		499
NEC 6X External		585

Hard Drives		
Apple 250MB 3.5"		\$159
Apple 350MB 3.5"		189
Quantum 540MB 3.5"		229
Apple 730MB 3.5"		239
Conner 1GB 3.5"		429
Seagate 2GBBarracuda		995
250MB External 3.5"		235
350MB External 3.5"		265
540MB External 3.5"		289
730MB External 3.5"		299
1GB External 3.5"		489
2GB Barracuda Ext.		1055
Imomega ZIP 100MB		199
ZIP 100MB 10Pack		149

Scanners		
Visioneer PaperPort		\$349
AGFA StudioScan		675
AGFA StudioScan II		825
HP Scanjet IICX		925
HP Scanjet IIC		925
UMAX Vista-T630		585
UMAX Vista-S6LE		575
UMAX UC1260		895
MicrotekScanMaker III		2479
MicrotekScanMakerISP		525
Epson 800C		759
Epson 1200C		999

Software	
Kai Power Tools & Bryce	\$ 229
Adobe Photoshop 3.0.1	549
Adobe Premier 4.0	495
MacroMedia Director 4.04	798
Pagemaker	569
Fractal Painter 3.0	295
FormZ 2.7	SPECIAL
SoftWindows 1.0 PwrMac	285
Filmaker Pro	89
Adobe Illustrator 5.5	385
QuarkExpress	689
ClariscWorks	69

Modems	
Supra Express Plus	\$ 98
Supra 144LC	135
Supra 288	225
Supra 28.8PwrBk Internal	CALL
GlobalVillage Teleport 28.8	225
GlobalVillage Teleport 19.2	269
GV Powerport 28.8	CALL
GV Powerport 19.2	315

Printers	
Apple StyleWriterII	\$199
Color StyleWriter2400	499
Color StyleWriterPro	599
ApplePortableStyleWriter	349
Apple Select 360	1099
Apple 16/600	1825
HP 5ML	CALL
HP SMP	CALL
HP LaserJet 4MV	2725

Misc.	
AppleDesign Keyboard	\$ 80
Apple Extended II Kbd	120
Mouse Systems A3 Optical	69
WacomARTZ 6x8tablet	279
RadiusVidvisionStudio	3375
Ethernet Transceivers	79

LEASE SPECIALS

LOW RATES • FAST TURNAROUND
LOW DOWN
100% TAX DEDUCTIBLE

ULTRA Design Station

PowerMac 8100/110 72/2GB/CD
SuperMatch 21TXL Monitor
Syquest 200 Meg Hard Drive
MicrotekScanMaker III
AppleDesign Keyboard

\$298.00 Per Mo.

Design Station

PowerMac 8100/100 40/1GB/CD
NEC XE17 Monitor
AppleDesign Keyboard
Syquest 200MB Drive
Photoshop • Illustrator • PageMaker

\$189.00 Per Mo.

DTP Smartlease

PowerMac 7100/80 16/700/CD
Apple Multiscan 17" Monitor
AppleDesign Keyboard
HP Scanjet IICX
Apple SelectWriter 360
Quark Express • Adobe Illustrator

\$178.00 Per Mo.

Prices quoted are cash discount prices and are subject to change without notice. Returns subject to 15% restocking charge.
2705 Pacific Coast Highway #178
Torrance, CA • 90505

CIRCLE 472 ON READER SERVICE CARD



Systems Apple Parts Apple Upgrades

Specials

SE POWER SUPPLY	129.
SE ANALOG BOARD	149.
POWERBOOK 140-180C KEYBOARD	69.
NUBUS ADAPTER-QUADRA 660AV	99.
DOS CARD FOR QUADRA 610	199.
IICX/IIC Power Supply	149.
1200 BAUD PERSONAL MODEM	29.
LC ETHERNET BOARD	49.
CRT & YOKE ASSEMBLY	49.
MAC PLUS KEYBOARD	69.
MAC PLUS MOUSE	69.
PORTABLE 2400 BAUD MODEM	49.
TOSHIBA 1X CD-ROM DRIVE	99.
APPLETALK INTERNET ROUTER	39.
APPLEDESIGN POWERED SPEAKERS	99.
PERSONAL NT LOGIC Bd.	149.
MAC PLUS POWER SUPPLY	119.

Bargains Aplenty!

MONITORS

APPLE 14" BASIC COLOR VGA	169.
APPLE PORTRAIT DISPLAY	299.
E-MACHINES E20 (NEW)	1199.
E-MACHINES T16/II TRINITRON (NEW)	799.
14" HIGH-RES TRINITRON 832x624	349.
NEW RADIUS COLOR PIVOT/LE AND CARD	699.



Jabra A/V EarPhone

Hands-free telephone communications through your Mac A/V computer and GeoPort Telecom Adapter! Voice-activated Dialer software included.

Only \$79 new

LOGIC BOARD EXCHANGES!

MAC IIX TO IIFX: \$399

40 MHz, MATH CO-PROCESSOR, WICKED-FAST!

Brand New! IIVX TO CENTRIS 650: \$499

25 MHz 68040, BUILT-IN ETHERNET

IIC TO CENTRIS 650: \$499

Price includes installation!

LCIII TO QUADRA 605: \$349

LC040 at 25MHz

CENTRIS 610 TO QUADRA 660AV: \$399

25 MHz, FLOATING POINT UNIT, ETHERNET, A/V TECHNOLOGY

QUADRA 800 TO 840AV: \$499

40 MHz 68040, A/V TECHNOLOGY, 66 MHz DSP



E-MACHINES DOUBLECOLOR SX



Accelerated 8-bit • Hardware Pan & Zoom
Virtual Screens • Monitors up to 16"

Ink refill kits available!



\$649 New

Apple® Color Printer

11x17 • 360 dpi • ColorSync color-matching • SCSI or parallel interface
64 scalable TrueType fonts
Canon BiC-820 engine

Shreve Systems

1200 Marshall St. Shreveport, Louisiana 71101
FAX 318-424-9771 • TECHNICAL SUPPORT 318-424-7987
CUSTOMER SERVICE • PURCHASING • INFO 318-424-9791

ORDERS ONLY

800-227-3971

All equipment is used or demo unless indicated "new". Refurbished equipment carries a 120-day warranty. Returns subject to a 20% restocking fee. Prices subject to change and reflect a 2% cash discount.

CIRCLE 425 ON READER SERVICE CARD

DIGITAL VIDEO/PUBLISHING WORKSTATION SPECIALISTS

WE CARRY A FULL LINE OF MAC AND PERIPHERALS

MACINTOSH SYSTEMS

8100/110 16/2G/CD	5.150	Quadra 950 8/700	2.925
8100/110 16/4G/CD	6.225	Quadra 650 8/230	1.995
8100/100 8/700	3.050	Quadra 630 4/0	775
8100/100 16/700/CD AV	3.825	Power Mac 520 4/160	1.375
8100/100 16/700/CD	3.450	Power Mac 520c 12/240/modem	2.695
7100/80 8/700/CD	2.725	Power Mac 540c 12/320/modem	3.395
7100/80 16/4G/CD	4.250	Performa 630 Bundle	1.225
7100/80AV 16/700/CD	3.250	Performa 575 4/250	858
6100/66 8/500/CD	1.775	Performa 6115 Bundle	2.199
6100/66 8/700/CD/DOS	2.395	New 603 Macs	CALL
WORKGROUP 9150 8/700	4.850	LC 6200/5200	CALL

MULTIMEDIA MASTERING

Media 100	7.875
Radius VideoVision Studio	2.875
TrueVision Targa 2000	4.075
Radius Telecast	13.450

MULTIMEDIA AUTHORIZING

Premiere 4.0	375
Strata Studio Pro	795
CoSA After Effects	1.495
Photoshop	395

HARD DRIVES

Fwb 17G Array 3ms	7.725
Micropolis 9G 1991	1.675
Seagate 4G Barricuda	1.075
1G (Seagate, IBM)	425

MEMORY!!!!!!!!!!!!

64MB 32MB	Call 875
16MB 8MB	425.295
4MB 2MB	155.78
SOJ for Wholesale	Call

VIDEO/WORKSTATIONS

8100 64/4G/CD - Targa 2000	
Premiere 4.0 - 17" Color Monitor	
Apple Ex II - CoSA After Effects	13.950
Lease Per Month	300

Advantages of doing business w/
Mac Care Incorporated?
30 Days Money Back (DSIO)
15 National Dist. Warehouses
Free UPS Grd. over \$100 orders

COMPLETE VIDEO WORKSTATIONS

FOR PROFESSIONAL FILM EDITORS ONLY!! **\$14,995**

Prices subject to change without prior notice; reflect a cash price only.
International Orders: Mac Care Inc. (Canada) Program & Benefits

CIRCLE 405 ON READER SERVICE CARD

ADVANCED MAC SYSTEMS

International Orders Welcome

Best Service guaranteed. TEL: (310) 314-7372

New Products. FAX: (310) 314-7512

Prices are subject to change without notice

Orders: **800.847.4622**

FWB	Power Mac	CUSTOM Configure!	PowerBook	NEC
6100 8/500MB	1599	520 8/240/Modem	2299	
6100 16/500-CD	2229	520C 8/240/Modem	2749	
6100 AV 16/500-CD	2669	540C 12/320/Modem	3549	
6100 16/500/CD/DOS	2449	540C 20/540/Modem	4499	
7100 8/700/CD	2849	280C 12/320/Modem	3799	
7100 40/700/CD	4429	150 8/120MB	1229	
7100 AV 16/700/CD	3349			
8100 AV 16/1GB/CD	4189			
8100 16/700/CD	3769			
8100 40/1GB/CD	4599			
8100 72/2GB/CD	6539			
8100/110 16/2GB/CD	5679			
LC 5200, 580, 630DOS				

AGFA

CALL

CALL For Radius Products

Sony

Monitors	Scanners	Video Boards
SuperMatch 21TXL...1899	AGFA Arcus II...2449	Lemans GT NuBus 24bit...849
Sony 17SE1Multi...969	AGFA StudioScan...859	Precision Color 24XK...699
Sony 17S1 Multi...859	AGFA Horizon Plus...14969	Precision Color 24XP...279
Sony 15" Multiscan...439	Spectrum Scan III...1889	OMEGA 100MB ZIP Drive...\$189
Apple 15" Multiscan...469	HP Scanjet IIC...949	
Apple 16" RGB...729	UMAX UC1260...1049	
Apple 17" Multiscan...949		
ViewSonic 17G...779		
ViewSonic 20G...1399		

CIRCLE 470 ON READER SERVICE CARD

Complete Computer Packages • Monitors • Memory • Storage • Peripherals • Printers, and More!

You Want to Go Places, We'll Help You Get There.

On the network, in your workplace, or at home, Computer Pros offers you the best deals on all the latest computer equipment. Competitive prices, selection and service for your laptop, notebook, desktop, and peripherals. Call us for the latest prices, and take advantage of our frequent flier bonus miles program.→

✓ CPU's: Build Your Own Configuration

POWER MACINTOSH

Power PC 6100/66 8/0	\$1495. ⁰⁰
Power PC 7100/80 8/0	\$2395. ⁰⁰
Power PC 8100/100 8/0	\$3025. ⁰⁰
Power PC 8100/110 8/0	\$4495. ⁰⁰

COLOR DISPLAYS

14" Color Monitors as low as	\$ 299. ⁰⁰
17" Color Monitors as low as	\$ 799. ⁰⁰
21" Color Monitors as low as	\$1599. ⁰⁰

MEMORY

4 Megabyte SIMMS	\$ 150. ⁰⁰
8 Megabyte SIMMS	\$ 295. ⁰⁰
16 Megabyte SIMMS	\$ 565. ⁰⁰

ACCESSORIES/HARD DRIVES

CD & Mounting Kit	\$ 299. ⁰⁰
AV Cards	\$ 450. ⁰⁰
Extended Keyboard	\$ 75. ⁰⁰
1 Gigabyte Hard Drive	\$ 495. ⁰⁰
2 Gigabyte Hard Drive	\$ 945. ⁰⁰
4 Gigabyte Hard Drive	\$1495. ⁰⁰

✓ Complete Packages

Performa 475 4/250, Color Monitor, Keyboard	\$945. ⁰⁰
Quadra/Performa 630 4/250 fpu, Color Monitor, Keyboard	\$1045. ⁰⁰

✓ Notebooks/Portables

PowerBook 150	\$999. ⁰⁰
PowerBook 540 C 4/320	\$2699. ⁰⁰
PowerBook 520 C 4/160	\$2125. ⁰⁰

Prices reflect cash discount.
Prices subject to change

✈ Earn Flyer Mileage with Every Purchase! Call for Details

COMPUTER PROS

1-800-319-4MAC (4622)

International Orders (305) 825-8709

IBM • LaserMaster • Howtek • Newgen • Adobe
Hyphen • Micronet • P.L.I. • Hewlett Packard
Compaq • AST • Microsoft • AT&T • Panasonic
Epson • Toshiba • QMS • Texas Instruments • Radius
NEC • Raster Ops • Sony • and More!



HEWLETT
PACKARD



Trade In Your Old MAC For A New MAC

PowerMACS

8100/110/16/2G/CD	\$5250
8100/100/8/700/CD	\$3500
8100/80/8/500	\$3135
7100/66/8/500/CD	\$2375
7100/80/AV 24/700/CD	\$3090
7100/80/8/700	\$1675

Monitors

RADIUS SONY NEC

14" Apple RGB	\$425
14" Apple Color Plus	\$290
15" Multiscan	\$455
17" Multipli	\$920
20" Apple Color	\$1780
21" Apple RGB-R	\$1430

Printers

EPSON GCC HP

Laser Wr. 16/600	\$1995
Laser Pro 810	\$2995
Laser Wr. Select+ 360	\$1190
Laser Wr. 320	\$875
Color Stylewriter 2400	\$450
Laser Wr. Select 310	\$550

Powerbooks

PB 540C 4/320	\$2850
PB 520C 12/320/M	\$2930
PB 520 4/320	\$1850
PB 150 4/120	\$960
DuoDoc II Plus	\$950
Duo 280c 12/320/M	\$3756



ICN
INTERNATIONAL COMPUTER & NETWORKING
TRADE-INS • UPGRADES • SYSTEMS • PARTS

Quadras

950 8/0-D	\$2695
840AV 8/230-D	\$2435
800 8/230-D	\$2170
700 4/230-U	\$1495
650 8/230-D	\$1895
660AV 8/230-D	\$1495
605 4/160	\$695

Specials

Mobile Message System
for PB 500
\$580

DAYSTAR Power Pro
601/100MHz
\$1875

Apple Quick Talk Camera
\$150

Upgrades

COMPLETE UPGRADES Trade or Upgrade Your Mac For A PowerMac

Q610, C610, Q660 To 6100/66	\$5895
IVX, Q650, C650 To 7100AV/66/80	\$1460/\$1700
Q800/Q840AV To 8100AV/80/100	\$1690/\$2260
Q800/Q840AV To 8100AV/110	\$2560
8100/80 To 8100/100/110	\$1100/\$1350
LCII/LCIII To Q605	\$495

Large Inventory of Parts
Available for Overnight Delivery

Upgrade Your Macintosh
To A PowerMac 8100/110MHz

2045 B. South Barrington Avenue Los Angeles, California 90025

PRICES ARE CASH & SUBJECT TO CHANGE

310-445-6600

We Buy & Sell New & Used MACS

FAX 310-445-6611

CIRCLE 439 ON READER SERVICE CARD

CALL THE MAC EXPERTS!

You won't find anyone with more Macintosh expertise than the experienced consultants at PowerMax™.
Give us a call today for a competitive quote and expert advice. Make our knowledge your power!

Mac CPUs & Powerbooks

630 w/fpu, 4 mb ram	\$849
PowerMac 6100/66 8 mb ram	\$1419
PowerMac 7100/80 8 mb ram	\$2315
PowerMac 7100/80 AV 8 mb ram	\$2735
PowerMac 8100/110 System	\$CALL
WorkGroup Server 6150/66	\$CALL
WorkGroup Server 9150/120	\$CALL
PowerBook 150 4/120	\$1049
PowerBook 520 4/240	\$1777
PowerBook 520C 4/240	\$2267
PowerBook 540C 4/320	\$CALL

Monitors, Printers & Scanners

Samsung 17GL 17" 28 Color Monitor	\$680
Diamond Pro 15FS 15" 28 Color Monitor	\$439
Radius Intelliscolor 20" Trinitron Monitor	\$1955
Apple StyleWriter II	\$190
NEC Superscript Model 640 Laser	\$718
Xante 11x17 Laser - Authorized Dealer	\$CALL
Epson 1200C Scanner	\$949

Monitors we stock: Apple, GTX, Mag Innovation, Magnavox, Mitsubishi, NEC, Panasonic, PowerMax, Radius, Radiance, Samsung, Sony, SuperMac.

Printers we stock: Apple, CoStar, DataProducts, DEC, Fargo, GDC, Hewlett Packard, Kodak, NEC, OkiData, QMS, Seiko, Texas Instruments, Xante.

Scanners we stock: Aida, Apple, Canon, Epson, Hewlett Packard, Microtek, Sharp, Umax, VisiCore.



PowerMax drives come complete with a double-shielded SCSI cable (50/50 or 50/25), Drive Seven formatting software, up to a 5 year warranty, and a 30 day money back guarantee!

PowerMax Hard Drives

PowerMax Ext. 350 Meg. Drive	\$219
PowerMax Ext. 500 Meg. Drive	\$279
PowerMax Ext. 700 Meg. Drive	\$339
PowerMax Ext. One Gigabyte Drive	\$599
PowerMax Ext. Two Gigabyte Drive	\$1129
PowerMax Ext. Four Gigabyte Drive	\$1749

We specialize in high-end array systems!



PowerMax Trinitron™ monitors are designed specifically for the rigorous demands of the Macintosh. They ship complete with Mac-ready cables and adapters, a three year warranty, and our satisfaction guarantee: if the monitor is not just right, we'll replace it for you!

PowerMax Trinitron™ Monitors

Model PM15T

15" Trinitron™ Aperture Grill
25 mm Dot Pitch
Resolutions up to 1280x1024
Power Saver Mode, Auto-Degauss, Tilt/Swivel.

\$449
Compare to Sony 15SF at \$479 (plus adapter)



Model PM17T

17" Trinitron™ Aperture Grill
25 mm Dot Pitch
Resolutions up to 1280x1024
Power Saver Mode, Auto-Degauss, Tilt/Swivel.

\$789
Compare to Sony 17SF at \$949 (plus adapter)



Model PM17TE+

17" Trinitron™ Aperture Grill
25 mm Dot Pitch
Resolutions up to 1600x1280
Power Saver Mode, Auto-Degauss, Tilt/Swivel.

\$999
Compare to Sony 17SE at \$1059 (plus adapter)



Model PM20T

20" Trinitron™ Aperture Grill
31 mm Dot Pitch
Resolutions up to 1600x1280
Power Saver Mode, Auto-Degauss, Tilt/Swivel.

\$1849
Compare to Sony 20SE at \$2099 (plus adapter)



**POWER
MAX**
Knowledge is Power

800-844-3599

24 hour fax line: 503-232-7101
(West Coast - but we're not in California!)

Available terms include: COD, Visa, MasterCard, Discover, American Express and Company PO's.
Ask about our fantastic business leasing programs!

CIRCLE 446 ON READER SERVICE CARD

LATEST

Mac

S · A · L · E
INTERNATIONAL

SPECIALS

* CLEARANCE ITEMS *

****New Toner for Select
300/310/360 \$69.00**

USED ITEMS

Mac Plus	No Kbd or Mouse	\$99.00
Mac II	1/0	\$199.00
Mac II	4/40	\$299.00
*Add 8 Bit Video Card		\$50.00
Apple Hi-Res Mono Monitor		\$69.00
Mac IICI Cache Cards		\$15.00
LaserSelect 300		\$349.00
Stylewriter II		\$189.00
ImageWriter II		\$199.00
Apple OneScanner		\$249.00
Apple Color OneScanner		\$499.00
PB Express Modems		\$99.00
Apple CD 150 Ext. Drive		\$129.00

****Personal Laser LS \$279.00**

**Hewlett-Packard
DeskWriter550C \$299.00**
Color InkJet Printer (Factory Refurb)

* NEW *

Quadra 630	4/250	\$899.00
Apple Color Plus Display		\$299.00
Laser IIf Logic Bd (Upgrade)		\$349.00
Laser NTR Logic Bd (Upgrade)		\$299.00
Apple One Scanner		\$399.00
Ext. Hard Drive Case		\$69.00
Extended Keyboards		\$75.00

* USED *

Mac SE (800K)	1/0	\$225.00
Mac SE (FDHD)	1/0	\$325.00
Mac LC	4/80	\$379.00
Mac LC II	4/40	\$399.00
Mac LC II	4/120	\$429.00
Mac Portable	2/40	\$350.00
Mac IIX	4/80	\$675.00
Mac IIFX	4/80	\$799.00

(Other Configurations Available)

Apple 8 Bit Video Cards	\$85.00
Apple 15" MultiScan (Refurb)	\$399.00
Apple 14" Color Display	\$350.00
Apple 16" RGB Display	\$649.00
Apple Extended II Keyboards	\$115.00

* HUGE SAVINGS ON NEW *



Performa 575
8/250 W/CD
68040 33MHz

\$1,299.00



\$129.00
Apple 12"
Mono Monitor

Apple Newton MessagePad
Now truly affordable...

Only \$129.00



New MS Word/Excel Bundle - \$79.00
ONLY \$49.00 With Any CPU

New Apple 8•24 Video Card - \$129.00
ONLY \$99.00 With Any CPU

New NEC CD Drive - \$69.00
Includes: DRIVE 7 & The Merchant CDs

FACTORY REFURBISHED



Performa 550
5/160 W/CD
68030 33MHz

\$899.00

Performa 466
4/160 68030 33MHz

INCLUDES:
Performa Plus
Color Display,
Keyboard,
Mouse &
ClariscWorks

\$729.00



USED ITEMS



Mac LC II
4/120 W/Kbd & **New**
Apple 12" Mono. Monitor

\$499.00

*For Color System: Add \$150



COLOR CLASSIC 4/80
KEYBOARD & MOUSE

\$749.00

*We Now Feature A Huge Inventory Of Parts For All Apple Products
And Also Offer Extended Warranties On All Apple Equipment*

Limited Quantities/Prices subject to change
Prices represent a Discount - off Full Price
Returns at discretion of Mgmt./15% Restocking fee

1-800-729-7031

1150 W. Alameda Dr., Ste. 1&2, Tempe, AZ 85282
(602) 858-0900 / (602) 858-9537 (Parts)

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

CIRCLE 401 ON READER SERVICE CARD

M.P.D.

1-800-993-5673

PowerMacs

6100/66 8/500	1,621.
6100/66 8/500 CD	1,807.
7100/80 8/500	2,583.
7100/80 8/700 CD	2,885.
7100/80AV 16/700 CD	3,412.
8100/100 8/700	3,232.
8100/100 16/1000 CD	3,984.
8100/100AV 16/1000 CD	4,176.
8100/110 16/2000 CD	5,677.

Performas Special

Performa 475 4/250 Bundle	999.
Performa 630 4/250 FPU Bundle	1,149.
Performa 630 8/250 CD Bundle	1,490.
Bundle includes: Color+ Display, Design Kybrd & Modem	

PowerBooks

PowerBook 150 4/120	975.
PowerBook 520 4/160	1,527.
PowerBook 520C 4/160	2,040.
PowerBook 540 4/240	2,300.
PowerBook 540C 4/320	3,095.
PowerBook 540C 12/500 Mdm	4,095.

Monitors

Apple 14" Color Plus	283.
Apple 15" Multiple Scan	453.
Apple 17" Multiple Scan	935.
Apple 20" Multiple Scan	1,878.
Sony 15" 17" MultiScan	441. / 870.
Sony 20" MultiScan 20se	1,910.

Printers

Color StyleWriter Pro	561.
StyleWriter II	199.
Color StyleWriter 2400	468.
Personal LaserWriter 320	845.
Personal LaserWriter 360	1,399.
LaserWriter Pro 16/600	1,999.

New Apple Products

PowerMac 5200/75 LC	Call
PowerMac 6200/75	Call
Apple CD600e	Call
StyleWriter 1200	Call
Apple Quicktake 150	Call
WorkGroup Servers	Call

GCC Printers

Elite XL608	2,200.
Elite XL808	2,818.
Elite XL1208	3,778.

SyQuest Removable Drives

88MB External for Mac	339.
200MB External for Mac	479.
270MB External for Mac	458.

Call for Cartridges & Internal Kits

Quantum Hard Drives

340MB SCSI	199.
730MB SCSI	285.
1080MB SCSI	539.
2.1GB SCSI	929.



30 Days Money Back Guarantee (*)
FREE 2nd Day Shipping on CPU's Only
48 Hours Turn Around on Warranty Repairs
School & Government PO's Welcome

Please call for Custom Configurations. Prices reflect 3% Discount for CASH ONLY! All Major Credit Cards accepted.
 (*) Certain Conditions Apply. International orders Welcome.
 Call (305) 477-4441 or Fax Us at (305) 477-4602.
 Lease options available, please call for details.

QUADRA FACTORY BLOWOUT!

COMPUTERS

QUADRA 605/LC 475 4/0

- 50/25MHz 68LC040 Processing Power
- Ready for PowerPC Upgrade
- Built in video supports color monitors up to 21"
- 4MB RAM, (expandable to 36MB)
- 1-year Warranty
- Supports Stereo Sound
- Multimedia Ready—Just plug in CD-ROM

\$599! "****" MacWorld
 AWARD WINNER!
 WHILE SUPPLIES LAST
 "****" MacWorld
 AWARD WINNER!

"It's hard to go wrong
 buying one...
 Never before has Apple
 offered so much
 performance for so little money!"
 MacWorld

QUADRA 605/LC475 VALUE BUNDLES

Value Starter Kit **\$CALL!**

- Apple Design Keyboard
- Apple 250MB Internal Hard Drive

Multi-Media Kit **\$CALL!**

- Stereo-Powered Multimedia Speakers!
- Three HOT multimedia CD-ROM titles!
- External Double Speed CD-ROM Drive!

FREE COPY OF ClarisWorks!!
 when you purchase the Q605 or LC475 and Starter Kit...while supplies last!
 (a \$149 Value!)

MORE MAC DEALS

CPUs Bought/Sold, New & Used, Trade-ins Accepted!		
MAC PLUS, Keyboard & Mouse	\$149	Quadra 630 4/250 \$999
MAC IIsi 5/80	\$499	Quadra 650 \$CALL
MAC Ili	\$599	Quadra 950 \$CALL

**CALL FOR
 POWER
 MACINTOSH
 PRICING**

MONITORS & VIDEO CARDS

SEE OUR TWO PAGE AD IN THIS ISSUE!!

PRINTERS

COLOR PRINTERS

360 dpi Star Printer

The SJ-144MC provides full color and monochrome laser quality printing for half the price of other color printing options!
 Retail \$599. Quantities limited!
 *breakthrough product because of its technology as well as its price...
 MacWorld

only \$249!

Compare the Value

	STAR SJ-144MC	Stylewriter 2400
360dpi	✓	✓
TrueType scalable fonts	✓	✓
Prints on plain paper and overheads	✓	✓
Advanced Heat Fusion printing, no ink jet smears	✓	NO
Blazing 386cps in Laser Quality mode!	✓	NO
3 paper feed paths	✓	NO
Large 102KB print buffer	✓	NO
Price	\$249	\$499

MONO PRINTERS

1200dpi Upgrade-ready Tabloid Laser Printers

from \$1999!



QMS 860 Hammerheads from \$1999

EDITORS' CHOICE: PC Magazine, MacUser
 BYTE MAGAZINE: "judged the best for print quality."

- upgradeable to 1200 dpi, from 600dpi
- 11"x17" full-bleed tabloid output
- Postscript Level 2 and QMS Crown Technology for networks
- Fast, 8ppm Canon engine with 25MHz RISC processor

MORE PRINTERS

Mitsubishi 6370-10u 300 dpi	\$1999	Apple Select 360 w/Font (price includes Apple ribbon)	\$1149
QMS CS100 model 10	\$1999	OEM Apple Laserwriter	\$499
QMS CS100 model 30 11"x17"	\$2999	GCC WriteMove II 2.0: portable, 240 dpi	\$249
QMS CS1000 600 dpi 11"x17"	\$3999	GCC SelectPress 1200	\$4999

Dealers and consultants, call for quantity pricing. We ship worldwide. Monday thru Friday 9 a.m. to 6 p.m. CST. Saturday 10 a.m. to 4 p.m. CST. Sales Department Only. Prices reflect cash discount. Not valid for typographical errors. All shipping charges for CD-ROM orders to be collected by credit card. (We have prepaid international, house acceptance, and commercial international, international handling/insurance.)

CRA SYSTEMS, Inc.
 Domestic Sales 800.375.9000 Fax 817.754.2348
 Consultants/Dealers 817.754.2131
 International Sales 817.754.2120
 300 South 13th St., Waco, TX 76781

CRA SYSTEMS, Inc. 800.375.9000

CIRCLE 430 ON READER SERVICE CARD



THIS SEEMS TO BE THE
MENTALITY OF
MOST COMPUTER COMPANIES.

NOT AT AEON
You can't stand
wasting time. Nor
can we. We are a
bunch of nerds who
understand the
things we sell.
It's really that
simple.



AEON

HTTP://AEON.COM

SALES@AEON.COM

BENEFIT FROM THE FACT THAT
WE HAVE NO LIFE AND SIT
AROUND MAKING
THIS STUFF WORK.

800-937-2366



Aeon 230 MO Drive: \$649



Aeon 4X CD Rom Drive: \$399



Aeon 1Gig Drive: \$639
Seagate External HDD



230M MO media: \$29
128M MO media: \$17

- PowerMac 16 Meg SIMM Non-Comp \$499
- Aeon 4.2Gig Seagate External HD \$1,749
- 230M formatted MO Media \$33
- 650M MO Media \$59
- 1.3Gig MO Media \$79
- CD-R Media 74min (TDK) \$11
- CD-R Media 74min (Sony) \$12



64M SIMM: \$2,249
PowerMac 6100 True 64 Meg

AEON TECHNOLOGY · Mon-Fri 9am-6pm and then some, CST 9111 Jollyville Road Suite 218
Austin TX 78759 Local: (512) 338-4834 Fax: (512) 338-1665

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE • CALL FOR RMA BEFORE RETURNING MERCHANDISE • RETURNS
SUBJECT TO A RESTOCKING FEE • ALL BRANDS & PRODUCT NAMES ARE TRADEMARKS OF THEIR RESPECTIVE HOLDERS

CIRCLE 437 ON READER SERVICE CARD

POWERMAC

6100/66	8/500	1599
6100/66	8/500/CD	1799
6100/66	16/500/CD/DOS	2399
7100/80	8/500	2449
7100/80	8/700/CD	2699
7100/80	40/2GIG/CD	4399
7100/80AV	16/700/CD	3399
8100/100	8/700	3099
8100/100	16/700/CD	3599
8100/100	16/1GIG/CD	3899
8100/100	40/1GIG/CD	4699
8100/100	136/2GIG/CD	7995
8100/100	72/2GIG/CD	6295
8100/100AV	16/1GIG/CD	3995
8100/110	16/2GIG/CD	5299
8100/110	136/2GIG/CD	9099

CALL FOR WORKGROUP SERVERS

QUADRA

605	4/160	749
610	8/230/DOS	1499
630	4/0	799
630	4/240	949
950	8/NO HD	2799
950	16/1GIG/CD	3995

PERFORMAS

ALL PERFORMAS INCLUDE MONITOR,
FAX MODEM, KEYBOARD, FREE PRE-
LOADED SOFTWARE VALUED \$750!

475	4/160	995
550	5/160/CD	995
575	5/250/CD	1399
630CD	8/250/CD	1399
635CD	5/350/CD	1599
638CDV	8/350/CD/TV	1899
6115	8/350/CD	2199

COMPU AMERICA

"The computer Specialist"

1-800-533-9005



FedEx

Next Day Shipping

Sales (310) 446-1771
FAX (310) 475-7744

CALL US LAST FOR THE BEST PRICE!

SCANNERS

SCANMAKER IIG	329
SCANMAKER II	469
SCANMAKER II SP	519
SCANMAKER II SPX	839
SCANMAKER II HR	799
SCANMAKER II HR WITH PHOTO	995
SCANMAKER III	2449
HP SCANJET IIC	929
EPSON 1200C PRO	1249
EPSON 800C	799
NIKON AX 1200	1199
UMAX 1260	899
UMAX 630 LE	499
VISTA S8LE	729

VIDEO CARDS

RADIUS PRECISION 8XJ	495
RADIUS PRECISION 24X	695
RADIUS PRECISION 24X PRO	1095
RADIUS PRECISION 24XK	795
THUNDER IIGX 1152	1199
THUNDER 24GT	1349
THUNDER 4GX	1899
THUNDER 4GX-1360	2249
THUNDER 4GX-1600	2799

GE 4 YEAR ON-SITE
WARRANTY AVAILABLE!

10435 Santa Monica Blvd. LA, CA 90025
All prices subject to change without and are cash discounted.

CIRCLE 467 ON READER SERVICE CARD

POWERBOOKS

150	4/120	989
520	4/160	1549
520	4/240	1749
520C	4/160	1995
520C	4/240	2149
520C	12/320/FAX	2799
540C	4/320	2799
540C	12/320/FAX	3499
540C	12/500/FAX	3899
DUO 280	4/240	2199
DUO 280	12/240/FAX	2699
DUO 280C	4/320	2949
DUO 280C	12/320/FAX	3695

PRINTERS

StyleWriter II	199
StyleWriter 2400	399
StyleWriter 2400 PRO	439
Epson Stylus	529
Apple LaserWriter Select 360	1099
Apple LaserWriter 16/600	1799
Apple LaserWriter Pro 810	2695

MONITORS

Apple 14"/15"	289/399
Apple 17"/20"	929/1899
Sony 155E/175F	469/859
Sony 175E1/205E1	1049/1899
SuperMac PressView 21T	2949
SuperMac 17	799
SuperMac 17XL	769
SuperMac 20PLUS	1429
SuperMac 21TXL	2049
SuperMac 17SR Calibrator	1799
Radius Precision Color 17"	995
Radius Intelli Color 20E 20"	1899
Radius Precision Color 21"	1995



MacAttack

(800) 299-MACS (800) 299-6227

409.690.5353 (Fax) 409.690.5345 (Intl. Sales)

Contact Us Via Internet! MASales@aol.com

We Attack High Prices!!

We carry hundreds of items—call for availability. Your satisfaction is our goal. One Year Warranty on Apple Products. Prices are CDD and subject to change—please call for latest pricing. International Orders and Fax Orders Welcome!

PowerMacs	Powerbooks	Scanners
6100/66 8/350 \$1576	Duo Dock II Plus w/ Ethernet \$829	HP Scanjet 3P \$CALL
6100/66 8/350 CD \$1758	150 4/120 \$990	Apple One Scanner \$623
6100/66 16/500 DOS Card \$2481	150 4/250 \$1137	Apple Color One Scanner \$862
7100/80 8/500 \$2631	Duo 280c 4/320 \$3243	AGFA Studio Scan II \$823
7100/80 8/700 CD \$2898	Duo 280c 12/320 Modem \$3708	Other AGFA Scanners \$CALL
7100/80 16/700 CD AV \$3473	520 4/160 \$1745	
8100/100 8/700 \$3292	520c 4/160 \$2059	
8100/100 16/116 CD \$4058	520c 12/320 Modem \$2967	
8100/100 16/116 CD AV \$4254	540c 4/320 \$3563	
8100/110 16/2000 \$5677	540c 12/500 Modem \$CALL	
Software	Monitors	Keyboards
Quicken 5.0 w/ In Control 3.0 \$42	Apple Color Plus 14" \$288	Apple Design Keyboards \$75
MYST CD-ROM \$47	AudioVision 14" \$560	Apple Extended Keyboard II \$149
Microsoft Encarta 1995 (CD-ROM) \$86	Apple Multiscan 15" Display \$462	
Norton Utilities 3.1 \$94	Apple Multiscan Trinitron 17" \$952	
Canvas 3.5 \$259	Apple Multiscan 15" \$469	
SoftWindows \$289	Sony 17" CPD-175F1 \$869	
Excel 5.0 \$299	Sony 17" CPD-1730 \$969	
FileMaker Pro 2.1 \$CALL	Sony Multiscan 20" \$CALL	
MS Office 4.2 (CD-ROM or Disk) \$CALL	Apple Multiscan 20 Display \$1913	
Aldus PageMaker (PowerMac) \$CALL	RasterOps Radius \$CALL	
Aldus PageMaker (PowerPC) \$CALL	E Machines T 16 \$999	
Adobe Photoshop 3.0 \$570	NEC SFG \$1246	
And Much More!!	NEC 6FGP \$2330	
Quadrads	Modems	Other Stuff
Quadra 950 8/0 \$2713	GV TelePort Gold II \$132	APC Surge Protectors \$22
We sell only Apple original serial numbers.	GV PowerPort Gold \$249	(Power & Phone Line Protection)
Printers	GV PowerPort 500 Series \$326	Imaging Cartridges 44/88 MB \$50/58
StyleWriter II \$239	GV PowerPort Platinum TelePort \$341	Kensington Turbo Mouse \$108
StyleWriter 1200 \$249	GeoPort TelePort Adapter \$113	Imaging Zip Drives \$212
Color StyleWriter 2400 \$435	SupraFax 14.4K LC \$134	Apple Quick Take 100 \$439
Apple Color StyleWriter Pro \$571	SupraFax v32bis \$185	Quadra 630 Multimedia Access \$CALL
LW Select 320, 360 \$2162	SupraFax 28.8K \$217	PLI (Syquest) 44, 88, 200, 270 \$CALL
1600DPS w/toner \$CALL		
HP Laserjet 45i \$3190		
HP Laserjet 45i MX \$4670		

Call Today About Other Great Product Offers!!

CIRCLE 438 ON READER SERVICE CARD

Add a second keyboard, monitor and mouse up to 250 feet away from your Macintosh!

- Compatible with most Macintosh computers with detachable monitors
- Supports Macintosh Hi-Res video
- Macintosh mouse support standard at both local and remote workstations
- Switch selectable privacy mode
- No software required for operation



MAC COMPANION™

Cybox Corporation
4912 Research Drive Huntsville AL 35805 USA
(205) 430-4000 (205) 430-4030 fax



Macintosh and Mac are trademarks of Apple Computer, Inc. Cybox and Companion are trademarks of Cybox Corporation.

Dealer Program Available

Made in USA

CIRCLE 433 ON READER SERVICE CARD

PowerMacs	Apple Monitors	Hewlett Packard	Agfa
6100/66 8/350/CD 2445	14" Color Plus 289	Deskwriter 320 295	StudiScan 600dpi 659
6100/66 8/350/CD 2275	15" Multiscan Call	Deskwriter 540 299	StudiScan II 800 845
6100/66 16/500/CD 2099	14" AV Trinitron 589	Deskwriter 660C 489	Transparency 359
7100/80 8/500 2499	17" Multiscan Call	Laserjet 5MP 1299	
7100/80 8/700/CD 2799	20" Multiscan 1895	Laserjet 4M Plus 1869	
7100/80 16/700/CD 3299		Deskjet 1200C p/s 1595	
8100/100 8/700 3175		Laserjet 4MV 2725	
8100/100 16/116/CD Call		Laserjet 4SIMX 4079	
8100/110 16/2000/CD Call		Scanjet 3C 919	
Quadrads/Performas		Scanjet IIP/3P 365/495	
Q630 4/250 949		Jet Direct Card 299	
Q630 8/250/CD 1399		Duplex option 4M+ 495	
Q630 20/500/CD 1799		500 sheet option 325	
Performa 375 5/250/CD 1439		Call for all Accessories	
Performa 400 8/250/CD 1499			
Performa 6100 8/500/CD Call			
Newton 120 2MB 685			
Apple Printers			
StyleWriter 1200 285			
StyleWriter 2400 c/r 445			
StyleWriter Pro c/r 575			
Portable StyleWriter 389			
LaserWriter 300 619			
LaserWriter 320 865			
LaserWriter 360 Call			
LaserWriter 16/000 Call			
Powerbooks			
150 4/120 995			
150 4/250 Call			
820 8/160 Call			
820C 4/160 Call			
820C 12/320/Mdm 2849			
840C 4/320 Call			
840C 12/500/Mdm Call			
840C 12/500/Mdm Call			
Duo Mini Dock 269			
Duo Dock 250HD 599			
Duo Dock II 855			
UMax			
Vista S-8/56 L.E. 719/625			
Vista S-8/58 L.E. 845/795			
UC 1260 1075			
Transparency 1260 445			

CIRCLE 440 ON READER SERVICE CARD

LOWEST PRICES BEST SERVICE

POWER MAC

6100 - 66 8/500/CD \$1845	8100 - 100 8/0 \$2989
7100 - 80 8/700/CD \$2788	8100 - 100 16/1 GIG/CD \$3850
7100 - 80 24/1 GIG/CD \$3595	8100 - 100 32/2 GIG/CD \$4575
7100 - 80 32/2 GIG \$4090	8100 AV - 100 8/0 \$3595
7100AV - 80 16/700/CD \$3240	8100 AV - 24/2 GIG/CD \$4295
7100AV - 80 32/2 GIG \$4345	8100 - 110 8/0 \$4290
6100 - 60/7100-66/8100-80 Call	8100 - 110 32/2 GIG \$5755

CALL FOR ANY OTHER CUSTOM MADE CONFIGURATIONS

1-800-799-4MAC

POWER BOOK	QUADRA	PRINTERS	MONITORS
150 4/20 \$969	605 4/160 \$729	Apple	Apple
520 4/240 \$1985	630 4/250 \$880	HP	Super Mac
520C 8/240 \$2265	650 8/230 \$CALL	SCANNERS	Radius
520C 12/320 \$2370	950 8/0 \$2769	U-Max	Sony
540 4/240 \$CALL		NP / AGFA	NEC
540C 4/320 \$CALL			
540C 12/320/FAX \$3540			
All Powerbook Duos - Call			

Apple logo
COMPU AGE
THE SOURCE TO MACINTOSH WORLD
303 S. Robertson Blvd., Beverly Hills, CA 90211
TRADE-INS Welcome

We will beat any verifiable price!
Call for any custom-made configurations
or quotes on New Generation Power Macs
Tel: 310-358-9000
Fax: 310-358-9100

Same Day Shipping
Dealers/ Intl. Orders Welcome
Prices subject to change
due to publication lead time.

CIRCLE 542 ON READER SERVICE CARD

SYSTEMS & PERIPHERALS

Macworld
SHOPPER

COMPAQ

HEWLETT
PACKARD

radius

Microsoft

FUJITSU

IBM

SUPERMAC

RELISYS

XANTE

Computer Revelations Inc.

1 800 275-9924

in NY 516 737-0800

POWERMAC	PRINTERS
8100 / 66 8/350 \$1635	LWRITER 360 \$1489
8100 / 66 8/350CD \$1635	LWRITER15/60PS \$2275
7100/60 8/500 \$2635	HP 4M \$1299
7100/ 80AV CALL HP 4M+ \$1950	
8100 /100 8/700 CALL HP 4MP \$1395	
8100 /110 165ppd \$5999	HP 1200 CPS CALL
PM AV CARD \$439	STYLEWRITERII \$269
PM DOS CARD \$689	STYLEWRITER 300 \$499

SUPERMAC / SONY	RADIUS/ NEC
171 \$899	INTELCOLOR 20E CALL
175F \$899	PRECISION 17 CALL
20 PLUS \$1399	PC 24X \$875
207XL CALL PC24XP \$299	
THUNDER IV CALL	
THUNDER 24 CALL	
CPD 15SF \$485	

POWERBOOK	SCANNERS
UMAX 630LE \$629	
150 4/120 \$1029	UMAX 840 \$699
150 4/250 \$1329	UMAX 1260 \$1099
520 4/160 \$1099	SCANMAKER II SP \$629
520C 4/160 \$2279	SCANMAKER II G \$499
520C 12/200 mod. \$2899	HP SCANJET IICX \$995
540C 4/340 \$3399	HP SCANJET III \$499
540C 12/320M \$3995	EPSON ES 1200 \$1279
	RELISYS CALL

CALL ON ALL SOFTWARE
WORDPERFECT MAC \$245.
MICROSOFT WORD MAC \$249.

APPLE INTERNAL SUPERDRIVE.
\$149 w/ Exchange

CALL ABOUT
OUR NEW
TRAINING
CENTER
PHOTOSHOP, QUARK,
ILLUSTRATOR
AND MORE!
PLUS MACBASICS

GCC
TECHNOLOGIES

We carry a
full line
of GCC Printers

SELECTPRESS

1200

\$5899.00

\$213. a month
leasing



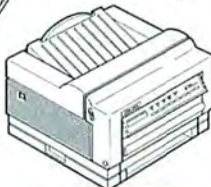
ELITE

600

\$1329.00

\$62.

a month leasing



ELITE XL

608 / 808

\$2449.00 / 2999.00

\$99. / \$119.

a month leasing



COMPUTER
REVELATIONS

CALL US FOR ALL OF YOUR LEASING NEEDS!

331E DANTE COURT HOLBROOK NY 11741 FAX 516 737-0923

NEW & USED BOUGHT & SOLD

Ask about our EXTENDED WARRANTY

CIRCLE 474 ON READER SERVICE CARD

MacALLY™ Peripherals

Call us for the Dealers near you

All Dealers & VARs, Join our MacALLY team. Please call today.

CALL 800.644.1132 Inside CA Call: 213 • 780 • 6110



mgi

Manufactured & Distributed by:

MACE GROUP INC.

2550 Corporate Place #C 101, Monterey Park, CA 91754

All trademarks or registered trademarks are the property of their respective owners.

CIRCLE 414 ON READER SERVICE CARD

EDGE

1 GIG EXT
\$569!

MacUser
RATED
★★★★★
JUNE 1993

ALTERNATIVE MAC!

QUATRO 850
ALTERNATIVE MAC CASES

... an inexpensive and expandable Mac compatible." Charles Piller, Macworld April '95

- *6 Drive Bays- room for CDROM, Syquest, floppy and all your hard drives
- *3 HUBUS Slots- room to grow.
- *200 Watts of Power
- *Full one-year warranty
- *100% Macintosh Compatible
- *Uses genuine Apple Macintosh Centris/Quadra 650, PPC 7100 and PPC 8100 motherboards
- *Faster speed, greater storage, and more expandability than Apple systems
- *CALL FOR DEALER NEAREST YOU!

1-800-257-1666

POWER
IN THE PALM
OF YOUR
HAND

THE DIPLOMAT

THE SIZE OF A VCR TAPE!

2515 WILLOW BEND PL. EL CAJON, CA 92020
Internet at "CUT" EDGE@eworld.com

PRICES SUBJECT TO CHANGE

EXPANDABLE
POWERFUL
RELIABLE
AFFORDABLE

ALL DRIVES SHIP WITH POWERMERGE 6 LITE FREE!

Hard Drives In Our DIPLOMAT Case:

Diplomat 40	Quantum	20ms	\$59
Diplomat 170	Quantum	16ms	\$198
Diplomat 340	Quantum	10ms	\$198
Diplomat 360	Quantum	12ms	\$239
Diplomat 540	Quantum	10ms	\$298
Diplomat 730	Quantum	11ms	\$299
Diplomat 1080	Conner	9ms	\$569
Diplomat 2105	Conner	9ms	\$979

Quest External Include Cartridges:

Diplomat 52570	3.5"	\$499
----------------	------	-------

Hard Drives In Our ZEP Case:

Ambassador Mextor 210	15MS	\$1491
Ambassador Quantum 220	14MS	\$219
Ambassador Quantum 100 BMS 72001		\$891
Ambassador Conner 4207 4 GIG 72001		\$1499

CD ROM's External w/ RCA Jacks:

Ambassador H9C 2x speed		\$1791
Ambassador Janyo 4x speed CD tilted		\$269
Ambassador Plextor 6x speed 145ms		\$5691

PowerBook 2.5" Drives Internal:

Quantum GRS80s great value	17ms	\$951
Quantum 250mb low power 15ms		\$1891

INTERNATIONAL SALES REPRESENTATIVES FOR THE U.S. & CANADA
WE MANUFACTURE & DESIGN OUR CASES IN U.S.

CIRCLE 449 ON READER SERVICE CARD

SOMETHING FOR NOTHING

Free Catalog Of Used
Macintosh Computers
and Peripherals.
We've Provided 5
Different Ways For
You To Reach Us.

CALL US.
MAIL US.

FAX US OR E-MAIL US.

Or Please Visit Our Web Site At

<http://www.sunrem.com/>

1-800-SUN-0999

24-hour Order Line (1-800-786-0999)

E-Mail us at: sales@doc.sunrem.com

PO Box 4059
Logan, UT 84323-4059
International (801) 755-3393
Fax: (801) 755-3311



CIRCLE 424 ON READER SERVICE CARD

MacUSA
Since 1983
800-809-0880

Voice: 818-704-8923

Fax: 818-704-9858

Quadra	
630/950.....	Call
Power Mac	
6100-60/66.....	Call 7100-66/80..... Call
7100AV/8100AV.....	Call 8100-80/100/110..... Call
PowerBook	
150/520.....	Call 520C/540C..... Call
Performa Bundle	
6115/630.....	Call 575/475/638..... Call
Printers	
H.P./Apple/Epson/NEC/Okidata.....	Call
Monitors	
Apple/NEC/Sony/Radios/Viewsonic.....	Call
Software	
WITH ANY PURCHASE, YOU CAN BUY MICROSOFT OFFICE OR ADOBE PHOTOSHOP FOR \$250. ASK ABOUT OUR RED TAG DEMO SPECIALS. WE ALSO SELL: COMPAQ, IBM, TOSHIBA	

PRICES REFLECT CASH DISCOUNT AND ARE SUBJECT TO CHANGE.
We'll Beat Any Price!
Visa, AmEx, & MasterCard Welcome.
24422 Vanowen Street, Canoga Park
California 91307, U.S.A.

CIRCLE 448 ON READER SERVICE CARD

SHOPPERS Market

a division of Compu-USA

1-800-607-2325
FAX US AND SAVE YOUR PRECIOUS TIME!
FAX (800) 607-2321
ONE HOUR RESPONSE ON ALL FAXES!
SALES (310) 475-7667 FAX (310) 477-9620

POWERMAC

PRINTERS

MONITORS

5200/75	8/500/CD	CALL	STYLEWRITER II	229	APPLE 15" / 17"	649/CALL
6100/66	16/500/CD	1949	STYLEWRITER 1200	269	SONY 1425 / 155F	319/445
7100/66	8/500	2099	STYLEWRITER COLOR 2400	479	SONY 175F / 205E1	669/1849
7100/66AV	16/500/CD	2699	STYLEWRITER COLOR PRO	499	NEC XV	339
7100/80	16/700	2699	LASER 320, 360	849/1099	NEC XV 15" / 17"	429/769
7100/80AV	16/700/CD	2999	16-600/PS	1849	NEC XV 17" / 21"	989/1989
7100/80AV	16/700/CD	3249	LASER PRO 810	2599	RADIUS INTELLICOLOR 20E	1799
7100/80AV	40/1GIG/CD	3599	HP 4ML, 5MP	995/CALL	RADIUS SUPERMAC 21TX	1989
8100/80	8/500	2899	HP 4ML +, 4MV	1899/2749	RADIUS PRESSVIEW 21T	2949
8100AV	16/1GIG/CD	3899	DESKWRITER 320	289	VIEWSONIC 17"	849
8100/100	16/0	3199	DESKWRITER 640	289	VIEWSONIC 20"	1299
8100/100	16/1GIG/CD	3549	DESKWRITER 660C	CALL	VIEWSONIC 21PS	1699
8100/100	40/1GIG/CD	4449	EPSON STYLUS COLOR	529		
8100/100AV	16/1GIG/CD	3849	TI PRO 600PS/23	1249		
8100/100AV	40/2GIG/CD	4599	NIKON COOL PRINT	1449		
8100/110	40/0	3199	TARGO PRIMARA	1249		
8100/110	40/2GIG/CD	6099				

RADIUS CARDS

					SPIGOTPOWER AV	729
					PHOTOENGINE	789
					THUNDER HIG 1152	1099
					THUNDER HIG 1600	1599
					THUNDER IVGX 1152	1799
					THUNDER IVGX 1600	2599
					THUNDER 24/GT	1249
					VIDEO VISION STUDIO 2.0	3249
					TELECAST	CALL

POWERBOOK

SCANNERS

ACCESSORIES

150	4/240	1099	HP IIC	879	SYQUEST 200MB EXT	479
520	8/160	1749	HP IIC	979	SYQUEST 270MB EXT	479
520	12/320/MODEM	2349	EPSON ES 1200C PRO	1195	IQMEGA 100 ZIP DRIVE	199
520C	8/240	2299	EPSON ES 800CLE	749	VISIONEER PAPER PORT	349
520C	12/320/MODEM	2699	AGFA ARCUS-II	2549	RAM, HDS, ETC.	47/74/61
540	12/240/MODEM	2799	AGFA STUDIOSCANNER II	889		
540C	8/320	3299	NIKON COOLSCAN	CALL		
540C	20/500/MODEM	4399	POLOROID SLIDE SCANNER	1899		
280	5/240	2299	MICROTEK IHR LE	799		
280	12/240/MODEM	2599	UMAX VISTA T630 LE	599		
280C	8/320	3199	UMAX VISTA S6 LE	699		
280C	12/320/MODEM	3599	UMAX VISTA S8 LE	849		
			UMAX 1260	1049		

WE CARRY THE FULL LINE OF POWERMACS, POWERBOOKS, DUOS, QUADRAS, PERFORMAS,

WE CARRY THE FULL LINE OF POWERMACS, POWERBOOKS, DUOS, QUADRAS, PERFORMAS.

CIRCLE 435 ON READER SERVICE CARD

1-800-334-KIWI

Used Macs

Quadra 660AV 8/230 CD.....	\$1299
Quadra 840AV 8/230 CD.....	\$2399
Quadra 650 and Centris 650.....	Call
PowerMac 6100 & 7100.....	Call
Powerbook 145, 160, 165, 180, 180c.....	Call

Factory Refurbished Macs

Performa systems include keyboard, 14" color monitor & ClarisWorks.	
Performa 400 4/80, 16 mhz 68030.....	\$599
Performa 460 4/80, 33 mhz 68030.....	\$699
Performa 475 4/160, 25 mhz 68040.....	\$799
Performa 550 5/160 CD, 33mhz 68030.....	\$799
Performa 630 8/250 CD, 33mhz 68040.....	\$1149
Performa 6112 and 6115.....	Call
Powerbook 150 4/120.....	\$899
Stylewriter II with cable.....	\$175
Personal Laserwriter 300 w/toner.....	\$425

Used and refurbished products have a 90 day warranty.

CALL FOR PRICES ON NEW MACS

We Buy Used Macs

Quadra, PowerMac & Powerbook only.

Visa & Mastercard No Surcharge.
Better Business Bureau Member.
Over 6 years in Macworld.

Kiwi Computers, PO Box 67381, L.A., CA 90067
Toll Free (800) 334-5494 Fax (310) 286-9667
In California and Overseas (310) 553-4507
Hours: Mon-Fri 9am-5pm, Sat 9am-2pm PST

Returns are subject to a 15% restocking fee.
Prices subject to change without notice. Quantities may be limited.
Not affiliated with Kiwi Software, Inc.

CIRCLE 404 ON READER SERVICE CARD

Lowest Prices Guaranteed

Seagate		Micropolis	
ST1120CN, 1GB, 5ms	\$485	MC4110, 1GB, 9ms	\$485
ST3243CN, 1GB, 5ms	\$515	MC4110AV, 1GB, 9ms	\$575
ST3243CN, 2GB, 5ms	\$795	MC2217AV, 1.7GB, 5ms	\$795
ST1255CN, 4GB, 5ms	\$925	MC4221, 2GB, 8.5ms	\$895
ST3255CN, 4GB, 5ms	\$945	MC3243, 4GB, 9ms	\$1295
ST1515CN, 4GB, 5ms	\$1425	MC3243AV, 4GB, 9ms	\$1375
ST41060N, 9GB	\$2695	MC1931, 9GB, 11ms	\$2195
Quantum		Tape Backup	
EM1080S, 1GB, 9ms	\$515	EXB350, 5GB, 8mm	\$1275
EM2100S, 2GB, 9ms	\$825	EXB350S 10GB, 8mm	\$1895
PC32150, 2GB, 8ms	\$895	HP1533A, 8GB, 4mm	\$1095
GP4301S, 4GB, 8ms	\$1325	WD3100, 2GB, 4mm	\$775
PC34300, 4GB, 8ms	\$1425	WD3400, 3GB, 4mm	\$975

*For External Drive, add \$50 for 3.5" and \$100 for 5.25".
Call for Latest Prices. We will Beat Any Price.
Disk Technology Company
213-850-8840 213-850-7748 Fax
Order only **1-800-90-DISKS**
VISA/MC/AMEX **34757**

CIRCLE 421 ON READER SERVICE CARD

YOU WON'T WASTE MEMORY WITH SIMMSAVER

SimmSaver®	
PATENT PENDING	
• SimmSaver® 30" converts four 30-pin SIMMs into a single 30-pin SIMM	
• SimmSaver® 8" converts your 30-pin SIMMs into a 72-pin SIMM	
• SimmSaver® 30" converts eight 30-pin SIMMs into a single 72-pin SIMM	
• SimmSaver® 32" converts your 72-pin SIMM socket into two 72-pin SIMM sockets	
• We sell new memory/buy used memory	
1-800-636-7281	
SimmSaver® Technology, Inc.	
228 N. Pennsylvania • Wichita, KS 67214	

CIRCLE 402 ON READER SERVICE CARD

MEMORY

GUARANTEED LOWEST PRICES
Memory for Desktops, Laptops,
Laser Printers from Apple to Zenith

WE BUY EXCESS MEMORY
1-800-808-6242

ERITECH INTERNATIONAL
818/244-6242 fax 818/502-5059
740 N. Glendale Ave., Glendale, CA 91206

CIRCLE 469 ON READER SERVICE CARD

Memory Wanted

WE BUY NEW OR USED

SIMMS

256K, 512K, 1MB, 2MB,
4MB, 8MB, 16MB, 32MB.

30 Pin, 64 Pin or 72 Pin.

POWERBOOK 2MB - 28MB

We Buy In Quantity. Call Us or Send Fax.
INNOVATIVE MICRO PRODUCTS, INC.
7645 Leesburg Pike, Suite 201
Falls Church, Virginia 22043
Tel: 703-648-0711 Fax: 703-648-0712

CIRCLE 462 ON READER SERVICE CARD

ACCELERATE YOUR POWERMAC

Acceleration for your 6100, 7100, Performa 61xx and 8100/100 computer	
The DVC Equalizer™ speeds your PowerMac 6100/7100 up to 84MHz and your 8100/100 up to a thundering 126MHz!	
Custom connector provides easy slip-on, slip-off acceleration. 6100/7100 has selectable speeds from 76MHz-84MHz. 8100/100 has selectable speeds from 109MHz-126MHz. Do not be misled. With thousands sold, accept only the DVC Equalizer™ !	
Add EVEN MORE POWER	
PowerMac L2 Cache	
256K	\$125
512K	\$259
Includes	
• DVC Equalizer™ Accelerator • Low noise, high output CPU fan • Selectable CPU speeds • Detailed manual • Bench testing software disk • Installs in under 5 minutes • 20-40% speed increase • No permanent modifications • Toll-free technical support • 30-day money-back guarantee • 1 year warranty	
FedEx (same day service available)	
Only \$79.95	
800.889.5137	
400.889.5137 (toll-free) 800.889.5137 (toll-free)	
DVC Equalizer 8100/7100 \$79.95	
DVC Equalizer 8100/100 \$79.95	
DVC 256K Cache Card \$125.00	
DVC 512K Cache Card \$259.00	

CIRCLE 436 ON READER SERVICE CARD



**THE LLB
COMPANY, INC.**

**INTERNATIONAL: 206-746-0229
FAX: 206-746-5168
TO ORDER: 1 800-848-8967**



**Call us for
your Media
and CD-ROM
needs!**

MEMORY

30 Pin

1x8x80 \$37	4x8x80 (IIIx) \$145
1x8x100 \$35	4x8x80 (IIIx) \$139
2x8x80 \$79	8x8x70 (IIIx) \$299
4x8x80 \$135	16x8x70 (Low Profile) \$609
	16x8x70 (IIIx) \$635

72 Pin Memory

POWERPC, CENTRIS, QUADRA, LC III

4MB-70ns / 4MB-60ns \$157 / \$159
8MB-70ns / 8MB-60ns \$302 / \$307
16MB-60ns / 70ns non-comp \$519 / \$509
32MB-60ns \$1059

**We also carry System Connection
cables for modems, printers, including
all SCSI and PowerBook cables.**

PowerBook Memory

PB140-170-4/6 \$99 / \$139
PB160-180-4/6/8/10 \$109 / \$149 / \$219 / \$279
PB165C-180C-4/6/8/10 \$109 / \$149 / \$219 / \$409
DUO 210 - 280C 4/8/12 \$169 / \$329 / \$479
DUO 210 - 280C 14/20/28 \$539 / \$795 / \$1199
PB 520 - 540C 4/8/16/32 \$179 / \$319 / \$629 / \$1229

Math CoProcessors

33 MHz 040 for LC575 \$350
16 MHz FPU for Color Classic \$49
33 MHz FPU for Duo Dock/Performa 600 \$55
25 MHz FPU for LCIII \$49
Centris 25 MHz CPU replacement \$299
LC/LC II 16 MHz Math Co. \$49

Video RAM

Video RAM 256K \$20
Video RAM 512K \$38

DRIVES

GENUINE SYQUEST 1-4

	5-9	10+
44MB 5.25" ... \$42	\$41	\$40
88MB 5.25" ... \$48	\$47	\$46
200MB 5.25" ... \$76		\$75
270MB 3.5" ... \$59	\$58	\$57
105MB 3.5" ... \$55		\$54

Rumi Hard Drives

Rumi 340MB Int / Ext (Quantum) ... \$195 / \$269
Rumi 540MB Int / Ext (Quantum) ... \$259 / \$325

Rumi SyQuest Drives

Rumi 200MB SyQuest w/ FREE Cartridge ... \$539
--

Rumi CD-ROM Drives

Rumi 2x Multisession Photo CD (NEC) ... \$185

Rumi Optical Drives

Rumi 230 Optical Bundle w/ 5 Verbatim ... \$705

SCANNERS

Umax

PowerLook.....\$2475
Vista-S6 or S8 Pro.....\$780 / \$934

PaperPort

PP30489 PaperPort for Mac.....\$365

Call about Microtek, Nikon & Sharp Scanners

AGFA StudioScan II Scanner

400 ppi x 800 ppi includes: Omni Page Direct, Foto Snap, Foto Look, Foto Tune LT and Photoshop LE.
AG StudioScan II..... \$845

Polaroid SprintScan 35 Slide Scanner

Scan 35mm slides up to 2700 dpi - in under a minute!
PLD619111..... \$1999

MODEMS

US Robotics

USR 317146 Mac&Fax Sportster V.34 ..\$265
USR 388979 Sportster 14,400 Mac&Fax \$125

Call us about PC Modems!

Global Village Platinum

137365 PowerPort Platinum 28.8 V.34 .....\$339
137366 TelePort Platinum 28.8 V.34 Ext .....\$239
137339 TelePort Gold II .....\$112

Supra

5014LC Supra 14.4 LC .....NOW ONLY \$99!
5014XP Supra Express Plus 14.4 .....\$99
50V34E-MC Supra 28.8 V.34 .....\$229

Diimo

DiimoCache 040/50 Accelerators .....From \$779
DiimoCache Slot-Free Cache Cards ..From \$175
DiimoCache Quadra Cache Card ....From \$115
DiimoCache PowerMac Cache .....From \$155

ACCELERATORS

Daystar

PowerPro 601 80MHz w/RAM Exp ..\$1845
PowerPro 601 100MHz w/Cache ...\$1749

NEW AT LLB!



**Apple
Supplies**



**HEWLETT
PACKARD**

**Authorized
Reseller**

Electronic orders: Compuserve @ 73423, 1272

- P.O.'s accepted upon approval
- All major credit cards accepted- No surcharge- when shipped
- Prices subject to change- Not responsible for errors
- We export to most countries in the world

**• AIRBORNE EXPRESS OVERNIGHT
\$6 AND UP**

- Orders received before 8:00 pm EST weekdays shipped same day
- Open 8 am to 7 pm M-F, 9 am to 4 pm Saturdays
- No sales tax except applicable sales tax in WA
- Returns subject to a 10% restocking fee.

The LLB Company, Inc. 13228 NE 20th St., Suite B, Bellevue, WA 98005

CIRCLE 563 ON READER SERVICE CARD

MAC Xtra

For Low Prices on Memory, Media & More.

Macintosh Memory

72 PIN MEMORY
•POWERPC •CENTRIS •QUADRA •LC III

4 MB SIMM 32BIT 72PIN 70NS	.....\$155
4 MB SIMM 32BIT 72PIN 60NS	.....\$159
8 MB SIMM 32BIT 72PIN 70NS	.....\$299
8 MB SIMM 32BIT 72PIN 60NS	.....\$305
16 MB SIMM 32BIT 72PIN 70NS	.....\$509
16 MB SIMM 32BIT 72PIN 60NS	.....\$519
32 MB SIMM 32BIT 72PIN 60NS	.....\$1059
128 MB (KIT OF 2-64MB SIMMS)	.....\$4659

30 PIN MEMORY

1x8x70	.....\$38
1x8x80	.....\$36
1x8x100	.....\$32
2x8x70	.....\$80
2x8x80	.....\$78
4x8x70	.....\$137
4x8x80	.....\$135
8x8x80	.....\$317
16x8x70 (LOW PROFILE)	.....\$599

ADDITIONAL MEMORY

1x8x80 (IIIfx & NTX)	.....\$36
1x8x70 (IIIfx)	.....\$38
4x8x80 (II, IIx) PAL	.....\$138
4x8x70 (II, IIx) PAL	.....\$140
4x8x80 (IIIfx)	.....\$136
4x8x70 (IIIfx)	.....\$138
8x8x70 (IIIfx)	.....\$315
16x8x70 (IIIfx)	.....\$679
1x9x70 (IBM)	.....\$43
4x9x70 (IBM)	.....\$161
1x36 - 4 MB	.....\$179
2x36 - 8 MB	.....\$345
8x36 - 32MB	.....\$1339



Media

SyQuest Cartridge 44MB	.....\$42
SyQuest Cartridge 88MB	.....\$48
SyQuest Cartridge 105MB	.....\$55
SyQuest Cartridge 200MB	.....\$76
SyQuest Cartridge 270MB	.....\$59
Sony 3.5" Floppy Disks 2SHD	.....\$6.90
Verbatim 128MB MO cartridge	.....\$28
Verbatim 230MB MO Cartridge	.....\$35
Verbatim 600MB MO Cartridge	.....\$69
Verbatim 1.3GB MO Cartridge	.....\$82
Verbatim CD-R 74 Min. 650MB	.....\$13.99
Iomega Zip100 Media Cartridge	.....\$19
Bernoulli 230MB Single Cartridge	.....\$96
Bernoulli 230MB 5-pk. Cartridge	.....\$455

PowerBook Accessories

Battery for PB140/180	.....\$49
Battery for PB100	.....\$49
Charger for PB140/180	.....\$89
Mini A/C Adapter for PB140/180	.....\$50
Mini A/C Adapter for PBDuo	.....\$50
Slimpack for PB100/180C	.....\$145
Slimpack for PBDuo	.....\$235
Powerbook Carrying Case	.....\$32
Kensington Turbo Mouse	.....\$106
Kensington Thinking Mouse	.....\$99
Kensington Keyboard Mac 101E	.....\$89

PowerBook Memory

4 MB Upgrade- PB100	.....\$167
6 MB Upgrade- PB100	.....\$175
4 MB Upgrade- PB140/145/145B/17	.....\$94
6 MB Upgrade- PB140/145/170	.....\$135
4 MB Upgrade- PB160/165/180	.....\$95
6 MB Upgrade- PB160/165/180	.....\$148
8 MB Upgrade- PB160/165/180	.....\$215
10 MB Upgrade- PB160/165/180	.....\$275
4 MB Upgrade- PB165C/180C	.....\$145
6 MB Upgrade- PB165C/180C	.....\$165
8 MB Upgrade- PB165C/180C	.....\$215
10 MB Upgrade- PB165C/180C	.....\$405

PowerBook DUO 210-280C

4MB Upgrade	.....\$165
8MB Upgrade	.....\$325
12MB Upgrade	.....\$475
14MB Upgrade	.....\$559
20MB Upgrade	.....\$792
28MB Upgrade	.....\$1,197

PowerBook 150 Series

4 MB RAM Module	.....\$179
8 MB RAM Module	.....\$342
14 MB RAM Module	.....\$587

PowerBook 500 Series

4 MB RAM Module	.....\$179
8 MB RAM Module	.....\$315
16 MB RAM Module	.....\$627
32 MB RAM Module	.....\$1,229

SyQuest Drives

FREE CARTRIDGE!
w/ RUMI SYQUEST DRIVE

88MB SyQuest w/cart	.....\$379
105MB SyQuest w/cart	.....\$379
200MB SyQuest w/cart	.....\$529
270MB SyQuest w/cart	.....\$529
Rumi CD-ROM 2X	.....\$185
Rumi 230MB MO	.....\$705
Rumi Quantum Drives	
Rumi 160MB Int/Ext	.....\$189/\$255
Rumi 365MB Int/Ext	.....\$229/\$285
Rumi 540MB Int/Ext	.....\$259/\$325
Rumi 730MB Int/Ext	.....\$319/\$385
Rumi 1GB Int/Ext	.....\$645/\$705
Rumi 2.1GB Int/Ext	.....\$1085/\$1145
IOmega Zip100 Ext	.....\$199
Bernoulli 230 Drive	.....\$459

Necessary Accessories

Math CoProcessors	
LC & LCII 16mhz	.....\$49
LCIII 25mhz	.....\$48
LC575 33mhz 040	.....\$350
Classic II 16mhz	.....\$55
Color Classic 16mhz	.....\$48
Duo/P600 33mhz	.....\$35
Centris 25mhz CPU repl	.....\$299
Video Ram	
Video Ram 256K	.....\$20
Video Ram 512K	.....\$38
Cache /PowerMacs 6100, 7100	
256K Cache	.....\$119
512K Cache	.....\$445
1MB Cache	.....\$859



Daystar Accelerators

Daystar	
PowerPro 601 80MHz	
w/RAM Expansion Cache	.....\$1845
PowerPro 601 100MHz w/Cache	.....\$1749
Turbo 040 40MHz w/Cache	.....\$795
Turbo 040i 33MHz w/Cache No FPU	.....\$509
Turbo 601 66MHz / Ili	.....\$999
Turbo 601 66MHz / Ili	
Includes Adapter	.....\$999
Turbo 601 66MHz / Ili, Ili, P600	.....\$999
Turbo 601 100MHz / Ili	.....\$1749
Turbo 601 100MHz / Ili	
Includes Adapter	.....\$1749
Turbo 601 100MHz / Ili, Ili, P600	.....\$1749
PowerCard 601	.....\$549

East Modems

Global Village	
Teleport Bronze	.....\$97
Teleport Gold II	.....\$112
Teleport Mercury 19.2	.....\$289
Powerport Mercury 19.2	.....\$329
Powerport Mercury PB500	.....\$340
Powerport Duo	.....\$329

Supra	
Supra 2400 Baud	.....\$59
Supra Express Plus 14.4	.....\$99
Supra 28.8 V.34 S/R	.....\$229
Supra Powerbook 14.4 S/R	.....\$165
Supra Powerbook 28.8 S/R	.....\$319

US Robotics	
Mac & Fax Sportster 14.4	.....\$152
Mac & Fax Sportster V.34	.....\$265

Fax Your Order! 206-746-5324

Overnight Delivery \$7 and up
UPS Ground \$6 and up
MasterCard, VISA & Discover, No Surcharge
Prices Subject to Change Without Notice.

MAC Xtra 1075 Bellevue Way NE, Suite 114, Bellevue, WA 98004 • Phone (206) 746-3303

1-800-553-4230

CIRCLE 561 ON READER SERVICE CARD

International 206-746-0229

Returns Subject to Approval & Restocking Fee
Office Hours:
M-F, 7:00 AM to 6:00 PM
Sat, 9:00 AM to 4:00 PM PST

PERIPHERAL

PERIPHERAL OUTLET, Inc.

800/256-6581

SAVE MONEY!

Peripheral Outlet will buy your old memory at great prices, even if you didn't buy it from us! Call for details.

68040 50 MHz Accelerator \$799

The DiiMOCache '040/50 Accelerator will make your Macintosh as fast as a PowerPC, even in native mode. And you won't have to buy new software. The DiiMOCache '040/50 is a 68040 accelerator boosted to 50MHz with 128K Static RAM Cache. Its Slot-Free design keeps your PDS and NuBus slots free for other cards. Several models support the Quadra 610, 630, 650, 660AV, 700, 800, 900, 950 and Centris 610 and 650. Soon shipping for more 68040 Macs!

68040 Processor w/FPU \$279

For the Centris and Quadra 605, 610, 650 and 660AV, and the Performa 475/476 and LC 475.
33MHz for Quadra 650 and LC 575 \$399.00
40MHz CALL
Heat Sink \$19.00



PERIPHERAL OUTLET, Inc.

327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 AppleLink-PERIPHERAL
HOURS: Monday-Thursday 6AM-7PM CST, Friday 6AM-6PM

We accept Visa/MC/Amex/Discover, and COD Cashiers check upon approval. Educational, Government, and Fortune 500 P/Os accepted upon approval.

Due to volatility in the market all prices and availability are subject to change without notice.

Call us last! We will try to beat all reasonable competitor's prices!

72 Pin Memory for the new Macs

80ns 70ns 60ns

4 Megabyte
8 Megabyte
16 MB-Non Composite
32 MB-Non Composite
**Prices Changing —
Call for Best Prices!**

PowerBook 100-series Memory

2 Megabyte upgrade
4 Megabyte upgrade
6 Megabyte upgrade
8 Megabyte upgrade
10 Megabyte upgrade
**Prices Changing —
Call for Best Prices!**

PowerBook 500-series Memory

4 Megabyte upgrade 169.00
8 Megabyte upgrade 329.00
16 Megabyte upgrade 649.00
24 Megabyte upgrade 1049.00
32 Megabyte upgrade CALL

All PowerBook memory upgrades include necessary tools, static protection, and instructions for safe installation.

Duo-series Memory

4 Megabyte upgrade 169.00
8 Megabyte upgrade 329.00
12/14 Megabyte upgrade 479/549
20/28 Megabyte upgrade 795/1095

Cache Cards, Etc.

256K Level 2 Cache Card for PowerMacs 149.00
512K & 1 MB Level 2 Cache for PowerMacs CALL
128K Cache Card for Quadras from 125.00
128K Cache Card for LCIII & Performa 450 129.00
Ili/Ili 64K Cache Card 125.00/159.00
Ili 2-slot Card and 68882 119.00
Slot-Free Cache Card for LC 475 195.00
Slot-Free Cache for 660AV, 700, 900, 950 245.00

50 MHz Accelerator \$389

Speed increases of up to 400% with the DiiMOCache 50MHz 68030 Accelerator. Awarded 4 1/2 Mice in MacUser's April 93 Accelerator review, the DiiMO outperformed not only DayStar's PowerCache 50MHz but also most of the 68040 25MHz accelerators. The DiiMOCache 50MHz runs on the LC, LCII, LCIII, II, IIX, IICX, IICI, IIVI, IISI, SE/30, and the Performa 600 and Performa 400 series. Call for adapter prices.
DiiMOCache 50MHz Accelerator \$389.00
DiiMOCache 50MHz w/FPU \$449.00



Standard 30 pin SIMMs

1 Megabyte
2 Megabyte
4 Megabyte
8 Megabyte
16 Megabyte
**Prices Changing —
Call for Best Prices!**

Video RAM

256K VRAM 80ns 17.00
512K VRAM 80ns 35.00

68882 Math Coprocessors

68882 25 MHz FPU 49.00
68882 33 MHz FPU 59.00
68882 50 MHz FPU 99.00
25 MHz for Macintosh LC/LCII 55.00
20 MHz w/2 slots for Mac IISI 119.00
25 MHz for Mac Classic II 55.00

Newton Upgrade Products

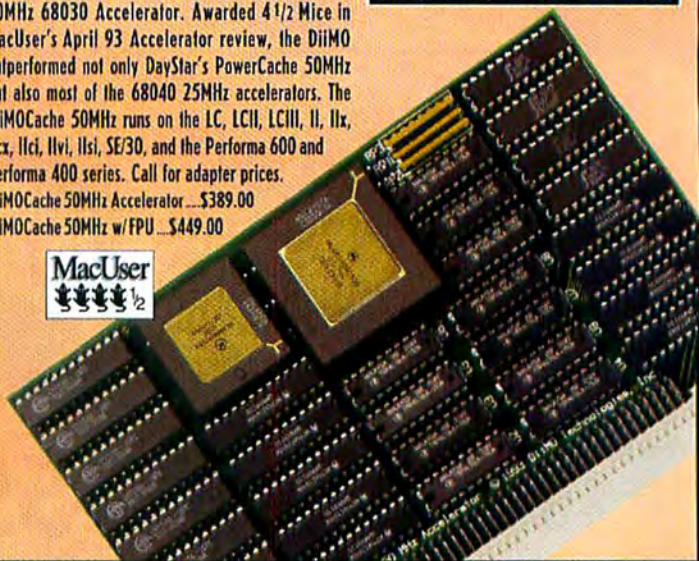
512K Static RAM Storage Card 89.00
1 Megabyte Static RAM Storage Card 129.00
2 Megabyte Static RAM Storage Card 235.00
2 Megabyte Flash Storage Card 99.00
4 Megabyte Flash Storage Card 169.00
8 Megabyte Flash Storage Card 299.00
16 Megabyte Flash Storage Card 565.00

Miscellaneous

LaserWriter 320 2, 4, 6MB upgrades CALL
LaserWriter Pro 810 4MB/8 MB upgrades 229/399
T.I. MicroLaser 1 MB 49.00
Mac Classic 1 MB Board 75.00
68851 16MHz PMMU 89.00
If requested, MODE 32 software included free w/PMMU
Mac Portable 3-7 MB Cards CALL

TOLL FREE TECH SUPPORT

Our tech support and installation instructions are the best in the industry!
LIFETIME WARRANTY on all memory products
Order by 6:30PM CST for same day shipping!
Overnight delivery from \$8.00 *some restrictions apply



CIRCLE 454 ON READER SERVICE CARD

Best Accelerator Price/Performance!

BUY DIRECT FROM MANUFACTURER & SAVE! • EXPERT SALES CONSULTANTS! • ONE YEAR WARRANTY • SUPERIOR TECHNICAL SUPPORT • SAME DAY SHIPPING • SINCE 1986



**Double Speed!
Plug and Play**

The Sonnet Quad Doubler plugs into the CPU socket and includes a 68040 that runs at twice the speed of your existing 040 CPU! No additional software required. 100% software compatible!

Start At
\$249

Accelerator/Cache	CPU	Speed	Macintosh	no FPU	FPU
QuadDoubler/8K	68040	50MHz	Quadra 610, 660AV, 700, 900, Centris650	\$599	\$599
QuadDoubler/8K	68040	40MHz	Centris 610	\$249	\$399
Speedstar/128K	68040	33MHz	Mac IIx, IIx*, IIxi*, IIcx*	\$449	
Speedstar/128K	68040	40MHz	Mac IIx, IIx*, IIxi*, IIcx* ("S49 adapter")		\$599
Mac II Doubler	68030	33MHz	Mac II, IIfx, SE/30	\$189	\$238
LC II Doubler/16K	68030	33MHz	Mac LC II, Performa 400-430	\$149	
LC Booster/16K	68020	25MHz	Mac LC	\$99	
FPU w/LC40 trade-in	68040	25MHz	Quadra 605, Centris 610, 650, LC475	\$149	
FPU w/LC40 trade-in	68040	33MHz	LC/Performa 570 series & 630 series	\$249	
FPU & Speed Boost	68040	33/66	PowerBook 520, 540 (installed)	\$449	
FPU	68882	16-33M	LC/II/III, Clr Classic, Dock, IIsi, etc.	\$49	
PMMU w/MODE32	68851	16MHz	Mac II	\$99	
CacheCard/32K		25MHz	Mac Ili	\$49	
CacheCard/256K		80MHz	PowerMac 6100, 7100, Performa 6115	\$129	
PowerMac Booster		80MHz	PowerMac 6100, 7100, Performa 6115	\$79	

©NN© SONNET TECHNOLOGIES, 18004 Sky Park
Irvine California 92714, 714-261-2800 Fax 261-2461
Gov't./Corp./Education P.O. **800-786-6260** Member Better Business Bureau
No Surcharge
VISA

CIRCLE 463 ON READER SERVICE CARD

MEMORY

CALL FOR LOWEST PRICES

1-800-662-SIMM (7466)

LIFETIME GUARANTEE

30 PIN SIMMS
1MB - 2MB
4MB - 8MB
16MB

DATA MEMORY SYSTEMS

15 Union St.
Lawrence, MA. 01840
Fax (508) 975-5232

POWER BOOK,
DUO & 500
SERIES
MEMORY
2MB - 36MB

UNIVERSITY, GOVERNMENT &
CORPORATE P.O.'S
WITH APPROVED CREDIT

72 PIN SIMMS
4MB - 8MB
16MB - 32MB

MACH 10 JET
INCREASE YOUR
POWER
MAC CLOCK
SPEED
10% - 47%

VIDEO RAM
256 & 512



FPU & PROCESSORS
68040 Processor w/FPU
25MHz & 33 MHz
68882-25 MHz & 33 MHz

- POWER MAC CACHE 256K, 512K, 1MB
- MEMORY FOR ALL PRINTERS

MEMORY UPGRADE SPECIALIST

CIRCLE 447 ON READER SERVICE CARD

MACH 10 JET - CPU ACCELERATOR

IS
AVAILABLE
FOR

8100 / 100 (AV)

8100 / 80 (AV)

7100 / 66 (AV)

6100 / 60 (AV)

Q840AV

Q800

Q660AV

C660AV

Q650

C610



- \$99 (suggested) to take your 8100/100 to 126MHz!!
- 20-40% acceleration in all CPU tasks
- Reliable, high specification, precision components
- User friendly manual, with many photos
- Full Technical support by qualified engineers
- 30 Day Moneyback guarantee, Lifetime warranty
- Award winning UK design

\$99



For a free information disk call any
of the dealers listed below.
Dealer and Distributor inquiries invited.

Distributor **DMS** Dealer **MEMORY TRADERS** Made in The US By: **SYZYGY ELECTRONICS**
Tel: 1-800-662-SIMM (7466) Tel: 800-315-7807
Fax: 508-975-5232 Fax: 703-522-6626
Lawrence MA Arlington VA
Dealer Inquiries Only
Tel: 703 522 6624 ext 213
Fax: 703 522 6626

CIRCLE 409 ON READER SERVICE CARD

We Buy Used Memory

256K
512K
1MB
2MB
4MB
8MB
16MB
32MB
64MB
VRAM
IIfx SIMMS
PowerBook
Duo

We want your used RAM:

- 30 or 72pin
- Any Configuration
- Any Size
- Any Speed
- SIMMS, SIPP's, & Chips
- Working or Broken
- Any Quantity

Best Prices Paid

We sell:

- 30 or 72pin
- Major Manufacturers Chips
- Lifetime Guarantee
- Free UPS Shipping
- VISA/MC No Fees
- Competitive pricing
- Any Quantity

BEST PRICES
ON ALL
SIMMS



800-315-7807

MEMORY TRADERS

Come and See us at:
Sun World in San Francisco, May 23-25
PC Expo in New York, June 22-24
Tel: 800-315-7807
Fax: 703-522-6626
Arlington VA

UPGRADES & MEMORY NETWORKING & COMMUNICATIONS MOBILE COMPUTING & PDAS

**Macworld
SHOPPER®**

MEMORY

MAG 72 PIN	
1X32 60/70	\$147/141
2X32 60/70	\$295/288
4X32 60/70	\$539/531
8X32 60/70	\$1090/1040

POWER PC	
4M/8M	\$145/290
16M/32M/64M	\$474/977/2044

PC 72 PIN	
4X36 60/70	\$569/545
8X36 60/70	\$1465/1443

POWER BOOK	
520, 520C, 540, 540C	
4M/8M	\$168/321
16M/32M	\$628/1295

140, 145, 170	4M/6M \$83/140
160, 165, 180	4M/8M \$94/Call
165C, 180C	4M/6M \$100/178/217

DUO	
210/230/...../280/280C	
4M/8/12	\$169/328/479
14M/20/28	\$557/799/1212

VIDEO VRAM	
256K/512K	\$21/37

Printer and PCMCIA
Memories available
I.G.H. ENTERPRISES
1628 SANTA MONICA BLVD #207, W.L.A. CA 90025

TEL (800)HBR-2021
FAX (310)826-2573

7:30 AM 6:00 PM MON-FRI
10:00 AM 3:00 PM SAT

Prices subject to change. Limited availability. Return
items subject to approval and restocking fee.

CIRCLE 452 ON READER SERVICE CARD

WANTED: USED SIMMS

TOP \$\$\$ PAID

256K-32MB

We Buy Macs

Mac Solutions
(310) 394-0001

FAX (310) 394-7744
1416 Wilshire Bl. Santa Monica, CA 90403

CIRCLE 410 ON READER SERVICE CARD

Dynamic Engineering

PowerBook & Duo
Accelerator

Portable Products

Memory, HDD, Battery

POWERBOOK 500 BATTERIES

435 Park Dr., Ben Lomond, Ca. 95005

Fax 408-336-3840

DISCVR VISA/MC P.O.
(408) 336-8891

CIRCLE 411 ON READER SERVICE CARD

TeleFinder BBS

Create Your Own GUI On-Line Service!

- ✓ Easy-to-use Electronic Mail
- ✓ Gateways to the Internet and Fidonet
- ✓ Fast ZMODEM File Transfers
- ✓ View GIF and PICT graphics online
- ✓ Conferences and Message Forums
- ✓ Multi-User Chat and Instant Messages
- ✓ File Search and Thumbnail Previews
- ✓ New TFTP and UUCP support
- ✓ Client software for Mac and Windows

Spider Island Software • 4790 Irvine Blvd #105-347 Irvine, CA 92720
Voice (714) 669-9260 • FAX (714) 669-1383 • BBS (714) 730-5785

CIRCLE 597 ON READER SERVICE CARD

Active Buyers turn to Macworld,
the Macintosh authority, to find
the products they need.



Call 800.888.8622

Macworld Shopper Delivers

Kablit™ Security

NOW!

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

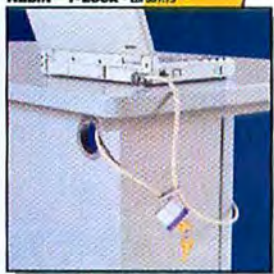
- Secure computer or Powerbook™ to desk,
table, etc.
- Protect data
- Lifetime warranty

MacKablit™ II - list \$34.95



Fixed Location

Kablit™ T-Lock - list \$39.95



Any Location

Quick And Easy To Install
Travels With Your Powerbook™

Padlock Security
Provided by
Master Lock



Secure-It

Order now — Call 800-451-7592...

18 Maple Court, East Longmeadow, MA 01028, USA phone 413-525-7039

The particular Master® Lock Trademarks used are trademarks of the Master® Lock Company and are used by Secure-It, Inc. under license.

CIRCLE 574 ON READER SERVICE CARD

Active Buyers trust
Macworld to deliver
the products they
need daily.

Everything you
need in one place

Macworld Shopper Delivers



PageMaker 5.0
\$249



AutoCAD Rel.12
\$199



Director 4.0
\$589



QuarkXpress 3.3
\$279



Strata Studio Pro 1.5
\$495



Paintbrush 3.0
\$218



Stata Vision 3D
\$249



Freehand 5.0
\$189



MiniCAD 5.5
\$319

Student/Teacher/School Full Packages & Latest Versions
Academic Credentials Required

Desktop Publishing Bundle
QuarkXpress 3.3 or PageMaker 5.0 + any leading photo editing package + any leading illustration package \$699
PowerMac Version \$759

'Only' limited to what we carry.

4th Dimension 3.2	\$559	MathCAD 3.1	\$85
ArchiCAD 4.55	\$495	Mathematica 2.22	\$159
Astound 1.5	\$125	Nisus Writer 4.0	\$139
Authorware Prof. 3.0	\$975	Nisus Writer w/ Language Key	\$239
Blue Print 5	\$150	Norton Utilities 3.1	\$89
Canvas 3.5	\$175	Now Utilities 5.0	\$59
Claris Works 3.0	\$99	Paint Alechemy	\$49
Coda Finale 3.2	\$249	Pixar Typestry 2.1	\$135
Code Warrior Gold	\$139	QuarkXpress (Foreign Edition)	Call
Delta Graph Pro 3.5	\$90	Ram Doubler 1.5	\$54
Fontographer 4.1	\$169	Ray Dream Designer 3.0	\$175
Form-Z 2.6	\$975	Soft Windows 1.0	\$228
FrameMaker 4.04	\$399	Sound Edit 16	\$189
In Control/Quicken 5	\$79	Supercard 2.0	\$139
Infini-D 2.6	\$269	Symantec C++ 7.0	\$149
Kai's PowerTools 2.1	\$84	TextureScape 1.5	\$84
KPT Bryce 1.0	\$84	WordPerfect 3.1	\$99
LogoMotion 1.5	\$74		
MacAcademy Videos	\$36		
Macro Model 1.5	\$425		

** We also Carry Adobe & Microsoft Products.*

80% SOFTWARE DISCOUNTS UP TO

1-800-377-9943

SOFTWARE PLUS

Astrology SOFTWARE

Software for professionals and students. Chart Interpreters, Atlases, Star Clocks and more. Superior accuracy, high resolution output. Call for a FREE catalog! PowerPC Native & Color

(800) 827-2240
Time Cycles Research
375 Willets Ave. Waterford CT 06385
(203) 444-6641 Fax (203) 442-0625

MUSIC FOR THE MAC

The full scale of Products

In an age of mail-order nightmares, you can rely on MacBEAT for expert, friendly advice and efficient, reliable service before and after the sale. Our customers enjoy the "Best Tech Support in the business!"

- We offer great pricing on computer-based recording systems, keyboards, sound modules, recording equipment, and all MIDI software, interfaces and accessories.
- Authorized dealer for Digidesign, Opcode, Coda, Mark of the Unicorn, E-mu, Kurzweil, Passport, Panasonic, Ramsa, Roland, Tascam, Steinberg, and more!

INFO-LINE: 505-473-3434
SALES 1-800-MAC-BEAT
fax: 505-473-4647

Call Now! **Free Catalog!**

REUNION®

the family tree software

Rated best by MacWorld, MacUser, and Mac Home Journal!



Reunion 4.0 no longer uses HyperCard! It's much faster at organizing your family information and images. It creates graphic tree charts and forms, family group sheets, indexes, calendars, family histories, book-style Register and Ahnentafel reports, cascading pedigree charts, and mailing lists. Reunion also links and displays color pictures, shows how you're related to others, records sources, provides custom fields for information unique to your research, calculates the day of the week you were born, imports and exports data, and much more.

Call MacConnection to order: 1-800-334-4444

For a free brochure and sample printouts, contact:

Leister Productions
P.O. Box 289, Mechanicsburg, PA 17055
Phone 717-697-1378 Fax 717-697-4373
Compuserve 74774,1626 America Online LeisterPro

MAC Grade

\$85.00
Plus \$4.50 Shipping (CA/IL add 17% tax)

Take the work out of GRADING!

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/college editions.

Call (800) 795-0641
CalEd Software
P.O. Box 22913, Carmel, CA 93922
60 Day Unconditional Money Back Guarantee.

BIBLE MASTER™

NAS COMPUTER BIBLE

Get them all together...

King James Version	New International Version	New American Standard Bible
--------------------	---------------------------	-----------------------------

...add on modules
NAS Hebrew/Greek Dictionaries
NAS Topical Studies and more!

American Bible Sales
870 S. Anaheim Blvd., Anaheim, CA 92805
DISCOUNT SOFTWARE PRICES
1-800-535-5131

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

ATTENTION: Students, Teachers & Schools!!



#1

In Education!

QUARKXPRESS
3.3.1 \$299

ARCHICADD 4.55
\$495

DIRECTOR 4.04
\$589

FREEHAND 5.0
\$195

AUTOCAD 12
\$199

STRATA STUDIO
PRO 1.5.1 - \$495

4TH DIMENSION 3.2	\$475	LOTUS 1-2-3 V1.1	\$99
ALCHEMY 3.0 MAC	\$85	MAC ACADEMY VIDEOS	\$39
AMERICAN HERITAGE DLX	\$65	MAC DRAFT 4.1	\$199
ARRANGE 2.01	\$149	MACROMODEL 1.5.2	\$429
ASTOUND 1.5	\$129	MAC WRITE PRO 1.5	\$85
AUTHORWARE PRO 3.0	\$975	MATHEMATICA 2.2.2	\$175
BLUEPRINT 5	\$149	MINICAD +5.02	\$319
CANVAS 3.5.2	\$175	M.Y.O.B. 5.0 WITH PAYROLL	\$90
CLARIS WORKS 3.0	\$89	M.Y.O.B. 5.0 W/OUT PAY	\$49
CODA FINALE 3.2	\$249	NISUS WRITER 4.0	\$149
CODE WARRIOR GOLD 5	\$149	NOW BUNDLE 3.0	\$75
COLLAGE 2.01	\$175	NOW UTILITIES 5.0	\$59
CS CHEM OFFICE PRO 2.0	\$299	PAINT ALCHEMY 2.0	\$85
DATADESK 4.2	\$329	RAM DOUBLER 1.5	\$55
DELTAGRAPH PRO 3.5	\$95	RAY DREAM DESIGNER 3.0	\$179
DESIGN WORKSHOP 1.2	\$249	SHOWPLACE 2.2 CD-ROM	\$149
DIRECTOR MULT. STUDIO	\$1175	SKETCH 2.0	\$249
DIRECTOR, SOUND EDIT 16		SMALLTALK 5 V2.0	\$99
& CLIPMEDIA II	\$695	SOFT WINDOWS 1.0	\$229
ENCORE 3.0.7	\$249	SOUND EDIT 16	\$199
FAST TRACK SCHEDULE	CALL	SPANISH POWER TRANSL.	\$99
FINAL DRAFT 3.0	\$125	STRATA VISION 3-D 4.0	\$249
FONTOGRAPHER 4.1	\$175	SUPERCARD 2.0	\$149
FORM Z 2.62	CALL	SUPERCARD 2.0 BUNDLE	\$249
FRACTAL DESIGN POSER	CALL	TERAZZO	\$95
FRACTAL PAINTER 3.0	\$219	TEXTURESCAPE 1.5	\$85
FRAMEMAKER 4.04	\$399	TOP DOWN FLOWCHARTER 4.1	\$169
FULL CONTACT	\$79	TYPESTRY 2.1.1	\$135
IN-CONTROL/QUICKEN 5	\$85	UP-FRONT 3-D 2.0	\$125
INFINI-D 2.6	\$249	VELLUM 3-D 2.6	\$595
INSPIRATION 4.1	\$89	VIDEO FUSION 1.6.1	\$275
JMP VERSION 3.1	\$329	VIREX 5.5	\$60
KAI'S POWER TOOLS 2.1	\$85	WALKTHROUGH PRO 2.0	\$249
KPT BRYCE 1.0	\$85	WACOM ART PAD 4X5	\$139
KPT CONVOLVER	\$85	WACOM ARTZ 6X8	\$285
LOGOMOTION 1.5	\$75	WORD PERFECT 3.1	CALL

LATEST VERSIONS & FULL PACKAGES

- **SAME DAY SHIPPING ON MOST ITEMS.
- **ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.
- **SCHOOL PURCHASE ORDERS WELCOME.
- **NO SURCHARGE ON CREDIT CARDS.
- **IBM & MAC PRODUCTS AVAILABLE.

CALL FOR
FREE
CATALOG!

The
SOFTWARE

Source

WE WILL BEAT ANY ADVERTISED PRICE!!

1-800-289-3275



DISCOVER



2517 Hwy 35, Bldg L
Manasquan, NJ 08736
(908) 528-0030

FAX (908) 528-9378

EMAIL: SFTSWS@AOL.COM

CIRCLE 570 ON READER SERVICE CARD

**Macintosh Online Bible
NOW ON CD-ROM**

... the standard by which all others are judged. MacHome Journal 8/94
Deluxe CD-ROM \$ 90
NIV • NASB • NKJV • NRSV • plus all items on Classic CD-ROM.

Classic CD-ROM \$ 40
KJV with Strong's + 9 other Bibles • Grk & Heb • Lexicons • Cross Refs • Topics • Dictionaries • Commentaries
Fast, Powerful and Easy to Use

800-554-9116
By the Numbers, Inc



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.
StarCom Microsystems
Windsor Park East
25 West 1480 N., Orem, UT 84057
801/225-1480

LXR-TEST BEST IN TESTING

Highest-rated software for every testing environment: classroom, school, district, governmental, industrial and certification.

- ✓ Item Banking & Test Production
- ✓ Test Scoring w/Group Comparison
- ✓ Mastery Reporting & Remediation
- ✓ Survey Scoring and Analysis
- ✓ Interactive Testing with Movies
- ✓ Weighted & Multi-Response Grading
- ✓ Accommodates All Question Types
- ✓ Integrated Design (Mac & Windows)

Logic eXtension Resources
909-980-0046 Fax: 987-8706
7168 Archibald Ave. Suite 240
Rancho Cucamonga, CA 91701

CIRCLE 407 ON READER SERVICE CARD

Practica Musica™
VERSION 3
Your personal music tutor now includes rhythm tapping, chord progressions, and many other exciting new features. More than ever the most complete music training package available for both beginners and advanced students. \$140

NEW!

ARS NOVA • (206) 828-2711 • (800) 445-4866
FAX (206) 889-0359 or (206) 828-2132

Songworks™
Not only prints your song, but helps you write it! Suggests tune and harmony ideas, plays, prints melody, chord symbols, lyrics with or without MIDI. \$125

CIRCLE 595 ON READER SERVICE CARD

Active Buyers include Macworld Shopper as part of their morning ritual.



Macworld Shopper Delivers

FREE SHAREWARE CATALOG
Software as low as \$2.99
• Education • Games • Graphics • Productivity • Utilities • Fonts
EDUCORP® 1-800-843-9497
Info: 619-538-8999 • FAX 619-538-2345
7434 Trade St • San Diego CA 92121

CIRCLE 418 ON READER SERVICE CARD

U.S. Digital Topography CD-ROM
• Color shaded relief maps
• Individual state maps
• State detail at 1:530,000
• Editable in applications which read PICT graphics
Eastern U.S. \$99
Western U.S. \$99
Chalk Butte Digital Maps
Visa 307-537-5261 MC

CIRCLE 419 ON READER SERVICE CARD

THE VIRTUAL STUDIO COMPANY™

STRATA



Strata Products Also Available Through :

MacPlace
at Egghead

The Mac Zone

MacWorld

MacWAREHOUSE

Vision3d 4.0
competitive upgrade \$149

STRATA VIRTUAL 3d

STRATA CLIP 3d

FRACTAL TERRAIN

RENDERPRO 3



For best pricing on
Strata Extensions

call: **1-800-STRATAFX**

CIRCLE 484 ON READER SERVICE CARD

Create PostScript files in one-tenth the time!



The last time you created a PostScript® file, you may have had the gnawing suspicion that there was a quicker, easier way to accomplish this time-consuming procedure. You were right!

Finally, there is a utility which can reduce the usual time it takes to make a PostScript file by up to 90 percent: PSEXPRESS. PSEXPRESS produces startling results with QuarkXPress, Freehand, Illustrator and Photoshop.

Here's what a pre-press professional says about PSEXPRESS:

"In our operation, we create quite a few high-resolution PostScript files for national magazine and catalog pages. PSEXPRESS has reduced the time to create each file by an amazing 80-85%. If I hadn't seen it, I would not have believed it. I only wish every software package could live up to the promises they make like yours has. Thanks for making our jobs easier."

ELECTRONIC PRE-PRESS SUPERVISOR, WORLD COLOR PRESS

You've wasted enough time and money creating PostScript files the old-fashioned way. It's time to speed up the process!

Productive Intelligence

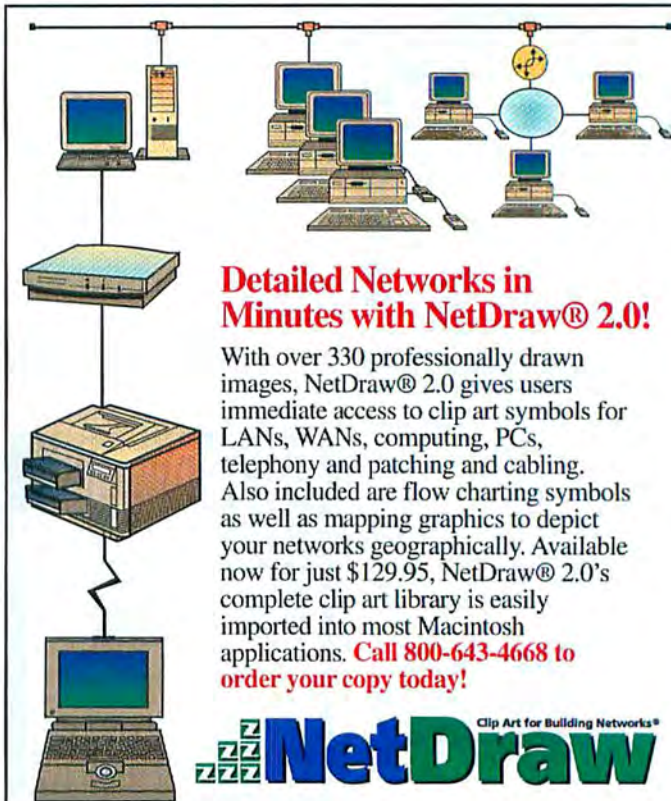
5430 Pine Cone Road
La Crescenta, CA 91214

818-541-0231 FAX: 818-541-1815

CALL NOW!
800-500-0541

Only \$249.00

CIRCLE 460 ON READER SERVICE CARD



Detailed Networks in Minutes with NetDraw® 2.0!

With over 330 professionally drawn images, NetDraw® 2.0 gives users immediate access to clip art symbols for LANs, WANs, computing, PCs, telephony and patching and cabling. Also included are flow charting symbols as well as mapping graphics to depict your networks geographically. Available now for just \$129.95, NetDraw® 2.0's complete clip art library is easily imported into most Macintosh applications. **Call 800-643-4668 to order your copy today!**

NetDraw Clip Art for Building Networks®

CIRCLE 461 ON READER SERVICE CARD

ARTBEATS



Award-Winning Backgrounds on CD

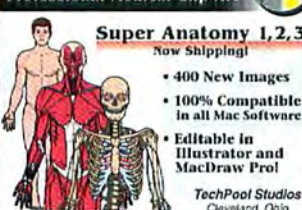
800-444-9392 or 503-863-4429

Artbeats, Box 709, M.C. OR 97457, Fax: 503-863-4547

Super Anatomy Collections

"...technically and artistically superior."

LifeART Professional Medical Clip Art



Super Anatomy 1, 2, 3

Now Shipping!

- 400 New Images
- 100% Compatible in all Mac Software
- Editable in Illustrator and MacDraw Pro!

TechPool Studios

Chesterland, Ohio

Tel: 216-291-1922

Fax: 216-382-1915

FREE Catalog
800-LIFEART
543-5270

CIRCLE 415 ON READER SERVICE CARD

MAP Art

MAPS FOR GRAPHIC DESIGN



"Best Collection - Map Category"
Clip Art's Greatest Hits
MacWorld, January 1994

"Fine Artwork"
MacWorld 1992

FULLY EDITABLE
WITH ILLUSTRATOR
& FREEHAND!

Hundreds of
full color
maps available!
World, USA
All 50 States!

CARTESIA 5 S. Main St., Box 757 Voice 609-397-1611
Lambertville, NJ 08530 24 hr. FAX 609-397-5724

CALL FOR FREE CATALOG
800-334-4291

Instant Logos

More than 1,000 logo designs — ready to use in EPS format. Eight different graphic categories. Available on floppy or CD-ROM. \$69. (Call for free brochure.)

Logo Design Software

Logo SuperPower® lets you create world class designs live these in minutes. Available for Mac or PC on floppy or CD-ROM. Requires drawing program such as Illustrator, Freehand or Corel Draw. LSP Basic — \$119
LSP Extended — \$279
(Call for free brochure)

Datathon Corporation (800) 648-5646 or (513) 421-1938
4103 Executive Park Dr. #16, Cincinnati, OH 45241 (VISA/MC/AMEX)

CIRCLE 533 ON READER SERVICE CARD

FontSoftware

800.248.3668

ADOBE • AGFA • BITSTREAM • LETRASET
LINOTYPE-HELL • MONOTYPE • URW...

Thousands of fonts from over 40 companies
large and small, all at low discount prices.

New 700 page font specimen book
with over 13,000 type displays
only \$39.95

Precision Type

47 Mall Drive, Commack, NY 11725-5703
Phone: 516.864-0167 Fax: 516.543.5721

CIRCLE 485 ON READER SERVICE CARD

AdArt

ALSO AVAILABLE ON CD-ROM

ELECTRONIC CLIP ART FOR ADVERTISING

PEPSI • GE • R • REALTOR®

RECYCLED ART • WEEDING
REAL ESTATE ART • ASTROLOGY
FLAGS OF THE WORLD • MASOCHISTS
CARS & LIGHT TRUCKS • ANIMALS
LOGOS & TRADEMARKS, 1 - 12
INT'L SYMBOLS & ICONS, 1 & 2 • WOMEN
BUSINESS SYMBOLS • MEDICAL SYMBOLS
SAFETY & PACKAGING • FRATERNAL SYMBOLS
ACCENTS & ATTENTION GETTERS • TRANSPORTATION
ALSO: SPECIAL EDITION VINYL CUTTERS PACKAGES

800 255-0562
FAX: 802-878-1768 • INFO: 802-878-1164

Innovation Advertising & Design
41 Mansfield Ave • Essex Jct., VT 05452

CIRCLE 506 ON READER SERVICE CARD

-DIGITAL COLOR PRINTS-

BIG, BEAUTIFUL AND IMPRESSIVE.

Merge text, graphics and photos from your disk or original art. Produce posters, billboards, back-lits, convention displays and P.O.P. displays from Mac or PC from 8-1/2" x 11" up to 52" x 30" in one piece.

T-SQUARE EXPRESS
998 W. Flagler St.
Miami, FL 33130
1-800-432-3360
B.B.S. (305) 545-8180

SAFWARE

Insures Your Computer



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

SAFWARE, The Insurance Agency Inc.
2929 N. High St., PO Box 02211
Columbus, OH 43202

CIRCLE 426 ON READER SERVICE CARD

Power Macintosh • FORTRAN 77
LS FORTRAN is an ANSI standard FORTRAN 77 compiler for the Macintosh or Power Macintosh. Features include: built-in debugging, support for mainframe extensions, background execution, scrolling output window, and optimized code generation. This popular, robust compiler is the complete solution to your FORTRAN programming needs. **Language Systems Corp.**
100 Carpenter Drive
Sterling, VA 20164
800/252-6479 • 703/478-0181
703/689-9593 Fax

4TH Dimension® has so much right, so what's wrong with it?

Answer: a lot of the "lets you create sophisticated multi-user applications quickly and easily" commands and constructs and the suggestion that it will automatically generate complicated user applications without effort. Many of the "easy" commands lead to analytical dead-ends and bad coding, resulting in inefficient and unreliable applications. Suggesting that application development can ever be quick and easy is complete nonsense and highly irresponsible.

Because of its end user orientation, important compromises were accepted. Now a large number of 4D™ applications in the field are impossible hogs as a result. This goes for most of the other "easy" database packages on the market as well. A complete review of the fundamentals can often do wonders for the many 4D™ programs that are shown not to be providing acceptable performance and adequate security.

If 4th Dimension® applications are developed with the care and commitment required, they can really fly. If you do not want to let all that wonderful database power slip through your fingers and go to waste, send us a fax and book some serious development or consultancy time today! This could be your best investment in years!



The 4th Dimension® specialists on the client's side. World wide intervention.

4 rue de la Presse - 1000 Brussels - Belgium
847 A second avenue Suite 147 - New York N.Y. 10017 - U.S.A.
fax New York: (212) 490.2885 - fax Brussels: (32-2) 218.3141 - fax France: (33) 90.51.61.99
AT&T Enhanced fax: GREAT BRITAIN: (44-171-) 410.0930 - U.S.A: (1-703-) 869.8709
JAPAN: (81-3-) 5381.4860 AT&T subscriber ID: 5248724 ##.

4th Dimension is a registered trademark of ACI, ACI US INC.

FIGHT BACK with powerful data recovery software!

Data Recovery Toolkit™
Order NOW and SAVE
20% OFF* regular price.

Take your data recovery ability to the next level. Recover data other utilities simply cannot!

Advanced features enable you to uninitialize volumes, recover accidentally trashed files, volume protection, 5 different recovery routines, backup/restore with tape support.

*Data Recovery Toolkit™/Mac
Personal Special \$700. Regular price \$749.
Order 24 hours a day!

For DRT: **800-743-0566**

CIRCLE 458 ON READER SERVICE CARD

DATA RECOVERY

It's our **BUSINESS**
to keep you in **BUSINESS**

- 24 Hours a Day
- Data Recovery Guaranteed
- Professional Clean Room
- Expertise with most systems and storage devices

2462 Wignola Rd.
Cobleskill, NY 12035
719.360.1614 • Fax 719.360.7022
WWW: <http://www.netdatarecovery.com>

For Data Recovery:

800-743-0594



"If DriveSavers can't recover your data, you might as well give up."*

*Reprinted from MACUSER, August 1994



Our proprietary techniques are so advanced, we can rescue data others might simply abandon. So, don't take chances with your data. If you can't afford to lose it, call DriveSavers. We've been restoring data and peace of mind since 1985.

400 Bel Marin Keys Bl. Novato, CA 94949 415-883-4232

Call: 800-440-1904

CIRCLE 510 ON READER SERVICE CARD

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 shipping available. We use genuine Apple™ parts.



1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

SLIDES

From PC & Mac files \$3.75
4x5 chromes/negs \$20
Dye sub print/overhead \$18
Hi Res Scanning \$10

Call for special pricing on Quantity Duplication of Slides & Overheads

Show & Tell 39 W38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 550 ON READER SERVICE CARD

Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.

- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

415-495-5555 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
381 Clementina Street • San Francisco, California 94103



Working at the speed of business.

800-341-DATA

CIRCLE 427 ON READER SERVICE CARD

Super Service Bureau!

Iris Prints \$25.00 (up to 10.5 x 17.2)

Lino Output \$7.50 (270 dpi - 8.5 x 11)

Displaymaker™ Ink Jet Prints

\$35.00 for 16 x 20. Prints up to 3'x16'

Fieri Output \$8.00 (8.5 x 11)

Quantity/Volume Discounts Available

Mac/Pc Files • Leaf Scans • Scitex Scans

4/C Sep's/Matchprints • Mounting/Laminating

Amex/Visa/Mastercard Accepted

24 hr Madam - (212-869-6963)

CALL US TODAY - 212-869-6960

MET PHOTO INC.

1500 Broadway, N.Y., N.Y. 10036

CIRCLE 465 ON READER SERVICE CARD

Need Help Fast?

Call for Typesetters, Graphic Artists,
Programmers, Network Installation
& More

Washington DC • 202.338.4163

New York City • 212.924.3979

Philadelphia • 215.972.0105

St. Louis • 314.862.6227

MacSpecialists
The people to power your Mac!™

CIRCLE 475 ON READER SERVICE CARD

IMAGERS

Digital Output & Production Center
Overnight Services

Best Value!
\$300
Slides Only
Quality Guaranteed



Indigo On-Demand Printing
4-Color Digital Offset Press

Slides & Overheads
Canon Digital Lasers
BIG Color Posters
8-16K 4x5 Imaging
Dye Sub Prints \$8.00
Multi-Media Services

Photo CD
Pro/\$8 • 35mm Format/\$.90
(800) 232-5411 or (404) 351-5800
1575 Northside Dr. Suite 490 Atlanta 30318
Satisfaction Always Guaranteed

CIRCLE 458 ON READER SERVICE CARD

ONTRACK DATA RECOVERY

The World Leader in Professional Data Recovery Services!

- Mac Specialists
- Any Media
- All Operating Systems
- Emergency Services

Mention this ad for a FREE diagnostic evaluation!

Ontrack
DATA RECOVERY

East Coast: **1-800-872-2599**
West Coast: **1-800-752-7557**

CIRCLE 459 ON READER SERVICE CARD

DATA RECOVERY

MACINTOSH SPECIALIST

- REMOVABLE AND OPTICAL DISK
- TAPE CARTRIDGE • POWERBOOK
- HARD DRIVES AND FLOPPY DISK

- Data Recovery Since 1989
- No Evaluation Charge • 1-2 Day Turnaround
- Mechanical/Electronic Failure, Virus or Data Corruption is Guarantee Recovery or it's Free
- Hard Drive Data Recovery Perform in Clean Room

1-800-469-2549

MICRO COM
18319 VENTURA BOULEVARD TARPANA, CA 91356
TEL 805-582-9082 FAX 805-582-9102
CIRCLE 422 ON READER SERVICE CARD

NEXTWAVE SERVICE BUREAU

35mm SLIDES & DUPES
4XS's & SCANS
PC & MAC
OVERHEADS
COLOR PRINTS

COMPETITIVE PRICING
PRESENTATION EXPERTS


voice 212/989-2727
outside ny 800/445-9002
bbs 212/989-3290

AMERICAN EXPRESS • VISA • MASTERCARD • DISCOVER

CIRCLE 468 ON READER SERVICE CARD

!!!Repairs by Mail!!!
Repairs from \$5.00!!! Same-day turnaround in most cases!! New and used hardware for sale! We buy dead Apples, Macs, PCs. Noon to 5:00, 6:30 to 10:00.
Arminius
8519 Orchard Avenue
Merchantville, NJ 08109
609-662-3420 (voice)
609-662-6460 (fax)

Macworld delivers the products Active Buyers are looking for.



Macworld Shopper Delivers



What's a little Competition?

NO CONTEST WITH Macworld on your side.

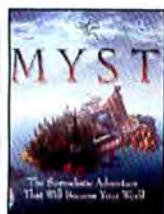
With 8,000,000 people in New York City, the competition is tough. For PAUL SCHEFFLER, account executive for MET PHOTO, a Manhattan-based service bureau, the competition in New York wasn't enough. Paul teamed with Macworld Shopper to reach beyond New York and win customers across the nation and around the globe. Now Met Photo's already THRIVING business sees PHENOMENAL GROWTH daily—Macworld Shopper sees to it that they do.

Over 1300 CD-ROM Titles in Stock!

"The...CD-ROM Pioneer" — The Wall Street Journal

FREE EDUCORP

CD-ROM Catalog



Midnight Stranger →
adults only #50316, \$49.95

Myst
#50107, \$47.95

Gadget
#50865, \$57.95

Return To Zork
#50451, \$49.95

Street Atlas USA
#50317, \$69.95

1000's of Fonts →
#2067, \$19.95

Buy World Atlas 5.0 and get U.S. Atlas FREE! #51051, \$39.95



FREE Shipping
Free express 2-day shipping on CD titles marked with an "→".

GAMES & ADVENTURES

- 50135 7th Guest \$49.95
- 50640 Arc of Doom 44.95
- 1467 Better Dead: A sci-fi thriller 49.95
- 51119 Dark Forces **NEW!** 54.95
- 50289 Dracula Unleashed 24.95
- 50198 Dragon's Lair 39.95
- 1611 Game Room →: 1,000+ games 19.95
- 51063 Jewels of the Oracle 49.95
- 51152 Jonny Mnemonic 49.95
- 1890 L-Zone 52.95
- 50105 Lawnmower Man 44.95
- 50821 Lemmings/Oh No More Lem. 37.95
- 50925 Mac 4 Pak & **FREE** CD Case 29.95
- Includes: • Out of This World • Battle Chess • Checkmate • Bridge Deluxe
- 50080 Manhole Masterpiece Edition 34.95
- 50943 Master of Orion 39.95
- 50703 MTV's Club Dead 44.95
- 50864 Out of the Sun 44.95
- 50438 Rebel Assault 49.95
- 51034 Sherlock Holmes Bundle v.1-3 19.95
- 51077 SimCity 39.95
- 50947 SimTower **NEW!** 38.95
- 50906 Space Ace 39.95
- P1583 Spaceship Warlock Non-AV 19.95
- 50607 Star Trek 25th Anniversary 39.95
- 50938 Super Wing Commander **NEW!** 49.95
- 50986 Video Casino 28.95
- 50882 Virtual Vegas 19.95

ENTERTAINMENT/GENERAL

- 50661 4 Paws of Crab \$29.95
- 2095 A Hard Day's Night 27.95
- 50971 Alice: Interactive Multimedia 57.95
- 50094 Astrology Source 39.95
- 50222 Beethoven's 5th Symphony 23.95
- 50956 Bob Dylan: Highway 61 39.95
- 50656 Bubblegum Crisis Screen Saver 22.95
- 50801 Cartoon History of the Universe 37.95
- 50369 Cookbook USA 27.95
- 50642 Cosmology of Kyoto 67.95
- 1300 EDUCORP Shareware → 2-CDs 69.95
- 51043 Electronic Arts Top Ten Pack 29.95
- Includes: • Kasparov's Gambit • Grand Slam Bridge • Air Combat • Indianapolis 500 • PGA Tour Golf • Wing Commander II • Ultrabots • Financial Workshop • Ultima VII • Seal Team
- 1356 Exotic Japan 34.95
- 50319 Freak Show 34.95
- 50809 GT Cinema Robotech 14.95
- 50668 Hometown Weekend Home Proj. 37.95
- 50340 Marilyn and André → 39.95
- 50137 Marsbook → 14.95
- 50403 Maus (The Complete) 34.95
- 50857 Meet Media Band 48.95
- L1777 Mozart: the Dissonant Quartet 16.95
- 50699 People Magazine 20 Yrs of Pop 22.95
- 50657 Project A-Ko Screen Saver 22.95
- 51035 Puppet Motel **NEW!** 27.95
- 50658 Ramna 1/2 Screen Saver 22.95
- 50612 Star Trek NG Tech Manual 44.95
- 50594 Truths and Fictions 34.95
- 50296 Virtual Tarot 39.95
- 50032 Who Built America 34.95
- 50125 Wines of the World 39.95

EDUCATION & REFERENCE



Buy ZooGuides v.3: Mammals of Africa and get Animals! 2.0 FREE #51054, \$39.95

- 50841 3-D Atlas \$59.95
- 50624 A.D.A.M. The Inside Story 39.95
- 50789 American Heritage Talking Dict. 37.95
- 50595 American Poetry 34.95
- 51125 A Brief History In Time 39.95
- 50309 Cinemanía '95 56.95
- 1610 Class Room 3.0 → 19.95
- 50935 CNN Time Capsule 1994 32.95
- 50863 Compton's Encyclopedia '95 59.95
- 51066 D Day & **FREE** Normandy → 39.95
- 50110 Encyclopedia of Dinosaurs → 29.95
- 1280 Encyclopedia of Life → 39.95
- 1642 Family Doctor 29.95
- 1333 Groliers Encyclopedia '95 59.95
- 50992 Internet for Everybody 34.95
- 50299 Learn to Speak Spanish 5.0 99.95
- 50774 Leonardo the Inventor 29.95
- 1460 Mayo Clinic Family Health Bk 37.95
- 1768 Monarch Notes 49.95
- 51094 Official Guide to Netscape **NEW!** 34.95
- 50014 Oregon Trail 44.95
- 50246 Phonedisc PowerFinder 139.95
- 50345 Random House Unabridged Dict. 59.95
- 50122 Redshift MM Astronomy 49.95
- 50639 Small Blue Planet Cities Below 34.95
- 50448 Small Blue Planet Real Picture 39.95
- 2000 Space Shuttle Physics 39.95
- 1200 Twelve Roads To Gettysburg 22.95
- 50863 Way Things Work 48.95
- 50879 Writing Center 59.95
- 50764 Wyatt Earp's Old West 34.95
- 50918 Zooguides v.2 Whales/Dolphins 39.95
- 50300 Zooguides v.4 Rainforest 39.95
- 50816 Zooguides v.5 World/Reptiles 39.95

KIDS EDUTAINMENT

- 50836 Amazon Trail \$42.95
- 2078 Animal Alphabet 29.95
- 50474 Arthur's Birthday 39.95
- 50290 Busytown (Richard Scarry) 37.95
- 50618 How Things Work (Richard Scarry) 37.95
- 1850 Just Grandma And Me 39.95
- 50739 Kid Pix Studio 46.95
- 51129 Kids on Site **NEW!** 29.95
- 50495 Little Monster at School 39.95
- 50617 Macmillan Dict. for Children 19.95
- 50461 Math Blaster In Search of Spot 38.95
- 50870 Math Rabbit Deluxe 44.95
- 50741 Math Workshop 39.95
- 50923 Mooky-Oke 19.95
- 50613 My Favorite Monster 29.95
- 50955 My First Amazing Dictionary 28.95
- 50869 Reader Rabbits Reading Journey 84.95
- 1962 Word Tales 19.95

DESKTOP PUBLISHING

- 1330 Clip Art 3.0 → \$19.95
- 51052 Creative Bundle 2-CDs 28.95
- 50442 Earth & Space Photos → 19.95
- 1819 Funny Business: EPS cartoons 9.95
- MB1 Medical Library Bundle → 2-CDs 99.95
- 1444 Professional Photo Coll. HR → 29.95
- P1595 Swimsuit v.1 9.95

10 PACKS \$39.95 EACH

CMC CD-ROM Library #50860

- Audubon's Mammals
- Birds of America
- Shakespeare
- Who Killed Sam Rupert?
- Beyond the Wall of Stars
- Total Baseball
- Sherlock Holmes
- Dinosaur Safari
- The Magic Death
- Parenting

Sierra Collection #50959

- The Great Barrier Reef
- Great Cities/World v.1
- Great Cities/World v.2
- The Amazon Rainforest
- Mount Everest
- The Blue Whale
- The Grand Canyon
- The Indian Monsoon
- Wildebeest Migration
- Astonishing Asia

Royal Geographic Collection #50958

- Angkor Wat
- Chartres Cathedral
- Empire State Building
- Inca Ruins
- The Panama Canal
- The Egyptian Pyramids
- The Taj Mahal
- The Trans-Siberian Railway
- Venice
- The Great Wall

TUTORIALS

- 50891 Adobe Illustrator Tutorial \$78.95
- 51062 Adobe Photoshop 3.0 Tutorial 78.95
- 50890 Microsoft Word 6.0 Tutorial 78.95
- 50887 Quark Xpress 3.3 Tutorial 78.95

MULTIMEDIA TOOLS

- 1450 Instant Buttons & Controls \$149.95
- 2079 Loops: Music for Multimedia 79.95
- 50471 Multimedia Music Clips 19.95
- 1582 SoundFX → 29.95
- 1019 Zillion Sounds 19.95

BARGAIN CDs

\$9.98 each
No Minimum
limited time offer
Quantities limited
to stock on
hand

- Space Shuttle* UM2
- Oceans Below* UM1
- I Photo to Remember UM12
- Clinton: Portrait of Victory UM6
- 600 Days To Cocos Island UM13
- Brahms: A German Requiem UM5
- Sherlock Holmes Complete Works UM42

1-800-843-9497

EDUCORP® Multimedia

W37 Info: 619-536-8888 FAX: 619-536-2345 Internet: service@educorp.com 7434 Trade Street San Diego, CA 92121-2410

Circle 157 on reader service card

FREE! 100 HOT GAMES OR
With any purchase from this ad you get 100 HOT
GAMES CD-ROM, including Wolfenstein 3D
Shareware (HW37-1) OR free stereo
headphones (HW37-2). You must
use code when ordering.
Limited time offer.



"Sparkles"

The six-point approach to end Macaboholism

NOT SURPRISINGLY, MY MAY column ("The Mac Attack Test") produced a downpour of E-mail requesting that I write a column about ending Macintosh addiction. After the 50th message or so, I figured I had a moral obligation to write it. I was going to call this column the 12-step approach, but a reader told me that 12 points would be more typographically correct. Then, because 6 points is just about the smallest font you can read on a Macintosh screen, I decided to cut the number of steps in half.

Confession Is Good for the Mole

Point 1: Confess your powerlessness. Admitting that you've turned into a Macintosh mole is the start to getting cured. Reader example: "One day at my middle school, one of the girls in the Mac lab was getting cold and asked permission to close the window. In an irritated tone of voice, I told her to 'click in the close box.' At this point I realized that maybe I needed to reorder my priorities."—johna17@aol.com

Point 2: Take an inventory of your documents to see if they are richer than your life. You should use no more than two fonts per document and one graphic element per page. With the time savings, recapture your life with your spouse and kids. Reader example: "The last time my husband and I made love I found myself whispering in his ear seductively, 'Hey big boy, want to make an alias with me?'" (I wonder what her documents look like.)—carolyn_curtis@fc1.glnf.org

Point 3: Make a list of the people you've harmed and then ask them for forgiveness. The length and variety of people on the list will astound you. Ask your spouse or kids, "What is the most important thing I could do for you?" If they say, "Use your Macintosh less," you're convicted. Reader examples: "I have begun to refer to my children as extensions and yesterday told my husband to 'load the little INITs in the car.'"—carolyn_curtis@fc1.glnf.org "Recently my daughter said I like the computer more than I like her,

Can you have sibling rivalry if one of them is a machine?"—pattyinfo@aol.com

Brats and Schmexperts

Point 4: Cut online time. Reader example: "You convince yourself that you absolutely must have E-mail to save time, then find yourself spending even more time finding people to communicate with."—mmiles8124@aol.com To cut online time, first consolidate the number of online services you're on to two, and second, limit E-mail and chatting.

The best way to accomplish the second and harder step is to imagine that you're spending hours of your time with grouchy schmexperts, and 16-year-olds who think they can run Apple even

won't stop the endless nights. Please, for the sake of probably half the Mac users, don't publish that article; my girlfriend and I are sure many Mac users' significant others would love to get their hands on it. Save us all!"—mike39890@aol.com

Macintosh: The Next Generation

Point 6: Protect the next generation if you can't save your own. Reader example: "As two adult members of a Mac-committed family, we started our three-year-old daughter, Maria, on a Performa with Kid Pix. She loved it, particularly the paintbrush, which sprays out circles of varying sizes and colors, which she dubbed sparkles. Not long afterwards, we were woken in the middle of the night by cries and screams from Maria's room: 'I can't find the sparkles! I can't get to the sparkles!' She was sound asleep, dreaming, but frustrated."

"Dad tried to rock her and comfort her, but Mom knew better. I sat down on the floor next to her bed and said, 'Take the mouse and point the arrow to the paintbrush over on the side of the screen. Now move the arrow down to the bottom of the screen.' I talked her through finding the sparkles, and she sighed happily and fell back into a deeper sleep."—heather.williams@williams.edu



though they can't keep their rooms clean. (Actually, this is exactly what you're doing.) As a rule of thumb, when you consider getting a dedicated phone line for your modem, you're spending too much time online.

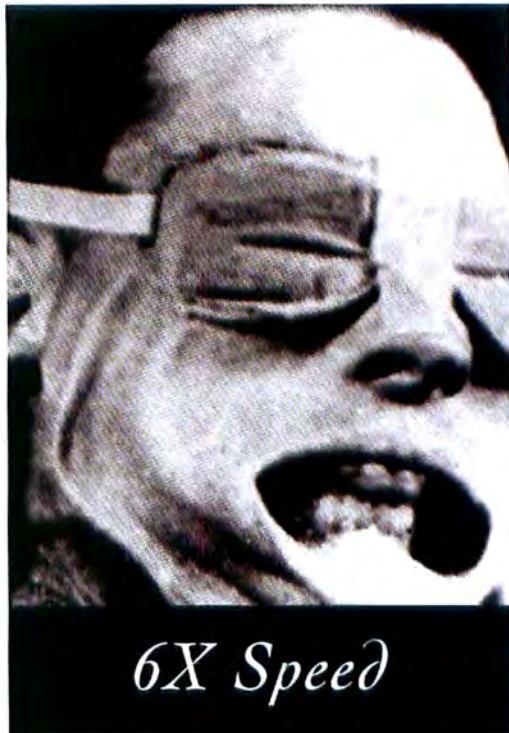
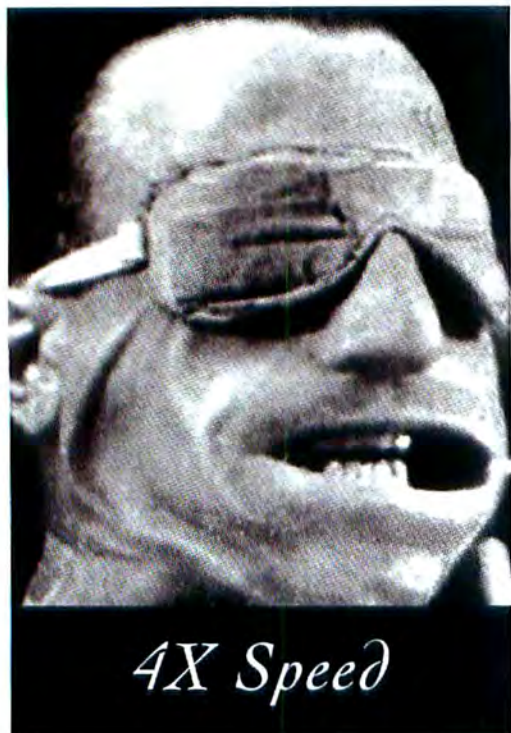
Point 5: Carry this message to others. Now that you know how to reduce or repair Macintosh addiction, you have a moral obligation to help others. Reader anti-example: "My girlfriend is waiting for the next issue to see if you write the 12-step method for kicking the Mac habit. I admit I am a Macaholic, but I can't and

Up to You

This is the best I can do to help you quit the Macintosh habit. The rest is up to you because the key to quitting any addiction is that you want to. Do you want to? **m**

GUY KAWASAKI's views are his own and only sporadically represent those of *Macworld*. He has investments in America Online, Apple, Bit Jugglers, Bookmaker, Global Village Communication, and Intuit. He is the president of Fog City Software, the creator of Claris Emailer. He can be reached at kawasaki@radiomail.com, or on the Web at <http://www.umsi.edu/~sbmeade/macway>.

**THERE'S
PUSHING
THE
ENVELOPE.
AND THEN
THERE'S
RIPPING A
HOLE
THROUGH IT.**



IT'S HERE.

databases and business software that run faster than you imagined possible.

Of course, our internal and external MultiSpin 6X readers come with all the extras you'd expect from NEC. A two-year limited warranty. Mac and PC compatibility. Unparalleled 1-800 number support. And NEC's exclusive on-screen interface that makes your reader easier to use. Even better, our interface kits not only come with SimpleStart™ software, they actually turn "Plug and Play" into a reality. For more about our new 6X readers, just call 1-800-NEC-INFO.

**SEE, HEAR
AND FEEL THE
DIFFERENCE.**

NEC

See, Hear and Feel the Difference are trademarks of NEC Technologies, Inc. NEC GSA# GSOOK934GS523 IPSOI

Key #26450

Circle 16 on reader service card



2X Speed



3X Speed



**INTRODUCING THE NEC MULTISPIN® 6X
CD-ROM READER.**

Once again, the leader in CD-ROM technology has broken the speed barrier. With a blazing 900KB/sec transfer rate and 145 ms access time, NEC's 6X readers have taken multimedia to an all-time high. Suddenly, you'll experience smoother video and animation than ever before. As well as

Click. Pop!

Bold Text

Indent

Change Fonts

Save and Print

Style: Letterhead

My Signature

It's like magic.

You're in your favorite word processing program. You're writing a letter. You click once and a pop-up menu appears. In it are the commands you use most often. You click again and the command you choose is executed.

You've finished your letter. You move into a spreadsheet program. You click the same button and another pop-up menu appears. But this time it's a different menu. With the spreadsheet commands you use most often.

It's like magic. But it's not magic. It's Thinking Mouse™ and Turbo Mouse® from Kensington.

These are no ordinary mice. They're *programmable* mice. What's more, you don't have

to be a programmer to use them.

Easy-to-program, easy-to-use, Thinking Mouse and Turbo Mouse give a whole new meaning to the word productivity. Your favorite programs will run better. You'll work faster. You'll save valuable time.

Together, they have won more awards than any Macintosh input device in history. Both come with a 5-year warranty, toll-free technical support and a no-risk 90-day trial.

For more information, call 800-535-4242.

Outside the US and Canada, call 415-572-2700. For information by fax, call and request document number 326. Compatible with System 7, including 6.0.7 or later and Power Macintosh.

