58 NEW PRODUCTS—PAGE 193 ▪ 20 PRODUCT REVIEWS—PAGE 154

MACWORLD

January 1989 $3.95
Canada $4.95

The Macintosh® Magazine

Steve Jobs Is Back

Next's New Machine

A Guide to Hard Drive Recovery

File Servers: Four Ways to Go

1988 in Review

Color Printers Compared

Spend seven years inside Apple and you learn a thing or two.

In 1981, Apple approached several major software developers with a radical vision of personal computing.

A vision, it turned out, too radical for most to even accept.

But one did.

To this day, over seven years later, we suspect the other developers are still kicking themselves.

We, on the other hand, are still pushing ourselves.

Apple and Microsoft not only shared the same vision, we shared the same timetable: the day Macintosh shipped, our software shipped.

At Microsoft, we shared in Apple's vision to make Macintosh® the most corporately powerful, yet disarmingly friendly, business computer in history. To give Macintosh users all the functionality, flexibility and power to push productivity to unheard-of limits. And to do it with a combination of hardware and software that's somehow embarrassingly simple to use.

It happens to be a vision we still share. Passionately.

Which is why we've created Macintosh applications that have changed the way today's businesses do business.

Case in point: Microsoft® Word, quite literally the best-selling Macintosh application

ever created. Now, with the new version 4.0, Word users can enjoy true WYSIWYG and even easier table generation.

Microsoft Write gives the casual user a great deal of word processing capabilities—for not a great deal of money.

And of course, there's Microsoft Excel. Right now, eight out of every ten Macintosh spreadsheet users are using Microsoft Excel. The simple truth is, for years it's actually been the most powerful argument for buying a Macintosh.

Nobody sells more Macintosh applications than we do. And the only thing more impressive than using them alone, is using them together.

And speaking of power, until Microsoft PowerPoint® was created, desktop presentations didn't exist. Now the person making the presentation can actually generate it—from overheads to 35mm color slides. Best of all, only PowerPoint has built-in color schemes. For impact like you've never seen.

And with Microsoft File as your economical database, creating professional-quality business forms and mailing labels has never been faster. Or easier.

As for Microsoft Works, just think of it as the Swiss army knife of business software. Works integrates word processing, spreadsheets, a database, drawing, even a communications tool—all in one versatile package.

For the developing developer? We created Microsoft QuickBASIC, which basically gives you everything you need for quick, efficient programming, testing and execution.

All of which brings us to Microsoft Mail and the concept of workgroup computing. Mail actually lets you share data, graphics, thoughts, whatever—Mac® to Mac, or even Mac to PC.

For the full story behind our Macintosh applications and what they can do for you stand-alone, and working together, call us at (800) 541-1261, Dept. I89. It's inside information we think you'll find extremely useful.

Microsoft®

Making it all make sense.

Customers in Canada, call (416) 673-7638, outside North America, (206) 882-8661. © Copyright 1988 Microsoft Corporation. All rights reserved. Microsoft, the Microsoft logo and PowerPoint are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. Macintosh and Mac are registered trademarks of Apple Computer, Inc.

MACWORLD

January 1989 — *The Macintosh® Magazine*

Departments

13 **Mac Bulletin**
Late-breaking news.

19 **Commentary/Jerry Borrell**

37 **Letters**

53 **David Bunnell**

57 **Steven Levy**

75 How To/**Insights on CompuServe**
Tom Negrino
Tips on how to make the most of your time when logging on to CompuServe.

193 **New Products**
A quick look at new Macintosh software, hardware, and accessories.

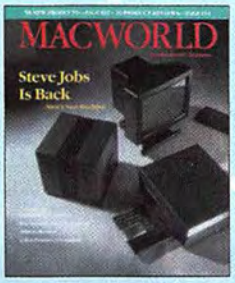
203 How To/**Quick Tips**
Lon Poole
Apple II files on the Mac, capturing color screen shots, altering HyperCard patterns, filling odd shapes in MacDraw, and more.

211 How To/**Getting Started with System Update 6.0**
Jim Heid
System Update 6.0 explored and exposed.

221 **Updates**
The latest software upgrade news.

227 **Where to Buy**
Contact information for products in this issue.

268 **Best-Sellers**

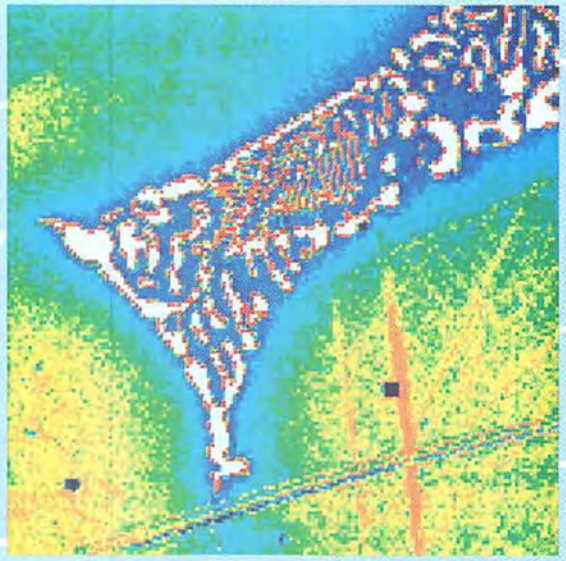


On the Cover
What's Next? Once again, Steve Jobs attempts to shape the future of microcomputing (p. 108). (Photo by Paul Franz-Moore.)

85 Macworld News

- *Molecular Analysis on the Mac II* Analyzing molecules modeled on a Sun or VAX host.
- *Digital Signal Processing* The Mac-DSP board brings it to the II.
- *Sculpt-Animate 4D* Ray cast animation.
- *Apple-DEC Courtship* Getting closer to Mac-VAX connectivity.
- *Ultimage* Image processing and analysis on the II.
- *Studio/8* A new color paint program.

Plus, 3Com's networking plans for the Mac, the Ergotron workstation, two new black-and-white paint programs, and more.



Programs like Ultimage offer science and industry the benefits of image processing—the enhancing and analyzing of digitized images (p. 91).

CompuServe brings a world of information to the Mac, and this month's Insights (p. 75) makes CompuServe easy to navigate.

Features

108 What's Next?
Bruce F. Webster
The unveiling of Next revealed a machine that sets a new standard for the computing world.

118 A Folder of File Servers
Dave Kosiur
Choosing a Mac file server will be much easier after reading this comparison of the four major competitors in the Mac market.

128 Scrapbook '88
Charles Seiter
The Mac's fifth year was an eventful one. An overview of the highs and lows.

134 Printing a Rainbow
Ron Risley
There are nearly as many color printers as there are hues and shades. Which suits you best?

144 Rescuing a Hard Disk
Bruce F. Webster
System crashes are much less scary with these prevention and file repair kits.

Reviews

154 QuarkXPress 2.0
Desktop publishing program.

156 Swivel 3D 1.00
3-D drawing, modeling, and animation.

158 AppleFax Modem 1.1
Send graphics and text to a facsimile machine.

162 DeskPaint 2.0 and DeskDraw
Graphics software.

164 Personal Writer 15SL 1.1
Input tablet for the Mac.

166 Acknowledge 1.0
Macintosh communications toolkit.

168 Two NuBus Prototyping Boards
MacProto and Hurdler II.

172 Data Acquisition and Control Systems
ADC-1 and MacPacq.

174 LightspeedC 3.0
Integrated C development environment.

176 Datacopy 830 Flatbed Scanner
One-stop scanning.

180 Alchemy 1.1
Digital sound editing for sampling keyboards.

182 Chuck Yeager's Advanced Flight Trainer 1.0
Flight simulator.

184 TurboSynth 1.0
Music synthesizer.

186 Window Shopping
A potpourri of products.

For highlights of the past year's Mac-related events, see "Scrapbook '88" (p. 128).

Take The Long View

STEPPING OUT II

"It's *Stepping Out*. It's software. It's the answer to the prayers of Mac owners who need a large screen display, but can't accommodate the bulk or expense of a large monitor."

MacUser, March 1988 * ⭐⭐⭐⭐⭐

berkeley system design, inc
1700 Shattuck Avenue, Berkeley, CA 94709
415-540-5535

*Reprinted from MacUser, March 1988. Copyright 1988 Ziff Communications Co.

Circle 187 on reader service card

MACWORLD

Editor-in-Chief
Jerry Borrell

Executive Editor: David Ushijima
Managing Editor: Charles Barrett
Senior Editor: Adrian Mello
Editorial Manager: Jane Lagas
Associate Editors: Deborah Branscum, Joe Matazzoni, Tom Moran, Carol Person, Cheryl Spencer
East Coast Editor: Brita Meng
Senior Production Editor: Luis A. Camus
Assistant Editors: Cathy E. Abes, Mark Hurlow, Mary Margaret Lewis, Suzanne Stefanac, Liza Weiman
Senior Copy Editor: Ruth Henrich
Copy Editors: Emily Bower, William Freais, Felicity O'Meara, Katherine L. Ulrich, O'Brien Young
Editorial Assistants: Pamela T. Creighton, Ann Garrison
Editorial Administrative Assistant: Lyn Taylor
Assistant to the Editor-in-Chief: Sharon Roe
Contributing Editors: Nancy E. Dunn, Erfert Fenton, Danny Goodman, Rob Hahn, Jim Heid, Steven Levy, David L. Peltz, Lon Poole, Charles Seiter, Franklin Tessler, Bruce F. Webster

Art and Design
Art Director: Christopher Burg
Designer: Dennis McLeod
Associate Art Director: Joanne Hoffman
Senior Design Associates: Leslie Barton, Tom Morgan, Michael Sumner
Design Associate: Hae Yuon Kim

James E. Martin
President and Publisher
Macworld Communications
Steven J. Rosenfield
Associate Publisher

Production
Senior Production Manager: Anne Foley
Editorial Production Manager: Ellyn L. Hament
Production Editor: Susan M. Ford
Assistant Production Manager: Claudia Dawn Smukler
Lead Typesetter: Mark L. Duran
Typesetter: Barbara Tannenbaum
Advertising Booking Coordinator: Stephanie Cady
Advertising Billing Coordinator: So Fong Yip
Production Assistant: Katie Scott

Marketing and Advertising Sales
Director of Advertising Sales: Patricia Navone (415/243-0505)
Senior Account Manager/No. California (San Francisco): Penny Rigby (415/243-0505)
No. California (San Jose): Cherie La France (415/243-0505)
Northwest: Regina T. Salaices (415/243-0505)
Midwest: Shannon Dolan (312/827-4477)
Southeast: Kathy Isaacs (404/394-0758)
New England: Joan Flynn (508/879-0700)
Eastern Advertising Manager: Bill Thompson (201/967-1350)
Mid-Atlantic: Annette Bremer (201/967-1350)
So. California, Southwest, Texas: Lisa Hillgren, Cathi Tucker (714/250-1307)
Macworld Catalog: Carol Felde, Niki Stranz
Director of Marketing Services: Sandi Vargas

Circulation
Circulation Director: Daniel Orum
Circulation Manager: Lindsay Davidson
Fulfillment Coordinator: Evelyn Adenau
Promotion Coordinator: Lori Hitchcock
Single-Copy Sales Manager: George Clark
Single-Copy Sales Rep: Martin Garchar

Research
Director: Cheryl Woodard
Manager: Ralph Ames
Market Analyst: Dusty Roady Pedersen
Research Assistants: Bill Segovia, Scott Shores

January 1989
Volume 6, Number 1

Macworld ® (ISSN 0741-8647) is published monthly by PCW Communications, Inc., 501 Second St., San Francisco, CA 94107. 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 $16 per year from Canada and Mexico; add $16 per year for surface mail or $95 per year for airmail from all other countries. Second-class postage paid at San Francisco. POSTMASTER: Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80323-4529. For dealer inquiries call 800/621-5461, in California 800/521-8455. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505.

For subscriber service questions call toll-free 800/525-0643 (in Colorado 303/447-9330) or write: Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529.

Macworld is a publication of PCW Communications, Inc. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. APPLE, the APPLE LOGO, MAC, MACINTOSH, and MACWORLD are registered trademarks, and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America.

Copyright ©1989 PCW Communications, Inc. All rights reserved.

Macworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 80 computer publications in more than 28 major countries. Fourteen million people read one or more IDG Communications publications each month.

Touch The Cutting Edge Every Month-Only $6.65

Software to Sharpen Your Macintosh™ Skills

DISKWORLD is an 800K, 3½" disk full of quality software for your Macintosh (512Ke, Plus, SE, II), delivered to your door every month for only $6.65 an issue. DISKWORLD keeps you on the cutting edge of the rapidly changing world of software for your Macintosh. Every issue brings you new useful applications for home or work as well as entertaining games and features. Each month you'll receive from five to ten quality, original programs (not public domain) depending on the size of each program.

Get the Most From Your Macintosh

Every month you can rely on the vast experience of our editors and programmers to provide you with carefully selected software **you can use**. Each monthly issue contains valuable features such as: ready-to-run applications, utilities, new clip art, new fonts, tutorials, games, desk accessories, HyperCard™ stacks, FKeys, INITs, product reviews and much more. With our easy-to-follow documentation on disk and our standard Macintosh menu system, you'll master each new application with confidence and ease.

Your Best Software Value

Without investing a fortune, DISKWORLD will convince you that your Macintosh is the most versatile and powerful tool you own. You'll learn more about your Macintosh, its capabilities, and available software than you now believe possible. At $6.65 an issue—you just can't find a better software value for your Macintosh than DISKWORLD.

FREE SOFTWARE— With a 3-Month Trial Subscription

DISKWORLD is sent to you each month on an 800K 3½" disk. Try DISKWORLD for three months for only $19.95 (that's only $6.65 an issue) and receive "The DISKWORLD Sampler" absolutely free. This bonus disk contains more new games, fonts, and clip art for your Macintosh.

Circle 300 on reader service card

Guaranteed Satisfaction or Your Money Back

As software publishers since 1981, we at SOFTDISK, INC. guarantee the quality of all our software products. If you are not fully satisfied with DISKWORLD return your first issue for a full refund. "The DISKWORLD Sampler" is yours to keep. You can't lose. Order today with the attached coupon or call toll free **1–800–831–2694**.

Call Toll Free 1-800-831-2694

Contents of Issue #3 (*Available as a back issue*)

Three Omnis 3+™ Applications: Cajun Cookbook Personal Financier • Collector's Inventory File Compare • Caplet Font • Amortizer Desk Accessory

YES! Please rush me my free *Sampler Disk* and start my three month trial subscription to DISKWORLD for my Macintosh for only $19.95 postage paid. (*Canada/Mexico $24.95, Overseas $27.95*) Make checks payable to Softdisk, Inc. in U.S. Funds. (Louisiana residents add 4% sales tax).

Name _____

Address _____

City _____ State _____ Zip + 4 _____–_____

Home Phone (_____) _____–_____ Ext. _____

■ Discover ❑ AmEx ❑ VISA/MC ❑ Payment Enclosed(*U.S. funds only!*)

Card # _____ Exp. _____

Signature _____

SOFTDISK, INC.
P.O. Box 30008 • Shreveport, La. 71130-0008 MW019

Macintosh and HyperCard are trademarks of Apple Computer Inc. • Omnis is a trademark of Blyth Software, Inc.

Radius Full Page Display™

Radius Two Page Display™

FOUR CLEAR R
YOU SHOULD BUY YO
A RADIUS AUTH

Now you can buy your Macintosh II with a powerful tool which will dramatically increase your productivity with every use.

A Radius Display.

Radius offers displays for every type of Macintosh user and every Macintosh software application.

If you're involved primarily in intensive word processing and database management, we heartily recommend our FPD.

The Radius Full Page Display™ shows you an entire 8½"x 11" paper-like page. With a refresh rate of 69 Hz, it is virtually flicker-free.

Our display is perfectly suited for working with software like Microsoft Word and 4th Dimension.

If you're incorporating your word processing into page layout and design, we suggest that the Radius Two Page Display™ is clearly the choice for you.

You have the same flicker-free resolution of the FPD with a full two-page horizontal layout. Ideal for viewing a magazine spread. Essential for creating architectural plans.

Or, if you're putting photographs into your Macintosh, our Radius Gray Scale Display™ lets you create and manipulate life-like images in 256 shades of gray across the same expansive TPD.

Scan your photographs, then do your own retouching using Image Studio or Digital Darkroom.

When you're ready, just print out on a LaserWriter or download to a Linotronic. You'll get startlingly beautiful and gratifying results.

© 1988 Radius Inc. Radius, the Radius Logo, Intelligent Hardware, Radius Full Page Display, Radius Two Page Display, Radius Gray Scale Display and Radius Color Display are trademarks of Radius Inc.

Radius Gray Scale Display™

Radius Color Display™

REASONS WHY OUR MACINTOSH II AT ORIZED DEALER.

For professional publishers and engineering designers, the Radius Color Display™ offers you the latest in digital design, Radius innovation and Trinitron color technology.

You can work with 256 brilliant colors at one time from the Macintosh palette of 16.7 million hues.

Create dazzling layouts with color photos. Draw dynamic 3D color illustrations. Design a new circuit board. Or, simplify a complicated catalogue. All in vivid, living color.

And should you need it, our Color Display is more than willing to work instantly in gray scale. With sharp, crystal clear resolution.

Best of all, no matter which Radius display you do choose, you get the classic Radius firmware.

All of our displays offer you Tear-off Menus which can be positioned anywhere on the screen. And built-in screen savers, control panel access, as well as adjustable menu and menu bar type size.

Our Full Page and Two Page Displays allow you to create bit-map screen dumps. And our Gray Scale and Color Displays let you save any part of your screen in a PICT file.

So before you buy your Macintosh II anywhere else, call 1-408-434-1010 for a brochure and the name of your nearest Radius Authorized Dealer.

It's clearly the thing to do.

radius™
Intelligent Hardware™

Color image courtesy of Scitex Corporation, Ltd. and Quark, Inc. All other brand and product names are trademarks or registered trademarks of their respective holders.

Circle 46 on reader service card

Welcome to Déjà Vu II—and to Las Vegas, the city that never sleeps—the city of excitement! Actually, you've already had plenty of excitement in the last 48 hours. You've been abducted by two thugs from Chicago, grilled by a notorious Las Vegas mobster, knocked senseless, and tossed into a bathtub in a cheap Vegas hotel. It couldn't possibly get any worse than this—or could it?!

Welcome to Déjà Vu II, an exciting, state-of-the-art thriller in the fine tradition of the original. Play at your own risk!

Versions available for the Macintosh, Apple IIGS, IBM, Atari/ST, Amiga.
$49.95 at your local computer store.
If unavailable, order direct
TOLL FREE 1-800-877-ICOM

ICOM SIMULATIONS, INC.
648 South Wheeling Road, Wheeling, IL 60090

Macintosh and Apple IIGS are registered trademarks of Apple Computer, Inc. IBM, Atari/ST, and Amiga are trademarks respectively of International Business Machines Corporation, Atari Corporation, and Commodore International. © 1988, ICOM Simulations, Inc.

Circle 256 on reader service card

Corporate
PCW Communications, Inc.

David Bunnell
Chairman & Founder

Lee Vidmer
President

John Griffin
Vice President

James E. Martin
Vice President

Jacqueline Poitier
Vice President

Cheryl Woodard
Vice President

Andrew Fluegelman
1943-1985
Founding Editor

Administration
Director of Finance: Vicki Peilen
Director of Human Resources: Janet D. McGinnis
Accounting Manager: Pat Murphy
Administrative Services Manager: Joseph Wollenweber
Employee Relations Manager: Shelly Ginenthal
Technical Services Manager: Wally Clegg
Assistant to the President (PCW Communications, Inc.): Christina W. Spence
Assistant to the President (Macworld Communications): Susan Miller
Assistant to the Associate Publisher (Macworld Communications): Cynthia J. Meade

Corporate Development
Corporate Editor: Harry Miller
Editorial Administrator: Karen Wickre
Public Relations Manager: Shirley Gines
Special Projects: Jeffrey S. Glines
Administrative Assistant: Cathleen Brennan

IDG COMMUNICATIONS

BPA

SYMANTEC UTILITIES PROTECTS SMART PEOPLE AGAINST HARD DISK CRASHES THE SAME WAY AIR BAGS PROTECT DUMMIES.

"SUM, or to be more precise, Symantec Utilities for Macintosh, is the slickest and most important set of utilities you can get for your Mac. To have a hard disk and not have SUM is sheer folly."

Steven Bobker, Chief Scientist, MacUser Magazine, 9/88, 5 Mice, Highest Possible Rating

Strong language. But well founded. Because in addition to six other indispensable utilities, SUM features Guardian, the ultimate software for protecting your Mac's hard disk *before* a crash. Like an air bag, Guardian stays out of sight, loading automatically every time you turn on your Mac. It protects invisibly by updating a "map" of your hard disk data. So that, in a crash, your data is safe. Because Guardian uses the "map" to locate it and recover it. In minutes.

SEVEN INDISPENSABLE HARD DISK UTILITIES:
Guardian—protects and restores hard disk data and deleted files. *Disk Clinic*™—easy-to-use troubleshooting interface. Restores hard disk data in case you have a crash before you can install Guardian. *Virus Protection*—protects systems against "viruses." *HD TuneUp*™—optimizes hard disks. *Symantec Tools*—views and edits data and resource forks of a file or volume in HEX or ASCII. *QuickCopy*™—makes fast floppy copies. *HD Partition*—separates hard disks into separate volumes which can be encrypted.

Smart Mac users who want complete, yet effortless protection for their hard disk data should follow Steven Bobker's advice and "Get SUM." Today.

See your dealer or order today: (800) 228-4122 Ext. 675G

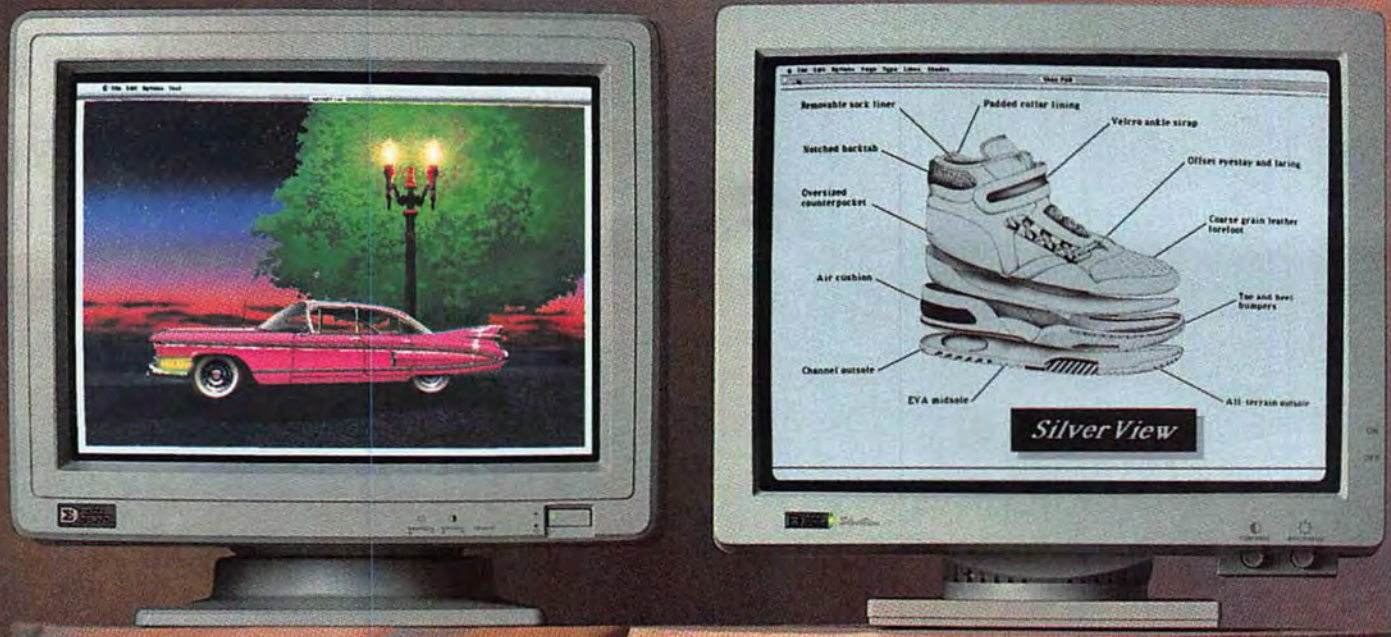
Bundled exclusively on all Jasmine Hard Disk Drives.

SYMANTEC™ Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. 408/253-9600.

MacZap owners call 408/446-9994 for a low cost upgrade. HD TuneUp, QuickCopy, and Disk Clinic are all trademarks of Symantec Corporation. Other products are trademarks of their respective holders. © 1988 Symantec Corporation

Circle 237 on reader service card

Flat-out



© 1988 Sigma Designs, Inc. 46501 Landing Parkway, Fremont, CA 94538
PageView, SilverView and ColorMAX are trademarks of Sigma Designs, Inc.
MAC, SE and Mac II are registered trademarks of Apple Computer, Inc.

brilliant.

If your monitor isn't sharp, even the best ideas look fuzzy.

That's why you need to look into ColorMax and SilverView for your Mac II and PageView for your Mac SE. The new line of monitors from Sigma Designs.

Designed for engineering workstations, our 19" ColorMax delivers 16.8 million colors with knife-edge definition. Which means your blueprints will now be a lot more than just blue.

For art directors and designers, the 21" flat-screen SilverView extends your range with an exact scale two-page spread. And your palette with the entire gray scale's 256 different shades. So you'll never have to leave anything to the imagination again.

Priced less than $1000, our PageView 15" flat-screen monitor is clearly one of the most remarkable bargains in this industry. Ideal for desktop publishing and text handling it comes with something ingenious called Multimode. Enabling you to work in actual size or the full 8.5" x 11" page. A feature you won't find on monitors costing twice as much.

Whether you work with words, pictures, or words and pictures, find out how much more expressive you can be with the right screen. Call us at (415) 770-0100.

We're the difference between an idea that looks dull. And one that's brilliant.

SIGMA DESIGNS

Sigma Designs, Inc.
46501 Landing Parkway
Fremont, CA 94538

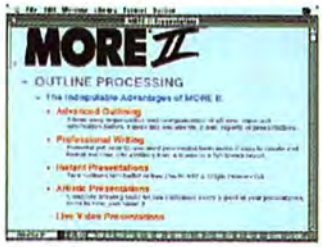
Circle 117 on reader service card

WHEN YOU'RE MORE PRODUCTIVE, IT SHOWS.

MORE II: PLANNING, WRITING AND DESKTOP PRESENTATIONS.

Being MORE productive means everything you plan, write, or present is MORE organized. And it shows in everything you do.

MORE II's advanced outlining makes it easy to capture, plan, and organize ideas into clear, action-oriented information. Simply type in "To-Do" lists, project schedules, proposals, plans... everything. MORE II automatically creates the outline for you.



Outlines make MORE II productivity easier. Just click the mouse on any part of an outline and get charts and slides, instantly.

Customize presentations with MORE II's complete set of drawing tools.

THE OUTLINE MAKES THE SHOW.

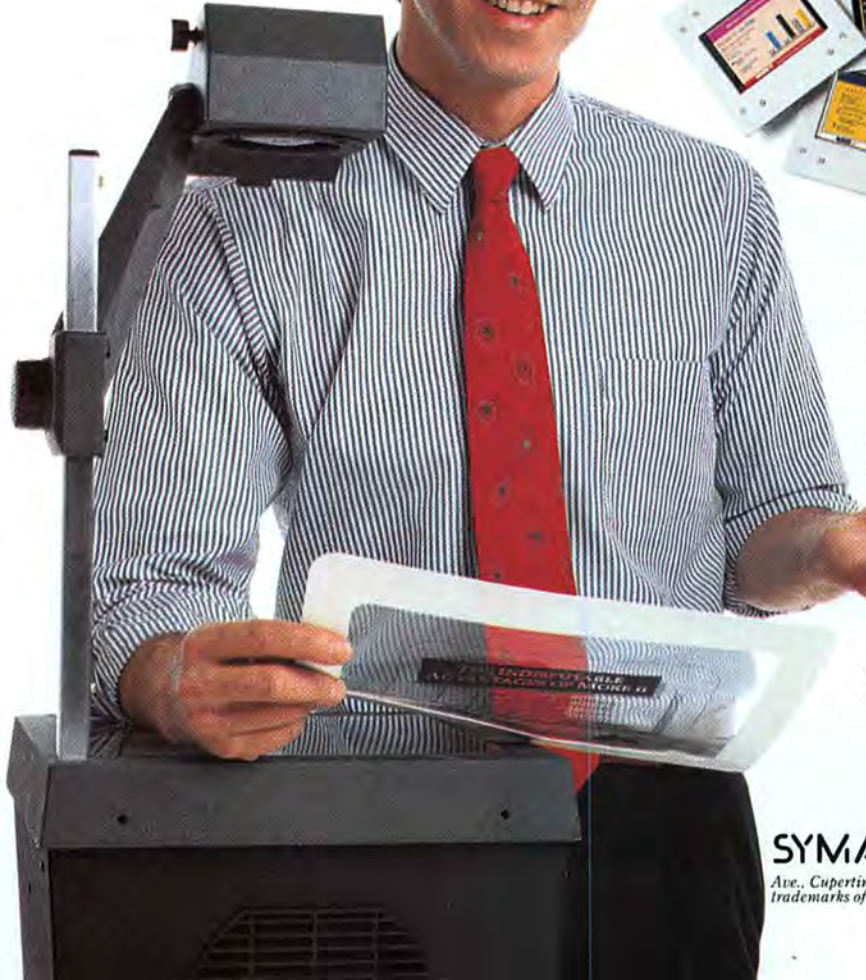
Once you have an outline, your art work is done. Because with a double-click of the mouse, any outline becomes a perfectly spaced bullet or organization-type chart instantly. Complete with company logos or art pulled in from other programs. Print the charts and get overheads fast. Or turn them into 35mm slides overnight. For even more graphics, click again and get every art tool imaginable. And because of MORE II's outline, when you change the master slide, the rest change automatically. So making 1000 slides is as easy as making one.

Click on another outline, add a few paragraphs using MORE II's full-power word processing and bingo. You've got a memo. Or a letter. Or a proposal. Add pages, pull in some charts and there's a full-scale report or a board-room quality presentation... totally spell-checked, with text, graphics, fonts and styles to rival anything created on any other program.

Write beautifully with MORE II's complete word processing.

Show slides in 35mm, or present them live on-screen, complete with wowing video effects.

Now go live. MORE II includes advanced, live-action meeting technology for slide shows (complete with video effects like dissolves, builds, wipes, and fades) on any MAC connected to virtually any projection device.



BE MORE PRODUCTIVE TODAY.

For planning, writing, and presentations, MORE II shows results. It's the only software that helps you master all three stages in the art of persuasion. Without becoming an artist.

For MORE II product and upgrade* information, call (800) 228-4122 Ext. 747G.

WHEN YOU'RE MORE PRODUCTIVE, IT SHOWS™

SYMANTEC™

MORE owners, upgrade to MORE II now, send $89 plus $10 for shipping/handling (check or money order) along with your MORE registration number to MORE II upgrade, Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014 or call (415) 964-4440. Suggested retail price $395. MORE and MORE II are trademarks of Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014 (408) 253-9600. ©1988

Circle 215 on reader service card

Mac Bulletin

68030 Accelerator

A new 68030-based accelerator board from Siclone Corporation lets the Mac II run most applications three and one-half times faster than before. The Si3033 board speeds up applications on all Mac II models and memory configurations, including the IIx, and is compatible with all Mac II software including Apple's A/UX, according to the company.

Graphic designers, CAD/CAM users, and extensive spreadsheet users are most likely to benefit from the Si3033, but it will help anyone wanting a faster Mac II. The board will list for $3999, and should begin shipping during the first quarter of 1989. For further information, contact Siclone, in Sunnyvale, California, at 408/734-2508.

1200 Backup Megabytes

France's GigaTrend has developed a tape backup system for the Mac that stores up to 1200 megabytes of data. Helical scan technology makes the high capacity of the DAT (digital audio tape) drive possible.

The Giga 1200 tape drive is intended for applications such as graphics, scientific and industrial uses, data acquisition, databases, image processing, and archiving. Its features include random read/write access and a 20-second average access time (40 seconds maximum). The drive uses the SCSI interface, is compatible with AppleShare, and can operate on a network.

For more information, call the American office of GigaTrend, in Carlsbad, California, at 619/931-9122.

New Version of Publishing Software

Interleaf's new version of Interleaf Publisher, version 3.5, is shipping; it has several new features including an open font architecture that supports the Apple Font Manager; the ability to convert typed-in text to graphic fonts that can be sized, stretched, filled, and rotated; support for multiple monitors; the ability to run under MultiFinder; and improved support for the industry-standard PICT format for importing graphics.

Version 3.5 also makes it easier for the Mac II to share documents with the various platforms Interleaf runs on, including computers from Apollo, Digital Equipment Corporation, IBM, and Sun Microsystems.

Version 3.5 will be available free to all registered users of Interleaf Publisher 3.0. Priced at $2495, it is sold through Interleaf's direct sales force and a limited group of publishing resellers. For further information, call Interleaf, in Greenbelt, Maryland, at 301/982-0991.

Logitech Hand-Held Scanner

A hand-held scanner for the Mac Plus, SE, or II is on the way from Logitech. ScanMan, which will be available in February 1989, can scan almost anything, according to Logitech. It includes a 4-inch-wide scanning window; gray scaling and contrast control; resolution that ranges from 100 dots per inch to 200 dpi, quasi 300 dpi, and quasi 400 dpi; and a SCSI interface box with an independent power supply. ScanMan takes less than 5 seconds to scan a picture 11 inches long.

The scanner comes with graphic editing software in English, Italian, French, Spanish, or German. It lists for $499. For further information, contact Logitech, in Fremont, California, at 415/795-8500.

FORTRAN Comes to HyperCard

Zone1 is offering Hyper-XCall, software that merges HyperCard and Absoft's MacFortran. Hyper-XCall implements the FORTRAN language Call statement as a command in HyperTalk, the scripting language used in HyperCard. This enables FORTRAN subroutines that have been compiled with Absoft Corporation's MacFortran or MacFortran/020 to be called directly by name from HyperTalk. The full power of FORTRAN is thus available to HyperCard users without the difficulty usually associated with external command (XCMD) programming.

Data may be passed to FORTRAN by subroutine arguments referencing HyperCard fields, variables, or globals. Call Back routines let the FORTRAN subroutine send HyperTalk commands to HyperCard, get data from and put data into HyperCard fields, and perform other related tasks. All of HyperCard's power is thus available to independently created FORTRAN subroutines. Data may also be retained in FORTRAN from one HyperCard subroutine Call to the next.

Hyper-XCall lists for $99 and includes a detailed HyperCard "manual" stack with the Call external command attached. For more information, call Zone1, in Stone Mountain, Georgia, at 404/381-8659.

Faster Network Transmission

The TOPS Divison of Sun Microsystems is offering FlashBox, a device that lets Macs communicate over LocalTalk-compatible networks at 770 kilobits per second, up to three times faster than the AppleTalk data rate. FlashBox is designed to provide faster data transmission across networks, where performance often suffers as network traffic increases.

(continues)

FlashBox is fully compatible with AppleTalk, offering users the flexibility to mix and match Macs running both protocols over the same wire. It is also compatible with Microsoft Mail and with AppleTalk-based applications such as TOPS and AppleShare LAN packages and TOPS's InBox (formerly Symantec's InBox).

FlashBox can be installed on every Mac in a network or only on those Macs most frequently using the network. It automatically selects the correct speed for communicating with other workstations or peripherals. Installation takes less than five minutes on each Mac 512KE, Plus, SE, or II. A simple one-time installation on the server of the TOPS FlashTalk software is also required.

FlashBox lists for $189, including the software. For further information contact TOPS, in Berkeley, California, at 415/769-9669.

MacTCP Based on TCP/IP

▶ Apple has developed network software based on the Transmission Control Protocol/Internet Protocol (TCP/IP), an accepted standard in education, business, and government. MacTCP is the building block that lets Macintosh users in universities, business, and government communicate with Cray supercomputers, UNIX-based workstations, VAX systems, and other computers that use TCP/IP protocols. With MacTCP-based applications, users can share information, access computing resources, send electronic mail, and collaborate with colleagues around the world.

Software developers have already demonstrated a range of TCP/IP solutions. Ungermann-Bass offers file transfer, virtual terminal, and mail applications, and Cayman Systems offers the Gator Box, which allows access to NFS (Network File System) servers while maintaining the intuitive AppleShare file-server interface. Apple's own MacWorkStation software uses MacTCP to support a Mac interface for programs operating on host computers. For further information, call Apple Computer, in Cupertino, California, at 408/996-1010, Ungermann Bass, in Santa Clara, California, at 408/496-0111, or Cayman Systems, in Cambridge, Massachusetts, at 617/494-1999.

Hypertext Comes Full Circle

▶ Before Guide and HyperCard came to the Mac, most work on hypertext and hypermedia was done on larger, more powerful workstations. The Association for Computing Machinery (ACM) held Hypertext '87, the first professional conference on hypertext, and published some of the proceedings of the conference in the July 1988 issue of *Communications of the ACM.*

Now you can peruse that research using HyperCard. The ACM has released a two-disk package called HyperText on HyperText. All of the information is cross-linked, so that data in one article can be accessed from related articles; references and figures can be viewed simply by clicking the mouse. The topics covered include an overview of hypertext, the KMS-distributed hypermedia system, the HAM hypertext abstract machine, and experiences with a hypertext medical handbook. For further information, contact the ACM, in New York City, at 212/869-7440.

Video Scan Conversion for the Mac II

▶ Have you ever wanted to display high resolution Mac II graphics in real time on one or more television monitors, and then record them on videotape? That's the raison d'être of RGB Technology's RGB/Videolink Plus. Like other high-end video scan converters, it digitizes the Mac II's RGB input to 8 bits per pixel, compresses and antialiases them with line- and pixel-averaging techniques, stores them briefly as an image, then converts the image to RGB signals and encodes it into NTSC composite video.

RGB Technology says that its proprietary antiflicker filter guarantees a clear, stable television image, without the flicker that often occurs when the Mac II's RGB signal is converted to NTSC. Licking the flicker effect, however, is not without a price. At $10,000, RGB Videolink Plus is one of the more expensive video scan converters available.

The unit does not take up any slots in the Mac II; it is a separate box nearly the size of the Mac itself. Its other features include simultaneous use of RGB and NTSC monitors, conversion of the full RGB screen, genlock, PAL compatibility, and a video mix option for combining Mac II graphics with live or prerecorded video. For more information, contact RGB Technology, in Berkeley, California, at 415/284-4330.

Walking the Mac

▶ The first portable Macintosh SE that operates from internal battery power is now available from Colby Systems. Called the Walkmac SE, the system can operate for two hours on battery power (two and one-half hours with the hard disk turned off). It weighs 12 pounds without the 3-pound internal battery and can also use external AC power.

The Walkmac SE, available through selected Apple dealers, uses an Apple system board supplied by the dealer from spare parts stock, according to Colby Systems. The system includes an extended keyboard with function keys and a numeric pad. Because the computer is wider than it is deep, it can be used as a true laptop in confined spaces such as airplane seats.

The basic unit has a suggested list price of $5495, with a supertwist LCD screen that displays white characters on a dark blue background. It also comes with a floppy disk drive and 1 megabyte of memory. Hard disks with capacities from 40MB to 140MB range in price from $995 to $1895. Processor upgrades and external monitors are also available as options. For more information, call Colby Systems Corporation, in Fremont, California, at 209/222-4985. □

WHY NO OTHER INEXPENSIVE LASER PRINTER CAN PRINT THIS STATEMENT.

At $1999, our Personal LaserPrinter (PLP) costs about $800 less than Apple's LaserWriter® II SC.* But that's the least of many good reasons why you should buy one.

One of the best is demonstrated, in rich and varied prose, above.

The PLP is the only laser printer in its category that lets you print in any number of point sizes, even fractionals. The LaserWriter II SC, by contrast, lets you print in any number of point sizes as long as the number is six.

The PLP gives you unlimited freedom in reducing and enlarging documents (critical for applications such as Excel and PageMaker®). The LaserWriter II SC doesn't.

With the PLP, italics are true *italics* and bolds are true **bolds**—because the PLP uses true outline fonts. The LaserWriter II SC doesn't.

All this begs an obvious question: how can we offer so much functionality and still charge less for it?

The answer is software—software that enables your Macintosh to use its own resources to do the processing that would otherwise require costly additional hardware.

But there's another reason the PLP performs better: it has to.

After all, in a market saturated with laser printers, there are plenty of opportunities to compare price and performance. The PLP simply provides a higher standard of comparison.

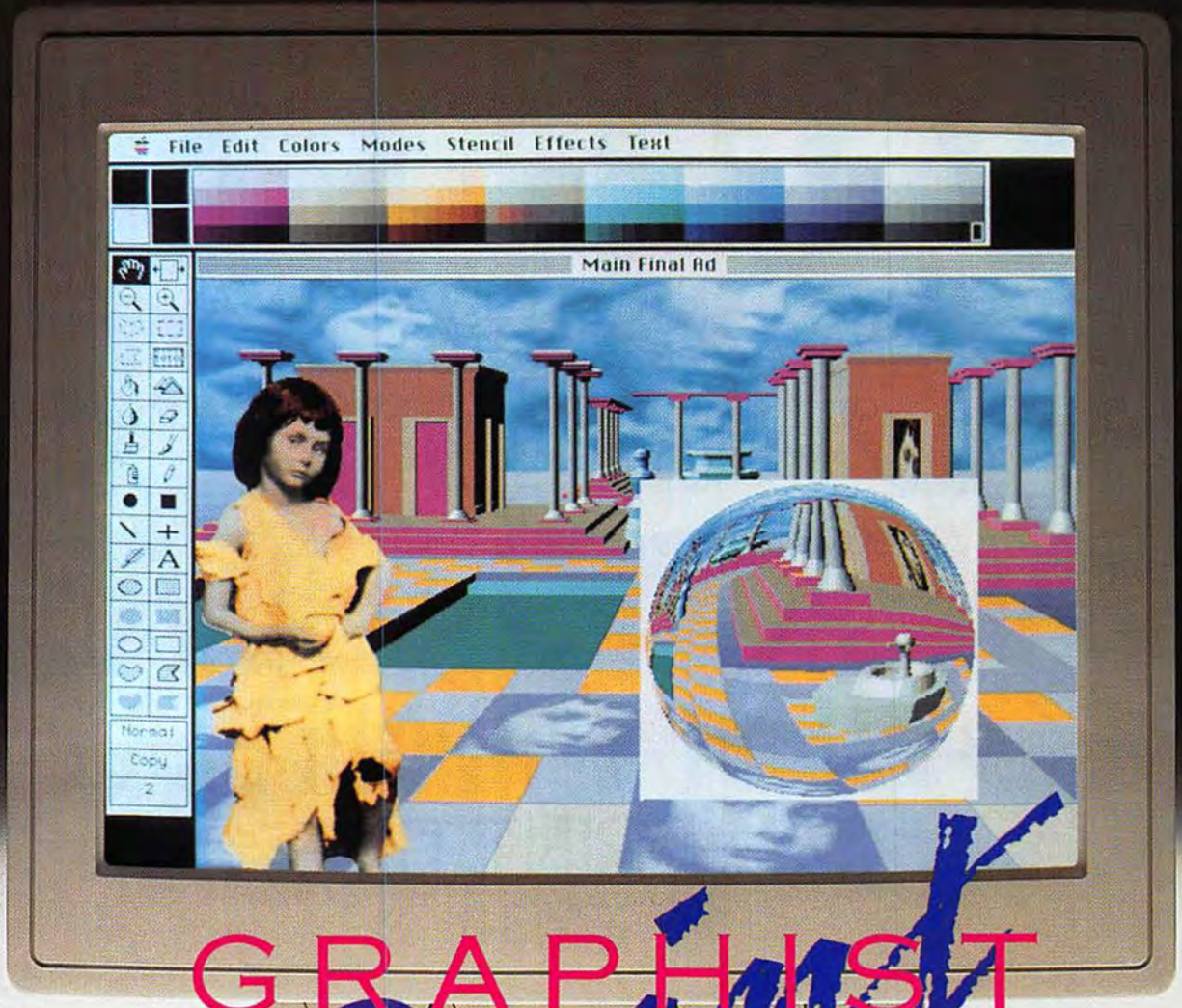
For a PLP demonstration—or information on our ImageWriter® trade-in program—see your authorized GCC Technologies dealer. For the one nearest you, call (617) 890-0880.†

GCC TECHNOLOGIES

*Based on a comparison of manufacturer's suggested retail prices. †In Canada, (800)263-1405. © 1988 GCC Technologies, Inc. GCC Technologies is a trademark of GCC Technologies, Inc. The GCC Technologies logo is a registered trademark of GCC Technologies, Inc. Personal LaserPrinter and PLP are trademarks of GCC Technologies, Inc. Macintosh is a trademark of Apple Computer, Inc. LaserWriter and ImageWriter are registered trademarks of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corp. The document above was created with PageMaker 3.0 and printed on a GCC Technologies Personal LaserPrinter.

Circle 177 on reader service card

INTRODUCING



GRAPHIST Paint II

A new and advanced paint, editing and special effects program.

For the serious artist, with capabilities and speed beyond any other Macintosh paint software

CUSTOMIZING COLOR PALETTES Create and save your own set of colors — one at a time with color picker, or a range of colors using RGB and/or HLS tables. Blend any range of colors from 2 to 256. Change palettes to change the color scheme of any illustration.

New, Exclusive "Magic-like" Special Effects

- 2 Layers with Paint and Edit features on both.
- Incrust selected images from Stencil layer onto top layer.
- New Pixel Brush allows you to create customized paint brushes.
- New "water drop" tool allows selective blending of colors.
- New "thermometer" displays colors on the palette.
- New spherization of any image including text.
- Two to ten times faster than any other advanced Macintosh paint or draw program.

Graphist Paint II is a new hi-end paint program with all of the standard painting tools, file formats and 16 Macintosh standard modes . . . PLUS you can:

- Import all of the standard formats, PixelPaint and video inputs (driver built-in) including PAINT, PICT I and II, TIFF and RIFF.
- Export many different formats for direct integration with other software to provide a more complete and better art solution.
- Digitize existing images from a video camera or a television (NTSC or PAL) with on-screen viewing, for subsequent editing.
- Select from 16.7 Million colors, supporting 1 palette of 256 colors at a time, on each of 2 screens.
- Pixel by pixel editing.

INCRUSTING

Take any two images, on two layers . . . incrust an image from one onto the other — in any position — or onto any other illustration — in any position — or back onto the full original.

Main original

Incrusting in progress

Incrusting completed

SPHERIZATION

Take any image, or text . . . define the area . . . and create a 3-D sphere of the entire image, or text.

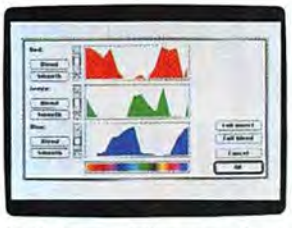
Spherize Type

Spherize Art

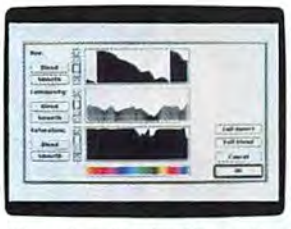
Create Custom Spheres

CUSTOM COLOR MANAGEMENT

Customize color palettes by changing RGB and/or HLS wave forms — or use the standard Macintosh color picker.



Red, Green, Blue wave form



Hue, Luminosity, Saturation wave form

Macintosh Color Picker

Graphist Paint II is packed with so many new features you'll want to get your hands on it right away. For full information and the name of the Graphist Paint dealer nearest to you call:

1-800-234-0230.

SEE US AT MACWORLD BOOTH # 47

Aba SOFTWARE

Aba Software, Inc.
41 Great Valley Parkway
Malvern, PA 19355

Circle 340 on reader service c

PixelPaint is a registered trademark of SuperMac Software, a Division of Scientific Micro Systems.

Limited Time Offer

Order a drive now and receive: SilverServer™

- Complete hard disk management utilities.
- Modem and disk server for use within your LAN.
- Remote disk server to share hard disks in another LAN or at home.
- Available separately for $149.95.

also receive:

- Carrying case for Cirrus drives.
- Available separately for $30.00.

CIRRUS. PERFORMANCE WITHOUT COMPROMISE.

30MB	40MB	70MB	NEW! 100MB	NEW! 135MB
$599	$699	$899	$1149	$1499
3½" SCSI Hard Disk	3½" SCSI Hard Disk	3½" SCSI Hard Disk	3½" SCSI Hard Disk	3½" SCSI Hard Disk
2¾ × 6½ × 9¼"	2¾ × 6½ × 9¼"	2¾ × 6½ × 9¼"	2¾ × 6½ × 9¼"	2¾ × 6½ × 9½"
40 ms access time.	25 ms access time.	25 ms access time.	15 ms access time.	15 ms access time.
Wt: 4½ lb	Wt: 4½ lb	Wt: 4½ lb	Wt: 4½ lb	Wt: 4½ lb

"Small slick units… stack them horizontally or vertically, they don't make much noise and they're fast."

SPEED
RELIABILITY
QUIET OPERATION
COMPACT SIZE
POWERFUL SOFTWARE

"If you don't already own one, a hard disk drive like the Cirrus 40Mb is the best investment you can make…"

MacWorld, August 1988

Cirrus hard drives deliver power and speed without compromising reliability, ergonomics or desktop real estate. Superior 3½" drive technology and high-volume half speed fan provide cool, quiet operation you can rely and rely on.

All Cirrus drives are compatible with the Mac II, SE and Plus and are **backed by a one year limited warranty. We also make 30 to 135 MB internal drives for the Mac II and SE. Call for prices.**

Cirrus drives are shipped preformatted and ready-to-use with 2 SCSI ports, power and SCSI cables, terminators, manual and SilverServer utility software. This powerful, comprehensive software package includes: Auto mounting, auto parking, password protection, diagnostics and powerful volume sizing functions that let you freely partition your drive into one or more volumes, or combine several drives into a single large volume. Plus you can change SCSI drivers and the interleave factor for extra speed.

When you order Cirrus Drives you also get SilverServer's exclusive new modem server, disk server and remote disk server so you can share modems and disks on an AppleTalk Network or even access hard disks over the phone!

Try a Cirrus drive soon. For over 2 years we've built drives of uncompromising quality so you won't have to compromise on performance.

LaCie LTD. **16285 SW 85th • No. 306**
Tigard, OR 97224 • Ph: (503) 684-0143

See us at Macworld Expo Booth #1613, Moscone Center, San Francisco

Order your Cirrus Drive today, call 1-800-999-0143

Prices shown are cash prices and do not include shipping. Add 3% for VISA or Mastercard, 5% for American Express. Add 7% for rush handling. Cirrus, LaCie and SilverServer are trademarks of LaCie Ltd. Macintosh and AppleTalk are trademarks of Apple Computer. Prices and specifications subject to change without notice. Excerpts reprinted with permission of MacWorld.

Circle 145 on reader service card

Commentary/Jerry Borrell

The Next Announcement

A dazzling introduction, a long wait for machines

So how good was it?

It couldn't have been much better from any viewpoint. Let me simply call it the best introduction of a computer since the Macintosh.

The setting: a symphony hall in a major city. It is glass and concrete on the outside, subdued and human on the inside. Within the softly lit hall, a scene of golden clouds is projected far overhead. A cone of yellow light flows over a cascade of cut flowers next to a graceful conductor's stand. Space music, unobtrusive but strong enough to set a mood, is piped in. A capacity crowd of the faithful has arrived, slowly filling every seat in the auditorium. All have produced photo identification with their invitation to enter. Many media people, including any with cameras, are turned away. Their job is to wait, noses pressed to the glass outside, and make the finish look like a Hollywood event.

Everyone is talking—in the lines while waiting to enter, in the carpeted hallways leading to the hall, in the hall itself. The computer industry is there to pay its homage, satisfy its curiosity, and express the hope that Steve Jobs will provide the technological thrill that makes Silicon Valley what it is. The hope that the substance will match the show. Every seat is occupied by someone of note. I sit down among several people I do not recognize. Two are from the National Science Foundation (NSF), which funds computer centers at colleges across the nation. Another is Gordon Bell, former VP of Research and Engineering at Digital Equipment Corporation, now cofounder of Ardent Computer, a mini-supercomputer start-up in Sunnyvale, California. He introduced the first Mac to the NSF, which still has only seven (compared to 1200 PCs). Another is an editor from the *San Francisco Examiner*. All bets are off, facades are down, conversations are intense.

DOUG MENUEZ

Steve Jobs addresses the press during the announcement of his Next machine.

There is talk of the dinner the night before. Of H. Ross Perot and Steve Jobs holding forth to a select crowd of potential customers, university advisors, and analysts. The machine crashed twice during dinner. The thought of the potential for disaster skirts one's consciousness, and then is gone.

Who Will Buy It?

The lights dim, come up again, and Jobs walks out to applause that would warm any conductor's heart. He is confident, happy, but thin. Three years is too long a time for this man to be out of the limelight.

He begins by telling us that all computers have a life span of ten years. The PC is dying, the Mac has peaked, and now his machine is being announced, he says—i.e., this is the personal computer of the 1990s. The opening slide is of the classical sandstone porticos at Stanford University. By the third paragraph Steve has convincingly positioned the machine as the "scholar's workstation." Never mind that a campaign based on this phrase was widely discussed but not promoted at Apple over the last year.

The target for this machine will be 3000 universities, 45,000 departments, 600,000 faculty members, 12 million students. Steve credits 23 carefully selected advisors, the heads of computer centers at colleges and universities across the country, with having guided the machine to this point. We are impressed—credentials have been proffered and look good.

So What's in the Box?

We still hadn't seen the actual computer, but Steve makes a transition to a discussion of what's inside the box. What's been going on in Palo Alto all these years?

He starts with a wish list of ten items that Next had been given from the members of Academe: 5-MIPS processing, floating-point processing, array processing, 8 megabytes of RAM, at least 100MB of disk capacity, unified imaging and printing, a

(continues)

New Powerbase
- Raises Mac 6"
- Tilts/Swivels
- Storage Shelf
- Surge, Noise, Static protection
- Organizes Power for 3 peripherals and Mac

POWER CONTROL REACHES A NEW HIGH.

Microvision introduces Powerbase, a combination of products from Kensington designed to elevate your Mac for more comfortable viewing while combining state-of-the-art surge protection.

The Powerbase is a must for any dedicated Macintosh, Macintosh Plus, or Macintosh SE owner at only $129.95. To place an order or for a free brochure, call today. **1-800-882-9199.**

microvision
28045 Ranney Pkwy., Westlake, OH 44145

Circle 388 on reader service card

Six Months Ago You Wrote A Paragraph About Alaska. Find It. In 30 Seconds.

If you work with words, you need Sonar.™ Because only Sonar and Sonar Professional give you the power to search and compare hundreds of documents in seconds. Not just titles, but actual content. And not just key words, but complex relationships across multiple documents, multiple folders, even documents created with different applications. Sonar shows the full text, gives exact paragraphs, page numbers, document titles and location.

Sonar brings mainframe capabilities to your Mac. Search up to 15,000 pages of text in under a minute! Sonar Professional can search at speeds exceeding 250,000 pages a minute!

SONAR
HIGH-SPEED TEXT RETRIEVAL

Once you've bought Sonar you can upgrade to Sonar Professional at any time. Try Sonar's full featured demo for 30 days for just $30 and you'll see why if you work with words, you need Sonar, the power tool for word processing.

Sonar . . . $295
Sonar 30 Day Demo Disk . . . $30
Sonar Professional . . . $795

$6.00 Shipping and handling charge added to all orders

Also from Virginia Systems: Round Up!™ a low cost utility that searches file contents across multiple documents and moves them to the desktop for easy access. RoundUp!™ is just $49.95 or free with Sonar.

All trademarks acknowledged. Search times quoted for MacII

TO ORDER OR FOR DEALER INFORMATION CALL:
804-739-3200 (EST)

VIRGINIA SYSTEMS
5509 WEST BAY COURT
MIDLOTHIAN, VA 23112

Circle 56 on reader service card

Commentary/Jerry Borrell

1-megapixel display, transparent networking, and UNIX for the end user.

OK. Does a good showman set himself up to look foolish before a crowd like this? Of course not; he raises questions and has an answer for each. But a great showman knows how to stretch it out—and Steve did just that. "We wanted to do more," he says. "We wanted fast networks, great sound, an architecture expandable to the 1990s, a machine that is small and quiet, and an affordable laser printer."

You know the routine: Tell 'em what you're going to tell 'em, then tell 'em, then tell 'em what you've told 'em. But Steve does it very well, with panache. So he told us. The heart of the computer is two chips, gate arrays (a kind of custom silicon technology) that do the main processing tasks of the machine. A 68030 CPU chip from Motorola (like the one the Macintosh IIx has) handles the interface and is supported by a floating-point processor. There is a digital-signal processor chip that is very fast and dedicated to array processing (sound, facsimile, image processing, graphics).

In addition there are 12 other CPU chips that shuttle data back and forth on the board. "We had a revelation that it's not the processor but the data flow in and out of computers that limits them," Steve tells us. So Next added enough processing to the machine to solve many of these problems. The software designers couldn't have enjoyed figuring out all of this, but that's not our problem.

So there's the CEO showing color slides on a billboard-size screen, using a little laser pointer to visually walk us through the layout of a circuit card, and waxing enthusiastic about the internal architecture of his computer. Boy, have times changed. Steve admitted this crowd needed more than a TV ad with piano music. And admitted he's been around a few circuit boards and integrated circuits. Not many computer introductions dwell on the workings of a machine in this way. Has Steve changed? Was this over the heads of the audience? Or are there a lot more people these days with a fundamental understanding of computers?

The sound? CD quality, of course. A modem won't be ready until next year. An "Aah" is heard from the audience at the first sign that the machine is not quite finished. Next chose NuBus (used by the Mac II) for

(continues)

HOW FAST CAN YOU MAKE AN APPLETALK?

Up to three times faster. With the new TOPS FlashBox.™

Most people wouldn't change a thing about their AppleTalk® network. Except to make it faster.

Now you can do that — easily and inexpensively. With FlashBox.

Simply plug FlashBox into the back of any networked Macintosh.® And in a flash, information will speed along your existing twisted-pair cabling (such as Apple's LocalTalk™ or regular telephone wire) at the FlashTalk™ speed of 770Kbps — up to three times the AppleTalk data rate.

What's more, FlashBox is only $189 per node, and can be installed on only those Macs you want. And because FlashBox can communicate at both FlashTalk and AppleTalk rates, it will automatically select the right speed to talk to any other Mac, PC, LaserWriter® or peripheral on your network.

In fact, you don't even need to be running TOPS — FlashBox can also quicken the pace of AppleShare,® InBox™ and multi-user applications. And networked PCs equipped with a FlashTalk compatible card (such as the TOPS FlashCard™) can talk with Macs at FlashTalk speed.

Only FlashBox can make AppleTalk faster without putting you through major changes.

So call your nearest TOPS dealer. Just dial 800-445-TOPS (or 415-769-8700 from outside the U.S. and Canada). Or drop a card to TOPS, 950 Marina Village Parkway, Alameda, CA 94501.

TOPS®
A Sun Microsystems Company

TOPS, Sun and the Sun logo are registered trademarks and TOPS FlashBox and FlashT
trademarks of Sun Microsystems, Inc. Other brand and product names or registered trad
are of their respective holders. Actual application speeds may vary based on network tra
prices are subject to change

INDIVIDUAL Training for PageMaker

INDIVIDUAL Training™
teaches PageMaker® 2.0 *and* 3.0

The *only* 100% on-screen interactive tutorial

Uses MultiFinder to run alongside PageMaker

Gives you the practical base you need to become an expert

Lots of *hands-on* exercises
Quizzes to measure progress
Hot Tips for experienced users

No tapes or video required

Partial list of topics:
- Mac basics for beginners
- PageMaker basics
- Lines, shades, shapes, spot color, columns
- All about type and graphics
- Sizes, styles, fonts, leading, tabs, indents, style sheets
- Manipulating graphics and type from other programs
- Basic design tips and topics

Retail price $69.95

INDIVIDUAL Software, Inc.
125 Shoreway Road
San Carlos, CA 94070
(415) 595-8855
(800) 331-3313 (outside California)
VISA/MC Accepted

Also call or write for information on ***Flash & Match***™ ***FLASHCARDS*** *and* ***Typing INSTRUCTOR Encore***™

PageMaker is a registered trademark of Aldus Corp.

Circle 167 on reader service card

Commentary/Jerry Borrell

Pictured are the laser printer, keyboard, monitor, and cube (from left) that make up the Next line.

its internal communications path. A second, more enthusiastic "Aah" begins to well up when Steve notes that the NuBus in the Next computer runs at two to three times the backplane speeds in the Mac II. Ethernet is built in, of course, there's a SCSI port —"Aah"—and the machine is plug compatible with external devices for the Macintosh, but it runs at four times the speed.

People are making little grunts of appreciation, there are lots of smiles. The hardware is very good. Steve says he would love to show some slides of how the computer is made (that is, how its single printed circuit board is manufactured), but he's decided instead to show a movie. The film starts like an early George Romero flick—white type on a black background, high camp. Then it switches to the most polished corporate setting imaginable. The board fabrication is done by robots, with all surface-mount technology. The floor of the place is polished to a smooth gloss, and the lighting makes it look like a modern office.

About now, we all began to perceive that this is not the typical start-up company. Our old image of Steve, with his disorganization and mood swings, dissolves and is replaced by an image of someone who really knows what he's about. Don't worry. There are enough former employees of Next who think that Steve is still pretty squirrelly, and they will find an eager audience through newspapers, but for now Steve is changing legends.

At the end of the film we get a glimpse of the machine. A black, 1-square-foot cube, with a tiny logo in the center. Then, at last, he shows us the machine itself. The design is everything you might expect. The cube can reside anywhere— only a keyboard, monitor, and mouse clutter your work space. The machine has an open architecture and holds up to three additional cards. Best of all, the cable connecting the monitor and the CPU is 10 feet long. With the matching printer, it all looks like a high-tech line from the Sharper Image catalog or from Porsche Designs.

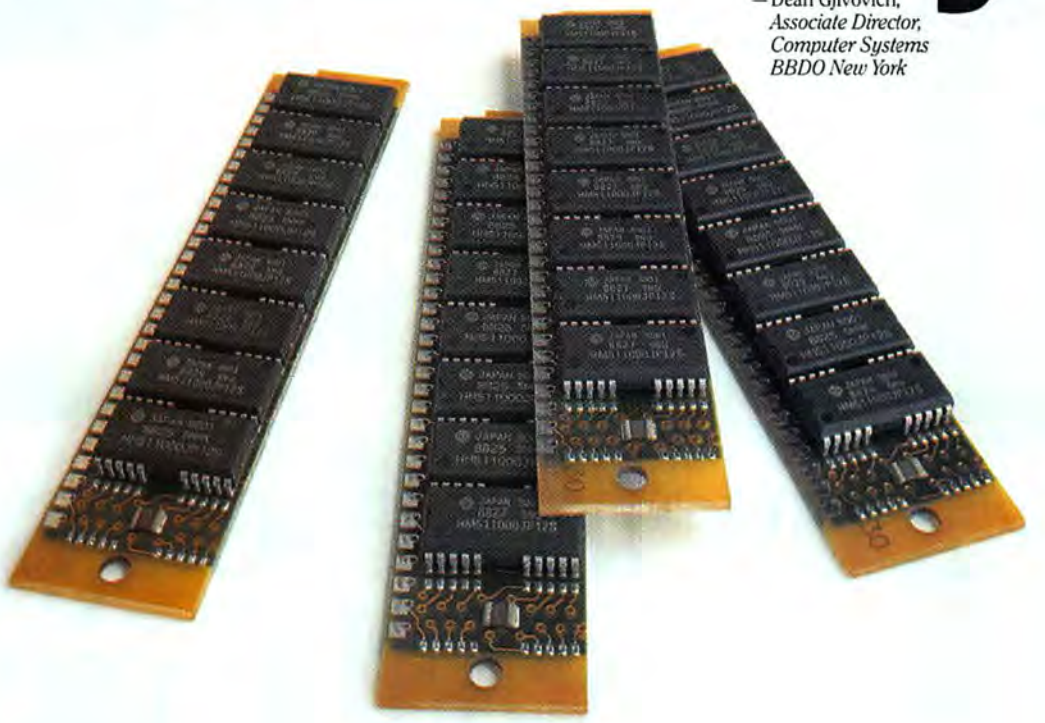
By now, the audience is eating out of Steve's hand. Gordon Bell allows that if the machine has software he'll turn in his Mac at home and buy one of these. All of this before the machine is turned on—we don't even know if it runs yet and people are singing its praises.

Then Steve turns on the machine and it runs a cute demo that first emulates the IBM PC, then the Mac, and then launches into Aaron Copland's "Fanfare for the Common Man." The clouds projected on high are replaced by a sea of shining stars. The

(continues)

"Thanks for the memory."

— Dean Gjivovich,
Associate Director,
Computer Systems
BBDO New York



Dean Gjivovich buys Macintosh memory modules for one of the world's leading advertising agencies. And he buys a lot.

So who does he call? Who else, but the nation's leading supplier of Macintosh memory — Microtech!

In fact, we supply SIMMs to hundreds of memory-hungry companies across the country and throughout the world. From Westinghouse and WordPerfect, to General Electric and the U.S. Department of Energy.

They know we're ready to ship today — in quantity — straight from our inventory of 2 to 8 MB* SIMM kits for the Macintosh Plus, SE, and II.

We test, retest, then torture test each component we use. Once a Microtech SIMM leaves the factory, it never comes back.

Best of all, we price our SIMMs aggressively. As only the biggest independent suppliers of Macintosh memory components can. Which means you get the best price possible, every time.

So if you need memory for your Macintosh — and you need it now — do what more and more companies are doing every day. Call Microtech, where there's no memory shortage at all.

MICROTECH
INTERNATIONAL, INC.
29 Business Park Drive, Branford, CT 06405

1-800-325-1895
(203-488-7744 in CT)

© 1988 Microtech International, Inc. WordPerfect is a registered trademark of WordPerfect. Macintosh Plus, SE, and II are trademarks of Apple Computer, Inc.
*8MB kits for Mac II only. Prices and availability subject to change without notice.

Circle 243 on reader service card

Novell presents a net
even the pickiest

Macintosh owners have a reputation for being fanatical about their Macs. And rightfully so, when you consider the elegance of the Macintosh user interface.

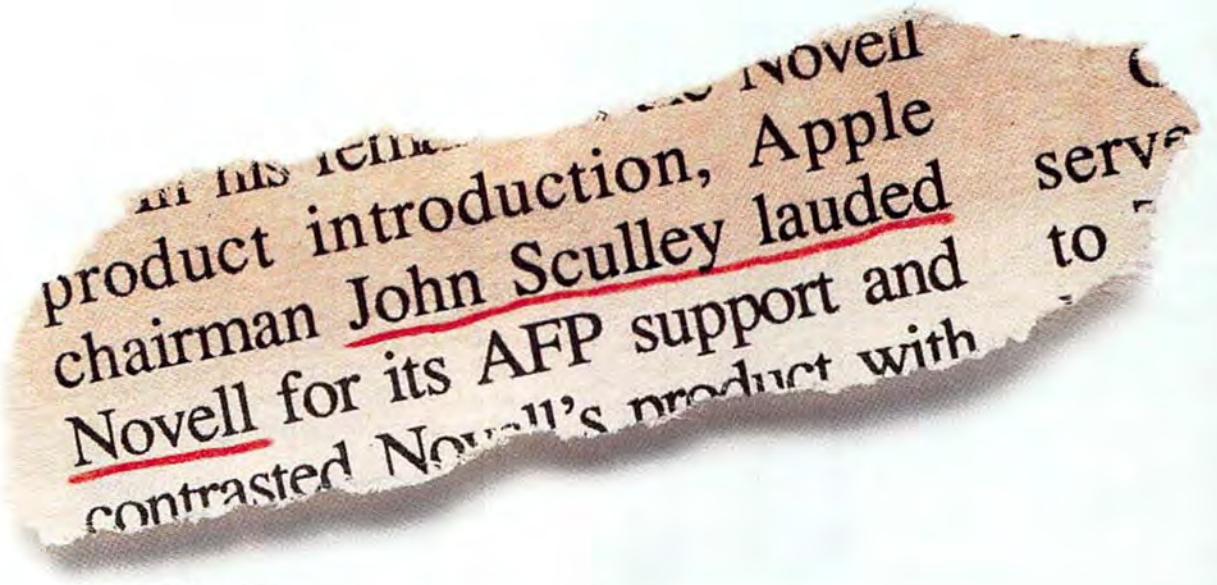
So when Novell set out to network the Macintosh with PCs, it was with one clear caveat: preserve the Mac environment. Create network software that would feel right to the pickiest of all Macintosh users. And none are pickier than the ones at Apple.

Full AppleTalk compatibility. Working directly with Apple, Novell's programmers created a version of NetWare® that is compatible with the AppleTalk File Protocol (AFP). It's an achievement hailed by Apple President and CEO John Sculley as "a very significant event for the industry." And it means that Mac users can now get all the power and flexibility of the number one local area network in the world, without sacrificing any Macintosh functionality.

AFP compatibility also means that NetWare for Macintosh will be fully compatible with future Macintosh hardware and operating system versions. So you can take advantage of new Macintosh product releases as soon as they become available.

Freedom to choose. NetWare for Macintosh lets you connect Macs with a

©1988 Novell Inc., World Headquarters, 122 East 1700 South, Provo, Utah 84601 (801)379-5900



InfoWorld, June 20, 1988

work made to satisfy Macintosh user.

myriad of PC, minicomputer and mainframe environments, including OS/2. So you can choose the workstation environment that best suits your needs while communicating easily between dissimilar operating systems and sharing files and peripherals.

You get all the performance, security, fault tolerance and functionality of NetWare without changing the way you work with your Macintosh. And you get the power to transparently connect to over two million NetWare users worldwide.

To satisfy your need for a powerful Macintosh network, plug into NetWare—the network that passed the ultimate Mac test drive. See your Gold Novell Authorized Reseller, or call 1-800-LANKIND.

For more information, call from your modem 1-800-444-4472 (8 bit, no parity, 1 stop bit) and enter the access code NVMC17.

NOVELL

For network solutions, you should be seeing red.

Circle 347 on reader service card

Connect

Wang and Macintosh

VsCom/Macintosh—The industry standard Wang VS 2110 terminal emulation and file transfer software is now available for the Apple Macintosh.

VsCom/Macintosh provides true Wang VS 2110 terminal emulation including complete support of the Macintosh user interface standard.

Wang VS function keys are accessible through continuously displayed icons, the Macintosh extended keyboard, or regular keyboard aliases.

Two-way transfer of documents and files between the Wang VS and the Macintosh are easily accomplished with VsCom/Macintosh.

Document conversions include Microsoft Word, MacWrite, WriteNow, WordPerfect, and DCA.

An additional key feature is direct transfer of Macintosh documents and files in and out of Wang Office.

All the standard features of VsCom/IBM PC are included.

Make the Wang—Macintosh connection your way

M/H GROUP

222 West Adams Street • Chicago, Illinois 60606 • 312.443.1222

Circle 160 on reader service card

demo image on the symphony stage shows three windows opening simultaneously with no perceptible slow down.

Now it's Steve's turn to be pleased—the machine didn't crash. He pats it appreciatively and announces one piece of the hardware he has saved for last. The computer has no floppy drive, instead using a 256MB removable, erasable optical drive "some four years before other companies can implement the technology," he says. "We bet our company on this."

Everyone's impressed. Then we're given a break and it's only as we troop out of the hall that some developers can be heard wondering how software distribution will work—the erasable disks cost $50 apiece (floppies cost $1). There's talk about disk swapping when you want to load new programs into the machine. Never mind, there are machines waiting outside for people to see.

(It's a pity that Bill Gates decided to downplay the Next technology, because he often speaks of revolutionizing software distribution through the use of CD ROMS. In the days following the announcement, we see a widely repeated quote from Gates in newspapers and newsweeklies that the Next machine is just another microprocessor in a box.)

The tough announcements—software, pricing, programming—are saved for after the break. Steve's ready for this. No one winces when he tells us that Display PostScript was chosen for the unified printing and display models, because they've seen the display work, and it's fast. These are integrated into a software architecture called NextStep, which at a later point we hear that IBM has endorsed, and which we assume will be forthcoming on some future workstation. (One has to wonder if IBM's use of NextStep has made Steve a new competitor to OS/2, PS/2 domination.)

Loud "Oohs" and "Aahs" are again heard from the audience. Steve wastes little time explaining the fact that all of the software rests on a UNIX base, because there is no need. UNIX is transparent to the user—truly. At least from everything we see during the demo. The developer environment looks even better. The toolkit features all object-oriented programming routines. The Interface Builder allows for fast construction of working interfaces. And the software architecture, NextStep, renders UNIX usable to "mere mortals."

(continues)

MacinStor™ gives you more crunch per byte.™

High-Performance Mass Storage You Can Trust. Up to 630 Megabytes, Internal or External.

Macintosh® users have many storage subsystems to choose from. Now, there's a family of products that meets the high-capacity and high-performance demands of today's storage-intensive Mac® applications.

Introducing the MacinStor high-performance family from Storage Dimensions. MacinStor comes with everything you'd ever want in a storage subsystem. And a few things you never thought possible.

To satisfy your hunger for high performance, MacinStor delivers capacities up to 630 MB on a single hard disk (internal or external), data transfer rates as high as 15 Mbits/sec., and seek times as fast as 14 milliseconds. Nobody crunches data faster. This high-performance philosophy is maintained throughout our product line. All the way down to our 45 MB drives.

MacinStor comes with a complete menu of easy-to-use installation and disk management software. It includes a formatter, diagnostics, partitioning, backup and restore, disk optimization, data encryption and data recovery. Plus, our manuals are complete and easy to understand.

Of course, all this has its price. And it's amazingly low. Especially when compared to what you get—or don't get—with other storage subsystems.

Now's the time to put more into your Mac. So you can get more out. For the name of your nearest authorized MacinStor dealer, call (408) 879-0300, Ext. 605 today.

He'll give you more to chew on.

STORAGE DIMENSIONS
A MAXTOR COMPANY

Storage Dimensions, 2145 Hamilton Avenue, San Jose, CA 95125.
MacinStor is a trademark of Storage Dimensions. ©1988 Storage Dimensions.

Circle 414 on reader service card

MacTilt for the Mac Plus, SE, & II!

- Silky smooth adjustment.
- Elevates Mac 4-inches.
- 360° Rotation and 20° Tilt to reduce eye, neck, and back strain with the touch of a hand.
- Models available for Mac II and most Large Screen Displays.
- SE simply clips on Base.
- Available at your nearest Authorized Apple Dealer.

ERGOTRON inc
3450 Yankee Drive
Eagan, MN 55121
(612) 452-8135 • (800) 888-8458

Circle 148 on reader service card

THE BEST TYPE BOOK MONEY CAN BUY.

This priceless professional tool is yours *free*. Simply mail the coupon below or call Adobe Systems toll-free at 800-83-FONTS.

Adobe, developer of the Adobe® Type Library and PostScript® software, is the world's authority on electronic publishing.

This full-color, 11"x15", 32-page *Font & Function*™ catalog is jam-packed with helpful tips and problem-solving advice from Adobe type and design experts. Plus, it's got samples, interviews and more than 300 high-quality Adobe typefaces for you to order. You'll see how easy it is to publish like a pro with your Macintosh® or IBM® PC computer, PostScript printer and a little help from *Font & Function*, the Adobe Type Catalog. 01-32-05-S

Get yours today. FREE. Just call 800-83-FONTS. Or write *Font & Function*, P.O. Box 7900, Mountain View, CA 94039-7900.

ADOBE™ SYSTEMS INCORPORATED

Adobe and PostScript are registered trademarks and the Adobe logo and *Font & Function* are trademarks of Adobe Systems Incorporated. Macintosh is the registered trademark of Apple Computer, Inc. IBM is the registered trademark of International Business Machines.

FREE.

01-12-02-2

To receive your free *Font & Function* Adobe Type Catalog, mail to: Font & Function, P.O. Box 7900, Mountain View, CA 94039-7900. Please allow 4 weeks for delivery.

I use a ❒ Macintosh ❒ IBM PC computer (Check appropriate box[es])

NAME

TITLE

COMPANY

ADDRESS CITY

STATE ZIP PHONE

The entire second half of the presentation goes like this. One announcement after another describes features of the machine or its support functions, and each is punctuated with loud applause.

Then Steve sits down and says, "Now, I'm not a programmer, but to show you how easy it is to develop a program with our machine, I'm going to build an application today." And he proceeds to develop an interface for a physics experiment showing how a molecule reacts to variables such as heat and compression. He hits the start button and then begins to tinker with sliders (virtual tools placed on the screen with the interface builder) that affect the parameters in which the molecule resides. And the molecule responds.

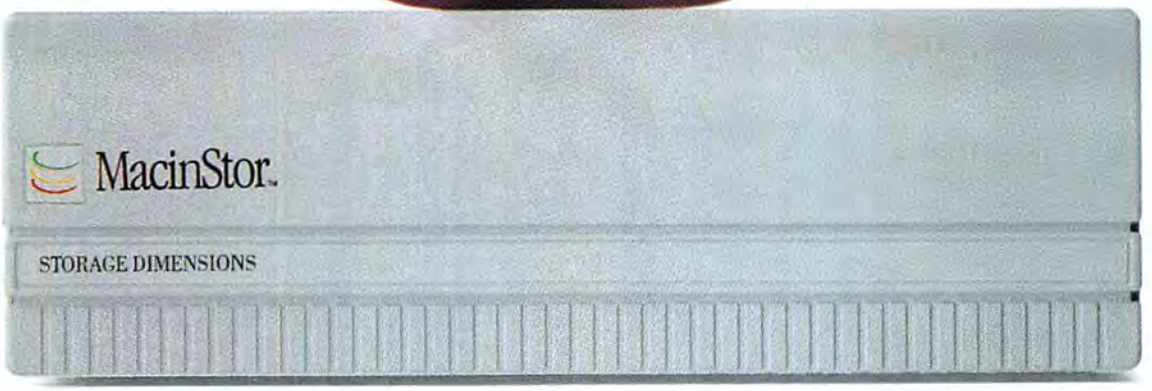
That is the beauty of an object-oriented programming environment—it allows "the rest of us" to develop applications. Next goes one step further, extending the concept to the interface as well.

Richard Crandal, a professor from Steve's alma mater, Reed College, is then brought onstage to show us some applications he has built. Most go over my head, but one hits home. It uses the microphone of the machine to digitize and display different analyses of the sounds from the audience. The demo leaves little doubt that this machine is going to be the joy of a Next generation of hackers coming out of universities. Crandal's students were the first to develop a color paint program for the Macintosh 512, a product that sat in the lobby of the executive building at Apple during 1986. A small touch of irony.

There is an old sales adage, "Don't give the customers anything to say no to, and when you close the deal, they'll probably say yes." It's been three hours, and no price has been mentioned. However, Steve now proposes to tell us about all of the software that will be bundled with the machine: Mathematica, a Next version of WriteNow, mail software, a database manager (from Sybase), Common LISP, and several digital books (a thesaurus, a dictionary, the complete works of Shakespeare, Bartlett's *Familiar Quotations*). That's more software than we had for the Mac for six months after its announcement. Each product is demonstrated, and there is only one crash, largely unnoticed because in a multitasking system only the applications window goes away, not the entire screen, so rebooting the system isn't necessary.

(continues)

MacinStor™ gives you a good deal to chew on.



High-Performance Macintosh® storage without the high cost. 45 to 180 megabytes, internal or "zero footprint" external.

Now you can give your Macintosh all the high-performance mass storage you'll ever need. And at a price that won't ruin your appetite.

Storage Dimensions' new MacinStor family of internal and external hard disk subsystems (including great looking "zero footprint" models) delivers the capacity and high performance needed for today's storage-intensive, high-end Mac® applications. Combined with exceptional reliability at a surprisingly low cost-per-megabyte.

What's more, unlike any other Macintosh storage subsystems, MacinStor comes with a complete, easy-to-use and install package of disk management software that includes a formatter, diagnostics, partitioning, backup and restore, disk optimization, data encryption and data recovery. Plus comprehensive documentation that's easy to follow.

External (including zero footprint) 3.5 or 5.25 inch subsystems.

Any way you look at it, MacinStor represents an outstanding value.

Compare and see for yourself. Call (408) 879-0300, Ext. 606 today for the name of your nearest MacinStor dealer.

He'll show you how to get more bytes out of your Mac. Without taking a bite out of your wallet.

STORAGE DIMENSIONS
A MAXTOR COMPANY

Storage Dimensions, 2145 Hamilton Avenue, San Jose, CA 95125.
MacinStor is a trademark of Storage Dimensions. ©1988 Storage Dimensions.

Circle 416 on reader service card

INTRODUCING THE SHORTEST DISTA

Most presentation software seems to be for people with lots of time and a degree in graphic design. But if you're like most business professionals, you probably have neither.

So we borrowed a page from our PageMaker® experience, and developed a new technology for automating the process of creating presentations.

The technology is AutoTemplate.™ The program is Aldus® Persuasion.™ And it's the most streamlined way to create great presentations with your Macintosh. Here's why.

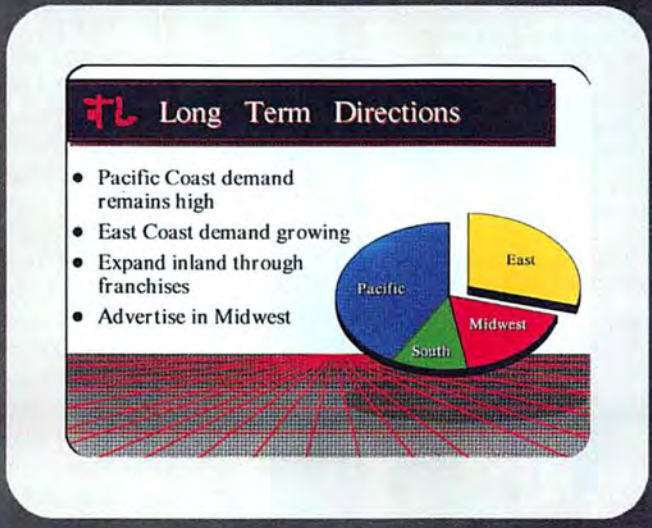
Using the AutoTemplate technology, all you have to do is select a design, type your ideas into the text outliner, and you're done. Aldus Persuasion automatically formats your outline into professional-looking slides or overheads, using one of the program's pre-formatted designs or one of your own.

You can literally create and change a presentation as fast as you can type your ideas into an outline.

If you want to embellish your presentation, feel free. Persuasion lets you be more creative with text formats, styles, and colors than any other presentation program.

*Offer good in U.S. and Canada only. Demo disk requires a Macintosh Plus, SE or II. Aldus, PageMaker, and the Aldus logo are registered trademarks and Aldus Persuasion and AutoTemplate are

FREE DEMO DISK



NCE BETWEEN THESE TWO POINTS.

Tables and graphs are easy to add, too. Persuasion automatically generates practically any kind of graph right from the program's data sheet. Or from imported data from spreadsheets such as Microsoft® Excel. And if you want to generate organization charts, Persuasion can do them instantly right from the outliner.

And you can be artistic with Persuasion. It includes powerful drawing tools, special effects, and clip art. So you can easily create flow charts, conceptual diagrams, and logos. Or import art from other graphics programs.

And because Persuasion is the most complete program for presentations, it includes a spelling checker, slide sorter, and an on-screen "slide show" feature. It also generates speaker notes and handouts.

Your output can be color or black-and-white; slides or overhead transparencies.

And film recorders, laser printers, or service bureaus can also be used.

To see just how short the distance can be between your ideas and a professional presentation, call us at (800) 33-ALDUS for a free self-running demo disk. In Washington state call (206) 628-2320. *Or visit your nearest authorized Aldus dealer today.

Circle 306 on reader service card

Aldus Persuasion

411 First Avenue South, Seattle, WA 98104, (206) 622-5500

trademarks of Aldus Corporation. Macintosh is a registered trademark of Apple Computer Inc. Microsoft is a registered trademark of Microsoft Corporation. ©1988 Aldus Corporation. All rights reserved.

Circle 304 on reader service card

"I THINK IT WAS IN THE AUGUST ISSUE . . . ."

Keep your copies of *Macworld* at your fingertips in our special file cases. Each handsome *Macworld* case holds twelve issues, ready for use again and again.

This is a great value at $7.95 for one file; $21.95 for three; or $39.95 for six files (Pennsylvania residents add 6% sales tax). Please add $1 per case for shipping and handling. Send your check or money order, payable to Jesse Jones Industries, to Jesse Jones Industries, Dept. MCW, 499 East Erie Avenue, Philadelphia, PA 19134.

Commentary/Jerry Borrell

At last, the price: $6500 for education users. No mention of retail prices, but one can assume an end user price of about $10,000. Suddenly the machine looks more like competition for Sun Microsystems than for Apple.

The shipping date? System software version 0.8 ships now to developers. Version 0.9 ships in the first quarter of 1989 to "aggressive end users." Version 1.0 ships in the second quarter of 1989. This is a machine that will not ship to most end users until the summer of 1989 at the earliest. That understated fact brings the announcement back to reality. You can't even march down to your local dealer and see one of these things until next summer. Nevertheless, the price receives a strong round of applause. It's a good price considering what we've seen.

The pricing presentation is followed by some prerecorded endorsements of the machine from the software developers. We hear only John Warnock of Adobe and three others when the presentation is cut short, due to the need to let the symphony musicians into the hall. The crescendo of the announcement comes when Steve formally recognizes IBM's purchase of NextStep and Display PostScript to overlay AIX, IBM's version of UNIX. The significance? An endorsement of NextStep from IBM. More staggering is that all software written for AIX will run on the Next machine and vice versa, giving Steve the coup-of-the-year award.

To close the program, a violinist from the San Francisco symphony is brought out to play a movement from a concerto. His accompanist? The Next machine. At center stage are two pools of light, one for the musician, one for the black cube that is on a stand at shoulder level. For 15 minutes we hear the two playing together and it's not bad. Or as Jean-Louis Gassée would say, "not too shabby."

After applause for both, and a bow from Steve, the show is over. Lights come up and Steve thanks everyone. There is an odd sense of vulnerability about it all. The announcement went well, the machine looks great (you know how great), and the early adopters are enthusiastic. But the machine isn't shipping, there's no Next magazine. We're all left waiting, and next year is a long time in the world of personal computing. □

Special Anniversary Offer

5 YEARS STRONG

We're celebrating our fifth year anniversary. Join us for incredible savings on every issue of Macworld.

Discover Macworld with a Special Anniversary Savings Rate!

12 ISSUES JUST $24

MACWORLD

POWERFUL

Each issue is packed with powerful techniques, straight-shooting reviews, tips and how-tos.

☐ YES, send me one year (12 issues) for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Even bigger savings! Send me two years (24 issues) for just $37.90.

Name _____

Company _____ ☐ Please Bill Me

Address _____ ☐ Payment Enclosed

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

4AAA1

INTUITIVE

Develop an understanding of the Macintosh with thought-provoking articles and insightful features.

☐ YES, send me one year (12 issues) for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Even bigger savings! Send me two years (24 issues) for just $37.90.

Name _____

Company _____ ☐ Please Bill Me

Address _____ ☐ Payment Enclosed

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

4AAB9

FRIENDLY

User-friendly hints and applications to make using the Mac more fun and productive than ever before.

☐ YES, please send a one year subscription (12 issues) to my associate or friend listed below for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Please Bill Me Later.

Send Gift To:

Name _____

Company _____

Address _____

City/State/Zip _____

Send Gift From:

Name _____

Company _____

Address _____

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

2AKP9

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

SAVE NEARLY 50%

When You Subscribe Today!

No other magazine helps you like Macworld. Powerful, Intuitive and Friendly. Macworld is a wealth of information which keeps you up to date on the latest products, news, tips and tactics. Dedicated exclusively to the Mac II, SE and Plus.

We look out for your interests. We tell you what's new for the Mac. What it does. Who it's for. Compare similar products–and name names! Discuss pros and cons. Assess value for money for both hardware and software.

Macworld helps you make the most of your Mac.

MAIL THE ATTACHED CARD TODAY!

CLEARPOINT

Delivering Memory That Won't Stop–Guaranteed!

The MC2RAM, Version S1 for the Complete Macintosh Family

The MC2RAM, Version D for the Mac II and SE

Only Clearpoint can offer an unconditional lifetime warranty, 24-hour-a-day service and delivery from stock. Call today and ask for the MC2RAM, the fully-compatible Macintosh memory.

Choose either Version S1 (megabit SOJs, identical to the Apple SIMM) or the cost-effective Version D* (megabit DIPs). Coming from the largest manufacturer of workstation memory, the MC2RAM SIMMs are guaranteed to provide optimal performance with either state-of-the-art design.

Order your Clearpoint MC2RAM memory today and get the only Macintosh memory that won't leave you in the lurch. With Clearpoint you know you're buying everything that memory should be.

* Does not fit in Mac IIs with full-height disk drives or SEs with CPU Accelerator boards.

Clearpoint is a registered trademark of Clearpoint Research Corporation. Apple, Macintosh and Mac are trademarks of Apple Computer, Inc. DEC and MicroVAX 2000 are trademarks of Digital Equipment Corporation. Sun is a trademark of Sun Microsystems Inc. DN 3000, DN 3500, and Apollo are trademarks of Apollo Computer. COMPAQ and DESKPRO are registered trademarks of Compaq Computer Corporation.

The Clearpoint Difference

◆Lifetime Warranty

With the strictest dynamic and thermal testing in the industry, Clearpoint confidently offers a lifetime warranty–Then backs it up with a 24-hour Repair/Replacement policy and an 800 service number for a warranty with teeth.

◆Superior Memory Design

Across the board, Clearpoint brings the workstation marketplace better memory design. Whether it's higher density or state-of-the-art DRAM technology–Clearpoint designs it better.

◆Guaranteed Buyer Satisfaction

Long-term satisfied customers is Clearpoint's goal. With comprehensive, user-friendly documentation, trade-up credits and competitive pricing, Clearpoint guarantees buyer satisfaction.

CLEARPOINT

Other Clearpoint Workstation Memory

COMPAQ 386

COMRAM (compatible with the Compaq DESKPRO 386/20 and /25) 4 MB boards.

SUN FAMILY

SNXSM (compatible with Sun 3/60): Available in 1 MB SIMMs, four in a set.

SNXSC (compatible with Sun 4/110 and 386i): 1 MB SIMMs.

DEC

DCME-M20 (compatible with the MicroVAX 2000): 8 and 16 MB boards.

APOLLO FAMILY

DNXRAM (compatible with the DN3000 and DN 3500): 1 and 2 MB boards.

Call or write for an MC2RAM Product Marketing Update, a free catalog, and our Memory Pointers newsletter.

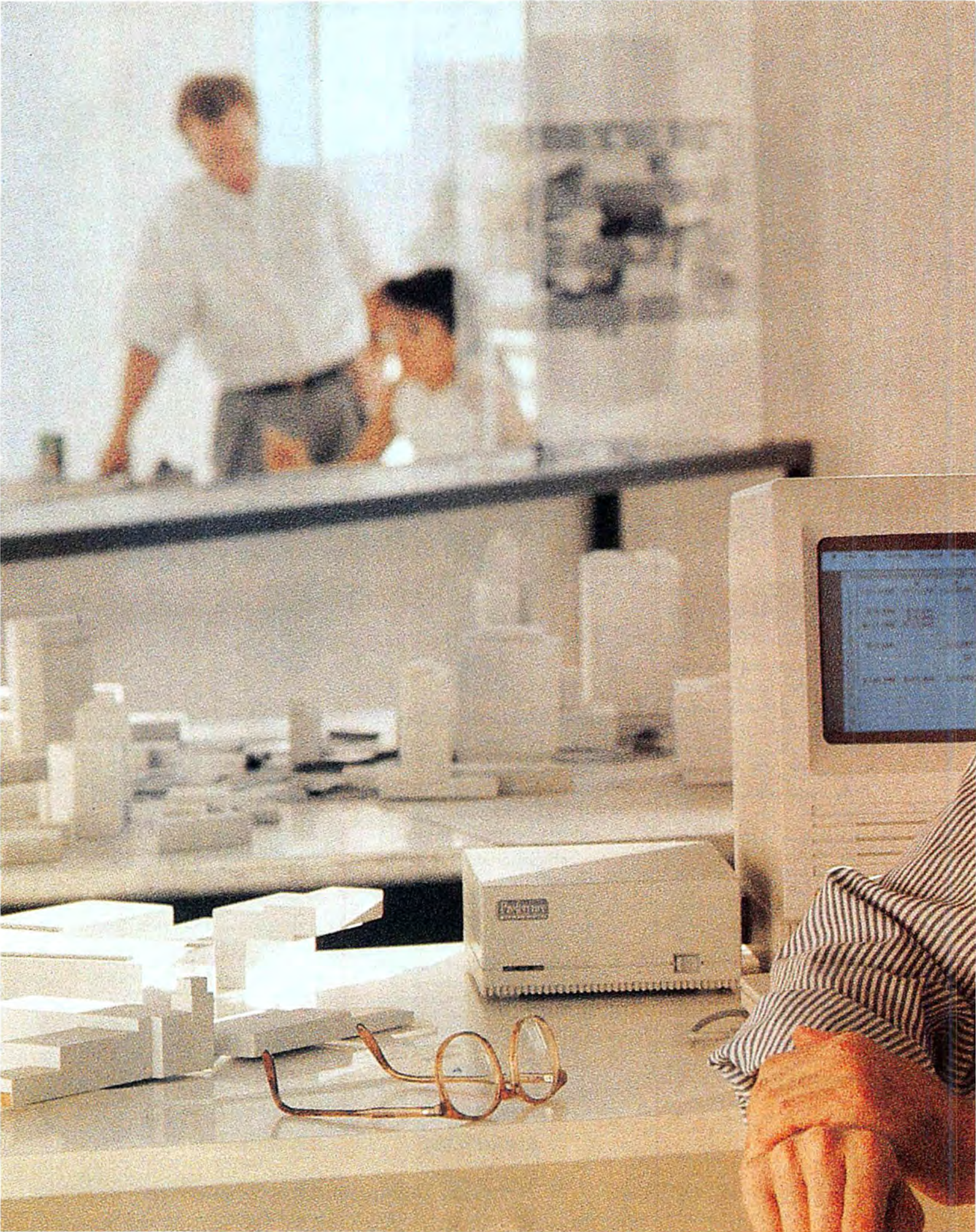
Dealer Inquiries Invited.

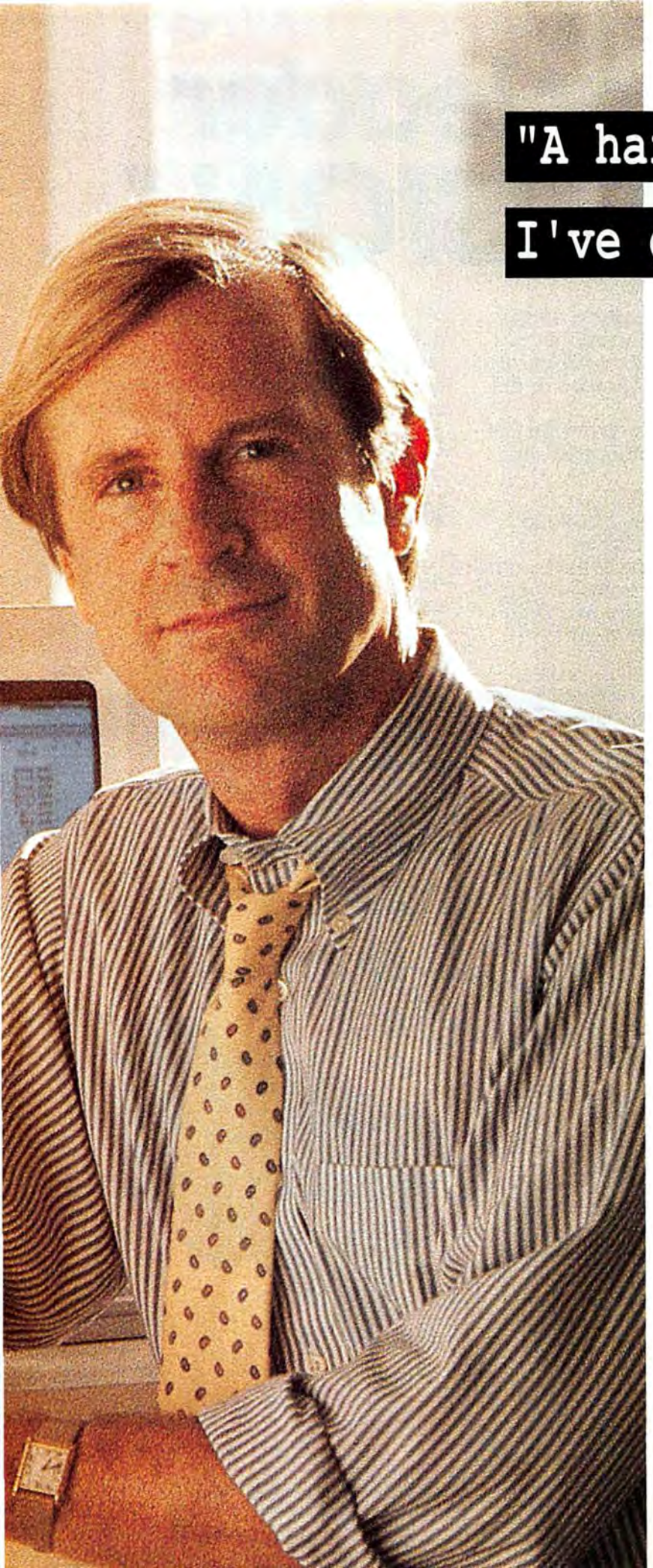
Credit Card Orders Accepted

Clearpoint Research Corporation, 99 South Street, Hopkinton, MA 01748
1-800-CLEARPT (1-800-253-2778) or 508-435-2000

Dealers circle 127 on reader service card

End Users circle 375 on reader service card





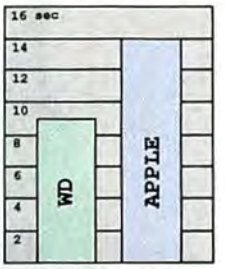
"A hard disk for my Mac* ?
I've got my Preference.™"

One drive stands out. This is it.
If you think all Apple* hard disks are created equal, you don't have a Preference. You should.

Preference is our family of performance products for computer users who care. For Apple users, it's the new 20 or 40 megabyte storage solution that's swift, sleek and simply a pleasure to use.

A Preference for Performance.
These new hard disks come with 32 Kbytes of built-in caching, 1:1 interleave and high performace SCSI drivers. Result: They're incredibly fast. So you "Open" and "Save" files in a flash.

Which is all the more amazing when you consider that we packed this performance into such a diminutive package—compact enough to sit beside, beneath or even on top of your computer, and tough enough to travel with you.



Why wait? Our 20 MB drive is more than 50% faster than Apple's external 20SC. (Test: "Duplicate" in Finder a 1.1 MB file on Macintosh SE)

A Preference for Simplicity.
Our new drives come ready to plug and play, preformatted and ready to connect to your Macintosh II,* SE,* Plus* or any Apple II* with SCSI adapter. And they can even be used to provide font storage for the Laserwriter* II NTX.

All in all, it's never been easier to make the right choice! Call 415-960-3360 for complete product details. Then see your Apple dealer. And express *your* Preference.

Western Digital is a registered trademark and Preference is a trademark of Western Digital Corporation.
*Apple and LaserWriter are registered trademarks and Macintosh II, Macintosh SE, Macintosh Plus and Apple II are trademarks of Apple Computer, Inc. Copyright © 1988 Western Digital Corporation.

Preference™
WESTERN DIGITAL

Circle 367 on reader service card

"... the clear leader 4th DIMENSION..."

MacUser

"Although this category, unlike spreadsheets and word processors, had a lot of new players this year, one seemed to us to be the clear leader.
4th Dimension, the powerful first product from ACIUS, takes the kudos."
MacUser, February 1988

"Congratulations! InfoWorld's readers have chosen 4th Dimension as the Product of the Year in the Macintosh Database Systems category."
Jonathan Sacks, InfoWorld, April 1988

"I can't imagine a data-management problem that you won't be able to solve with 4th Dimension."
Steve Mann, Macintosh Today August 11, 1987

"Users with no experience or interest in programming can build a barebones database in 4D's 'Design Environment' just by pointing, clicking, and naming files and fields."
"For searches and sorts - database operations that are performed interactively - 4D's performance curve is probably the best of the four programs (Omnis 3 Plus, Double Helix II, dBASE Mac, and 4th Dimension)."
David Brandt, MacWEEK, January 19, 1988

"It will do everything you need, and then some, and will prove itself well worth the cost."
Jan L. Harrington, MacUser, November 1987

"I'm convinced that many users of other Mac databases and even PC databases will want to switch over to 4th Dimension."
Adam Green, Macworld, July 1987

"In general, Macintosh software is better than software for other personal computers...
4th Dimension redefines those high standards."
Andrew Gore, The Macintosh Buyer's Guide, Spring 1988

"4th Dimension from ACIUS, Inc. of Cupertino, California, outshines the other databases we tested both in number of features and in rich database development environment."
Don Crabb, InfoWorld, January 11, 1988

Want to try it out?

For $20, we'll send you a demo disk and comprehensive 50-page user's manual.
Call today and find out what 4th Dimension can do for you.

- **Relational database**
- **Multi-user**
- **Intuitive interface**
- **Graphics and pictures**
- **Automatic forms & reports**

Yes you can!

$20 Demo Offer
1-800-952-6300 *Ask for Dept. A22*

Demo version bundled on all Jasmine Hard Disk Drives.

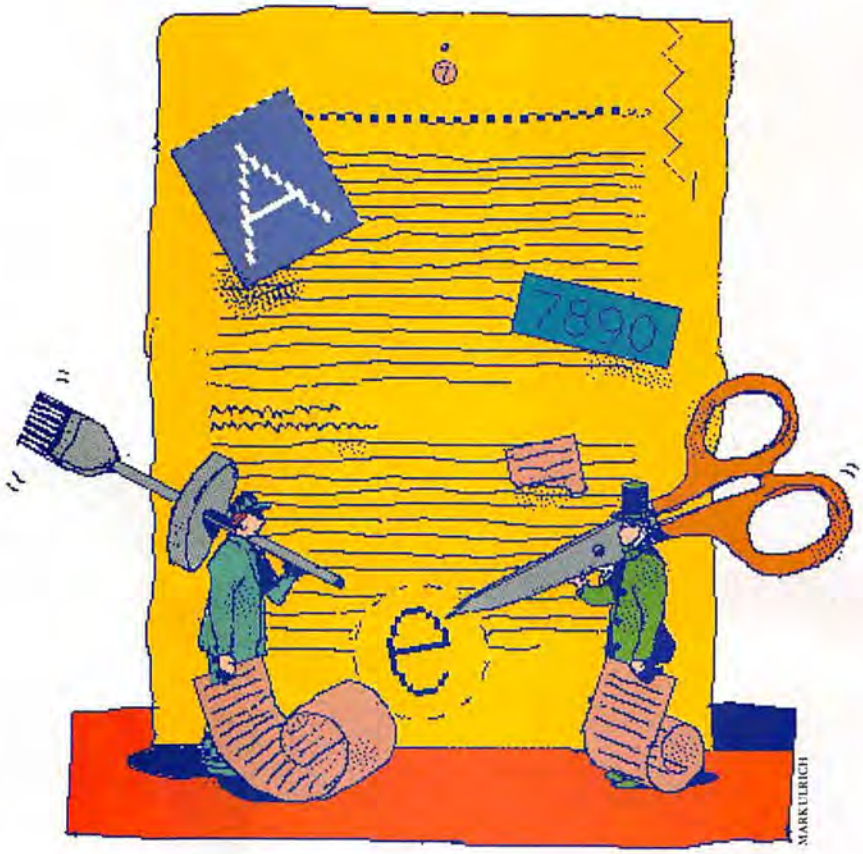
ACIUS

4th DIMENSION is a trademark of ACIUS, Inc. and ACI. All other brand names are trademarks of their manufacturers.

20300 Stevens Creek Blvd., Suite 495
Cupertino, CA 95014 (408) 252-4444

Letters

A forum for Macworld readers



FullWrite Supporter
Had I not already used FullWrite's style sheets extensively, I would have come away from your review (September 1988) with the false notion that "the lack of style sheets spoils the program." Not only is the style sheet feature beautifully implemented, but style sheets can also be exported easily to new documents with the save-as-stationery feature. Also, one can cut and paste formatted text to a new document. Further, custom styles added to the Style menu can be efficiently accessed through the WalkDown key commands with a minimum of keystrokes.

Judith Mish
Longmeadow, Massachusetts

CASE Tools for the Mac
I am trying to find some CASE (computer-aided software engineering) tools that run on the Macintosh. Ideally, I need a system that supports the four major areas of software development—analysis, design, coding, and documentation.

Andy Berry
Milton Keynes, England

PowerTools is an integrated CASE tool set from Iconix Software Engineering (213/458-0092). Anatool 2.0 automates structured-system-analysis methodology, and BLUE/60 is a data modeler. Both are available from Advanced Logical Software (213/659-5157). MacDesigner is a comprehensive CASE tool from Excel Software (515/752-5359). And Foundation Vista from Menlo Business Systems (415/948-7920) offers online application analysis and design.—Ed.

1988 Annual Index
The Macworld 1988 Annual Index will appear in the February 1989 issue.

Corrections
The phone number for the MacLarger 12-inch video enlarger from Power R (New Products, *July 1988) is 216/547-8000.*

The phone number for GraphistPaint II-Color from Aba Software (News, *September 1988) is 215/644-3580.*

The price for MacGolf 3.0 (also known as MacGolf Classic) is $94.90, and it is available from PCAI, 1305 Jefferson Hwy., Champlin, MN 55316; 612/427-4789 (Where to Buy, *September 1988).*

Simply Accounting from Bedford (Fast Financial Feedback, *October 1988) can host 1000 ledger accounts, 1000 customers, and 2000 inventory items.*

Evangelism Exposed
Three cheers for Steven Levy's "The Unbearable Heaviness of Being in the Computer Industry" (July 1988). He gives voice to the sentiments of "the rest of us" by exposing the shallow roots of Mac evangelism and by reaffirming the principle of separation of church and state-of-the-art. Understand, I speak as a card-carrying Apple/Mac user since the birth of the Revolution. I remain loyal, though wary.

Paul Cohen
Westport, Connecticut

Kudos to Claris
In April, I received the upgrade to MacWrite 5.0 and found some problems with its spelling checker on my 512KE. I wrote a letter to *Macworld* outlining my problem. One week after the letter appeared in your magazine, I received an update to 5.01 that

(continues)

FOUR INDIVIDUALS WERE GIVEN AN HOUR WITH THREE WENT BANANAS. ONE ATE THEM.

A To an architect, fine hairlines like ours are pure poetry.

B Auto-tracing built this banana from a scanned-in produce ad. In split seconds.

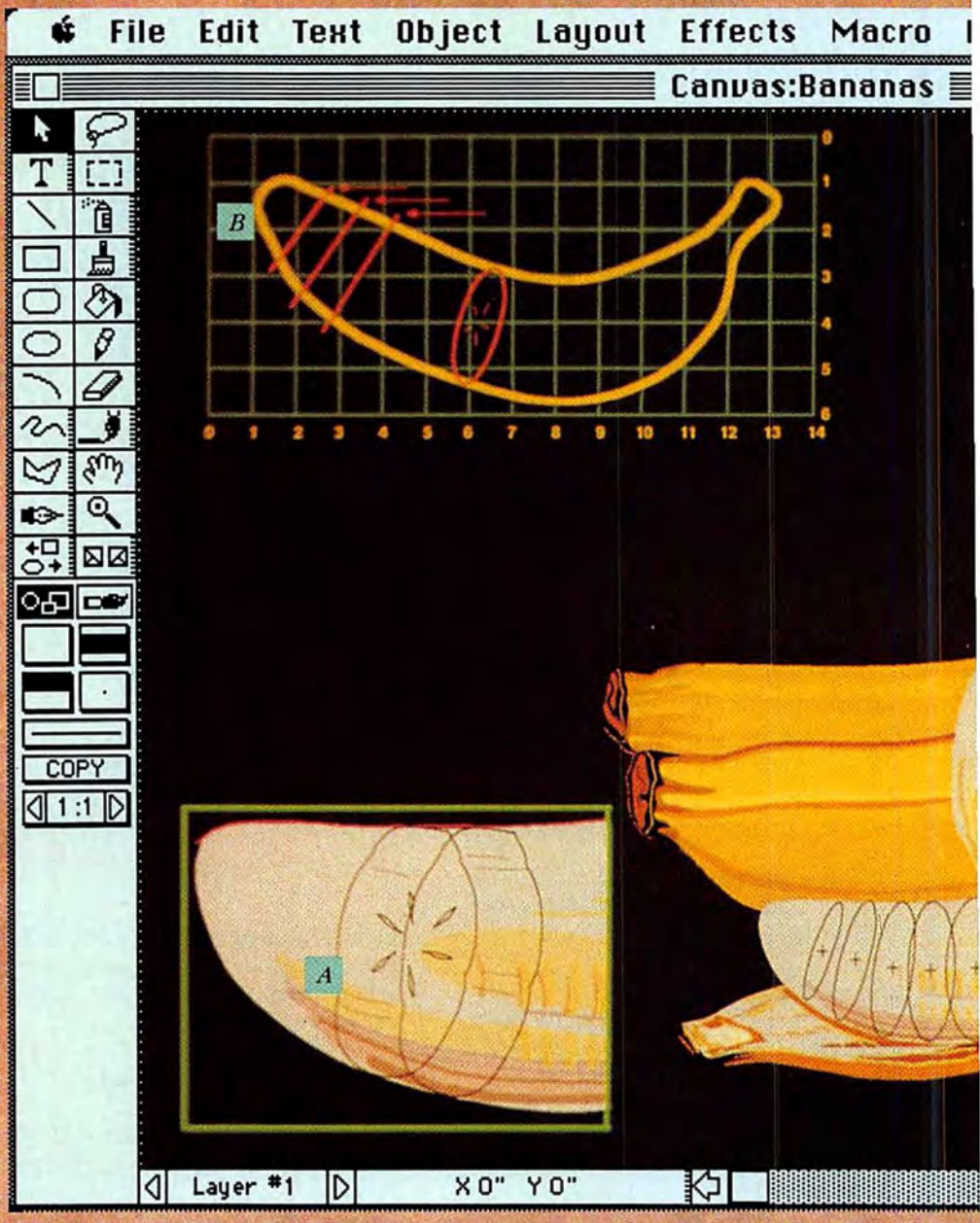
C Multi-point bezier curves make drawing a bunch easier. Colors are added in layers.

D Auto-resizing helped this V.P. of Sales display the fruits of his labor, graphically.

E Smooth continuous color blending inspired this art director to new heights.

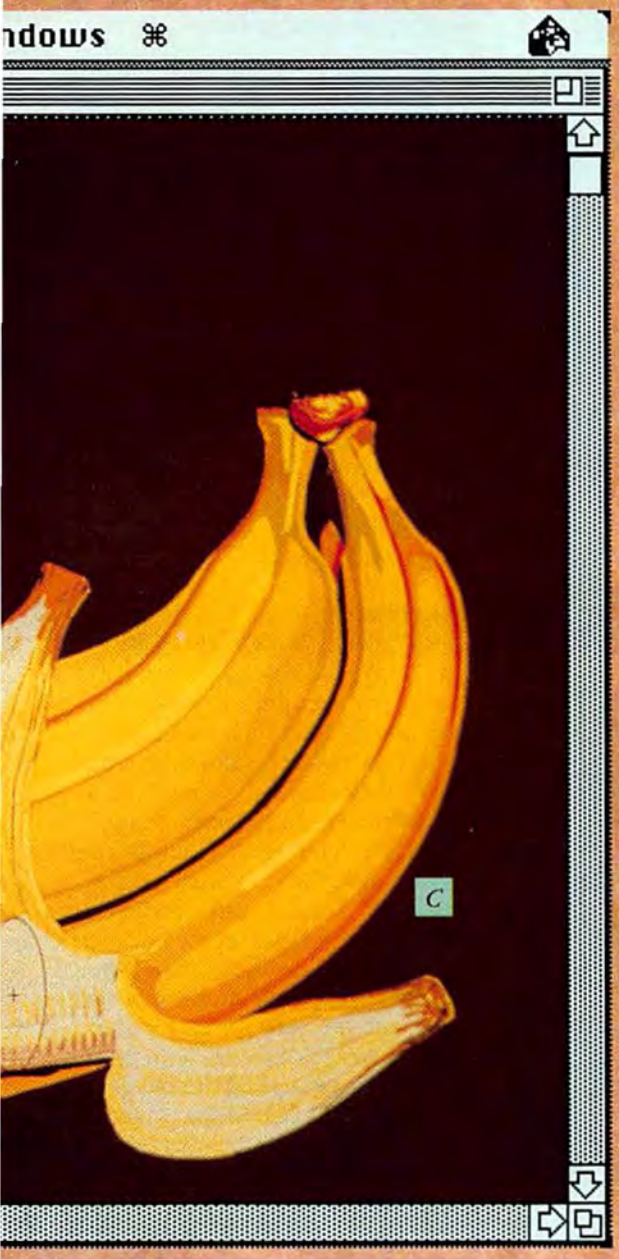
F What are mere words compared to WYSIWYG text with special effects?

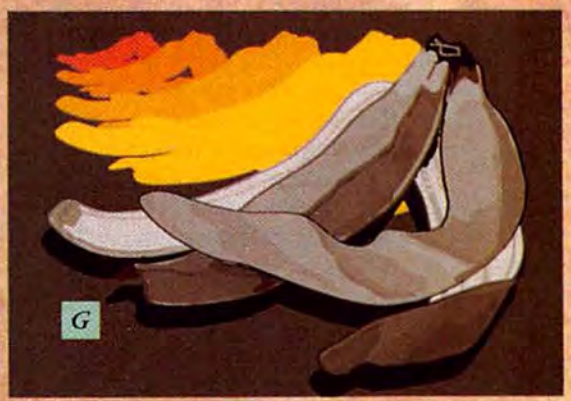
G After he slipped away, we added rich Postscript® gray scales to Koko's leftovers.



These unretouched drawings were created in Canvas 2.0 and output to a Mirrus film printer.

THE NEW CANVAS 2.0™





How an architect, an MBA, and an art director developed instant talent in precision drawing. While Koko developed a mild stomach ache.

Meet Canvas 2.0. The new top banana. Able to help even ordinary people draw extraordinary things.

Easy enough for anyone to master. Except gorillas.

Use our Bezier curves and smooth polygons to build any shape. Add or delete control points and join, split, open or close them at will.

Use Auto-Tracing to save countless hours by converting existing bit-mapped images – pictures like clip art or scanned graphics – into easily manipulated Canvas 2.0 objects.

Work across unlimited layers. View, print or save them in any combination. Draw in millions of colors, or with Postscript© gray scales and patterns.

Experience heart-stopping accuracy (64,000 DPI) and fineness of line (1/1000″). Zoom around from 3% to 3200% of original size. Draw continuously up to 9 feet square. Import and export freely, using PICT, PICT2, TIFF, MacPaint™ or MacDraw™* formats. Output to any Mac compatible printer, typesetter, or film printer you want.

Like we said: go bananas.

But do it soon. While we're still throwing in Canvas 2.0 DA for free. It's a special desk accessory version that puts some 80% of these features right under your Apple menu.

And if all this hasn't convinced you that Canvas 2.0 is the drawing program you've been waiting for, send us $9.95 to receive a fully featured Demo Copy. With which you can finish convincing yourself.

After all, power like this can be *very* apeeling.

Canvas 2.0 (including Canvas 2.0 DA) $299.95

Site licenses available

Canvas 2.0 Demo Disk $9.95

For more information or a demonstration of this or any of Deneba's other products, see your local dealer or call us at 1-800-6-CANVAS. In Florida, call (305) 594-6965.

Deneba SOFTWARE

3305 Northwest 74th Ave. Miami, FL 33122

© 1988 Deneba Systems, Inc.
All product names mentioned are trademarks of their respective holders.

*Read only.

Circle 282 on reader service card

If your work involves RESEARCH, you should discover

ArchiText is a versatile and practical application that lets you retrieve, organize and analyze small or large amounts of text quickly and efficiently. It is the perfect research tool for the graduate student, medical or legal professional, writer or anyone involved in research on a day-to-day basis.

ArchiText:

- Allows you to enter text into "nodes" (sub-documents) by typing directly into the node, pasting from the Clipboard, or by importing ASCII formatted text documents. (accepts graphics as wel)
- Splits, combines and links (associates) these nodes together on graphic maps to connect related items within the text.
- Allows for an unlimited number of maps, each representing unique relationships between the nodes. In this way, you can keep adding to and refining your information.
- Searches for words or word combinations using the Boolean operators AND and OR. You specify the search text, the portion of the document to be searched and whether the search text should be confined to a sentence, paragraph or node text block. Search results may be used as a basis to link existing nodes or to create new nodes.
- Lets you append all the maps and nodes from another ArchiText document into your current document, thus allowing you to extend your research to related topics or build effective concordances.

Call or write us for a free ArchiText-based brochure on disk!

ArchiText... $349.95. Demo Disk... $10.00. Requires at least a Macintosh Plus using System 4.2 or later and Finder 6.0 or later.

BRAINPOWER, INC.
30497 Canwood St. • Agoura Hills, CA 91301
800-345-0519 • 818-707-1712 (in CA)
FAX 818-707-0114

Circle 382 on reader service card

fixed the spelling checker. Once again my faith in software companies (no matter who controls them) has not been unfounded. Thanks, Claris, for your attention to those of us who have not yet made the transition to a meg or more of memory.

Larry B. Macy
Fayetteville, Arkansas

World-Class Thanks

I was thrilled to win second place in *Macworld's* World-Class contest, and I was astonished when five gigantic boxes packed with thirty-some of the best Macintosh products arrived. I was under the impression that I would receive some used demo copies that had been evaluated by your staff, but they were new packages. You even tossed in some extra (quite expensive) products for which I have been saving my pennies. The stack of registration cards that I mailed was almost two inches thick! The *Macworld* staff is first-class in all respects.

Craig A. Mattocks
Hampton, Virginia

Indexing Pluses

In "Publishing with Word" (July 1988), Microsoft Word's index generator is criticized because it requires the writer to code the entries rather than having the program automatically produce the index by listing every instance of an entry. As a technical writer, I'm sure Word's design was based upon interviews with indexing experts. An index that lists every occurrence of a word is of little value to the user of a large manual or book. Entry categories such as "See" and "See also" can only be produced by having the writer specify the occurrence and phrasing for each index entry. As the authors did note, once this initial work is done, rerunning the index after changes have been made to the content or layout is a snap.

Joyce Hannah Swaney
Pittsburgh, Pennsylvania

Interleave Ratios

Lon Poole's "Five Mid-Range Hard Disks" (July 1988) states that when you move a Rodime hard disk to a different model Macintosh, you must reformat the disk to change the interleave ratio. This implies that only Rodime requires reformatting.

The article also states that CMS, Jasmine, and SuperMac use special software that permits a 1:1 interleave ratio with Mac-

(continues)

FOR A MERE $99.95, BIGTHES™ WILL MAKE EVERY ONE OF YOU UNDERACHIEVERS OUT THERE EXACTLY 6⅔ TIMES SMARTER THAN BILL BUCKLEY.

You've probably seen our competitor's ads. The ones touting Wm. F. Buckley, Jr.'s fondness for their electronic thesaurus.

"It's a bloody miracle...," Mr. Buckley enthuses.

Heck. Even Microsoft® believed him enough to include a copy with their popular word processor.

Well.

All we can say is "Sorry, Bill." And "Sorry, Microsoft," too. Apparently even smart guys like you get fooled sometimes.

Because at 100,000 root words – and an utterly humongous 1.4 *million* combined synonyms, antonyms, related, compared and contrasted offerings – our BigThes weighs in at some 6⅔ times the vocabulary power of that little program you're using.

And ours is the only one based on the renowned Merriam-Webster Thesaurus,® the world's most popular.

And the only one organized the same way a user thinks – by contextual meaning, instead of by part of speech.

And the only one that provides separate short definitions for every meaning group.

BigThes is very fast: under a second, on average. It's also very easy to use: simply double-click on any word in your open document for an instant lookup.

It provides unlimited cross referencing, remembers the last 20 words you've worked with, and supports multiple open lookup windows.

Installed as a desk accessory, BigThes is compatible with MultiFinder® and HyperCard® and works smoothly and simultaneously with 95% of all Macintosh® software. Including every major word processing or desktop publishing program on the market.

So.

If *how* you say what you say is important to you, here's your one chance at catching up with Buckley before he catches on.

BigThes. It's positively the last word in words.

BigThesaurus™ **$99.95**
(Hard disk required)

For more information or a demonstration of this or any of Deneba's other products, see your local dealer or call us at 1-800-622-6827. In Florida, call (305) 594-6965.

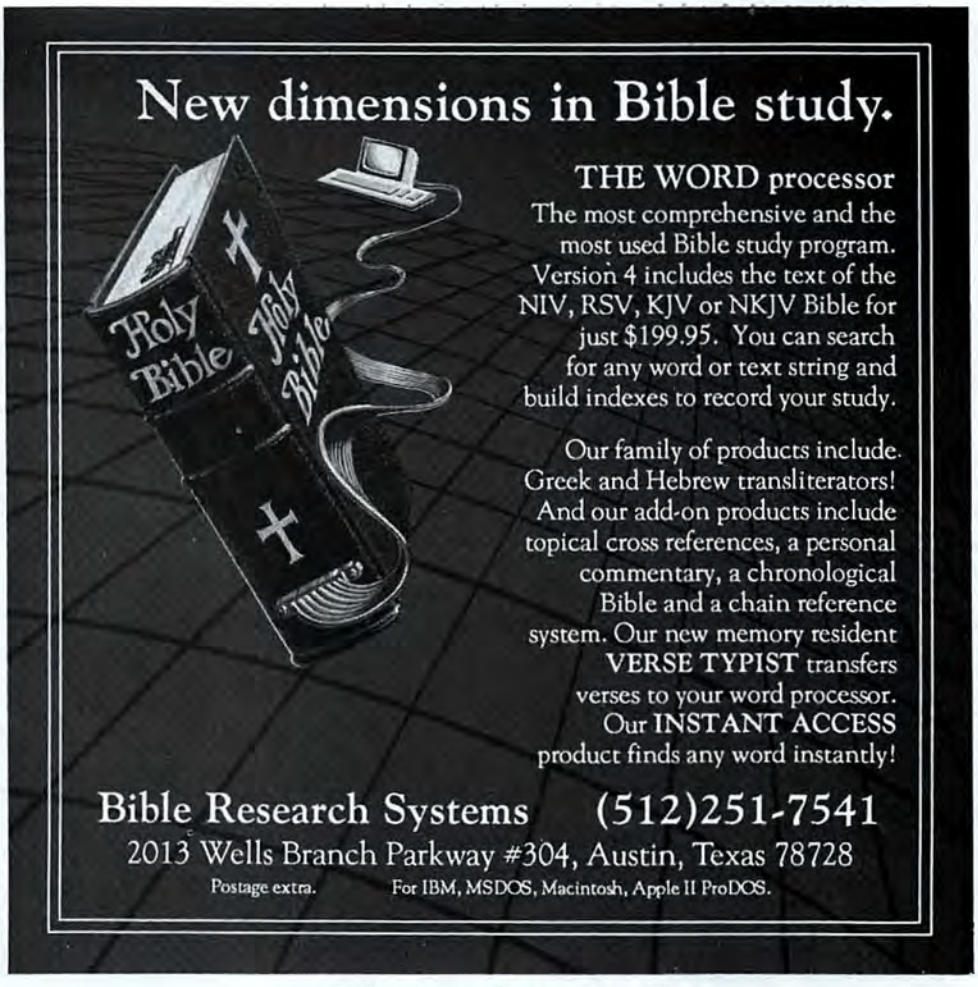
Deneba SOFTWARE

3305 Northwest 74th Avenue, Miami, Florida 33122

© 1988 Deneba System, Inc.
All product names mentioned are trademarks of their respective holders.

Circle 180 on reader service card

Circle 386 on reader service card



Circle 25 on reader service card

intosh, which implies that Rodime does not support 1:1. Actually, when one formats the drive with the Rodime formatter, the software looks at the host type and formats for the optimum interleave (1:1 for the Mac II, 2:1 for the Mac SE, and 3:1 for the Mac Plus).

The article states that to remap new defects on a Rodime drive, you must back up what files you can, reformat the disk to block out the defects, and then restore the files from the back-up. The article says that with Jasmine, NuData, and SuperMac the defects remap automatically. The truth is that Rodime, like the others, does map out spares on the fly.

Debra L. Diamond
Rodime, Inc.
Boca Raton, Florida

The article clearly states that all the drives tested use a 1:1 interleave ratio with a Mac II. It also states that both the Rodime and NuData drives must be reformatted (and erased) to change the interleave ratio for best performance when one of these drives is moved from one Macintosh model to another. The article also explains that, in contrast, the CMS, Jasmine, and SuperMac drives require no such reformatting because they use a 1:1 interleave ratio with any Macintosh model. The information about handling disk defects came directly from Rodime Technical Support.—Ed.

Circumflex Searches

In *Business Clinic* (July 1988), Danny Goodman said that Microsoft Word cannot search for and replace the ASCII characters that end up as ambiguous rectangles on the screen because it cannot cut and paste them. In fact, searching for them is simple: in the Find What box of the Change command, type a circumflex (Shift-6) plus the appropriate ASCII number. (To determine the ASCII code of a mystery rectangle character, select the character and type Option-⌘-Q.) For example, to get rid of the line-feed characters placed in WordStar documents that have been transferred as Text-only to the Macintosh, simply type ^010 in the Find What box and nothing in the Change To box.

Gary Sprung
Crested Butte, Colorado

INIT Picking

In "The (D)A Team" (September 1988), it is stated that DiskTop cannot launch a document from within another application

(continues)

Smart investors always buy utilities.

You've invested in a Macintosh* to bring out the best in what you do. Now enhance that investment with SuperMac's family of easy-to-use utilities. Programs that protect your work. And help you do more in less time.

Improve your portfolio with our Sentinel™ data encryption software, SuperSpool™ or SuperLaserSpool™ printing control software, and DiskFit™ backup and restore program. The analysts say they're blue chip. And so will you.

Don't let your printer regulate your business.

Why stop working just because you're printing? Let SuperLaserSpool and SuperSpool take control. So you can use your computer again seconds after you select "Print." Even if your documents are long and complex.

See if documents have printed, preview them, or zoom in to see part of a page up close. Or send several documents to the spooler and change the printing order later. Both products work faster under MultiFinder* than any other spoolers.

SuperSpool works with any ImageWriter.* And SuperLaserSpool is the only spooler that works with *all* Apple* printers. Plus, it's the only one compatible with PageMaker* 3.0.

MacWeek said, "The speed at which SuperLaserSpool returns control of the Mac to the user is impressive, in some cases even astonishing."

Keep insider information where it belongs.

Lock up your confidential information with Sentinel, a program that lets you convert any document on your disk into a secure code. No one can open it without the password you define. Or a Cray* and about 50 years.

Documents and folders can be grouped together in convenient sets. Then choose one of three advanced encoding techniques, including DES, the U.S. government's official data encryption standard. Sentinel encrypts, locks and unlocks faster than any other program.

The critics at *MacWorld* said, "...Sentinel provides a simple, effective security tool that does exactly what it claims to do and does it well."

How to recover from a crash.

DiskFit copies files on your hard disk for safekeeping. If your disk crashes, DiskFit can completely restore them. Back up just once, and DiskFit makes a complete record of files called a SmartSet.™ Then, DiskFit copies only new or modified files to the SmartSet, and deletes old files. You won't waste time copying files that haven't changed, or disk space storing old versions.

Create backups on floppies, tape, Bernoulli* cartridges or even other hard disks. Of whole volumes, documents, system or application files. And Network DiskFit™ backs up AppleShare* or TOPS* networks.

As *MacUser* said, "DiskFit is so easy to use and so well designed that it may be the program that gets you to do regular backups on your hard disk—making it more than worth the price."

Add SuperMac's utilities to your Macintosh portfolio.

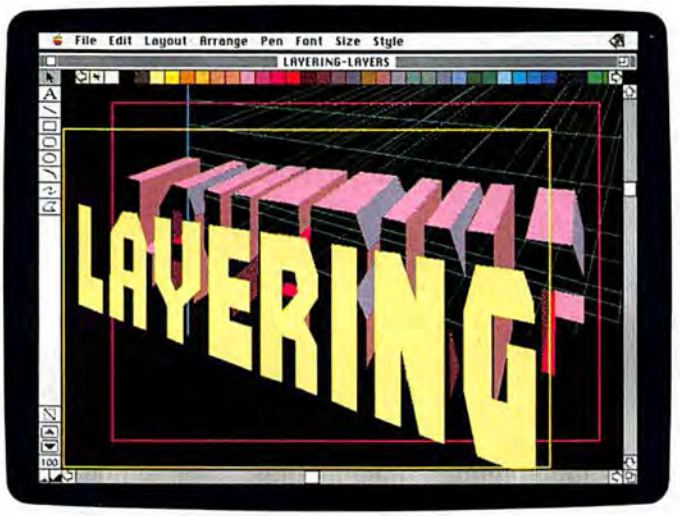
Put SuperMac's utilities on your buy list. To protect the investment you've made in your Macintosh system, and to do more work in less time.

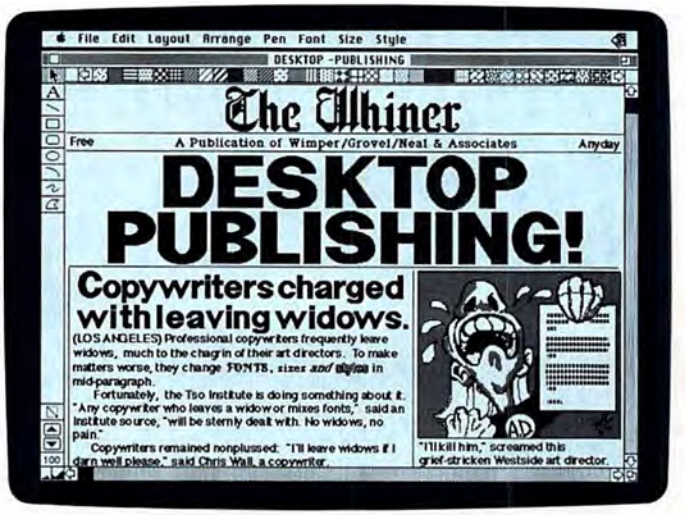
You'll find our family of utility programs at authorized SuperMac dealers and leading software specialty stores.

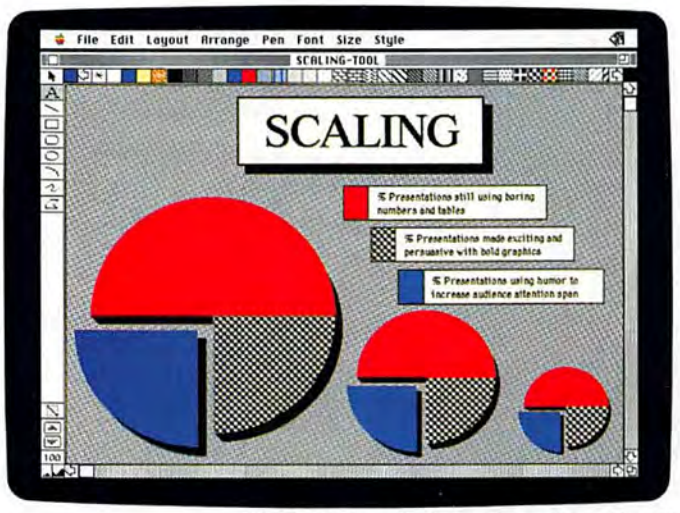
SUPERMAC SOFTWARE

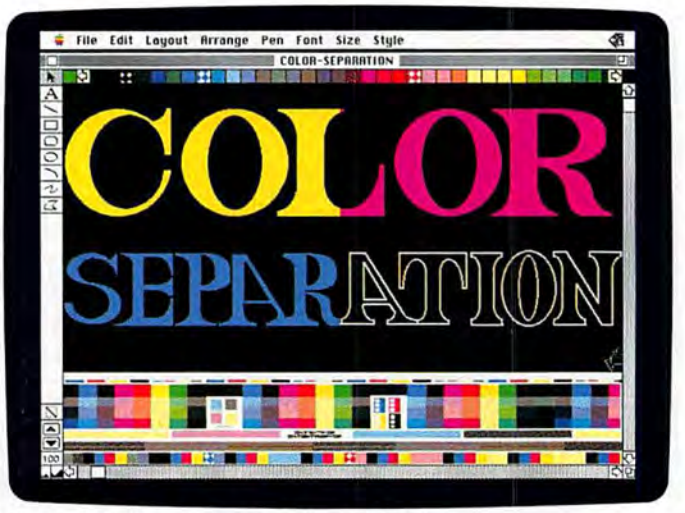
485 Potrero Avenue
Sunnyvale, CA 94086

SuperMac is a trademark of SuperMac Technology. DiskFit, Network DiskFit, SmartSet, SuperSpool, SuperLaserSpool and Sentinel are trademarks of SuperMac Software. *Apple, Macintosh, ImageWriter and AppleShare are registered trademarks and MultiFinder is a trademark of Apple Computer, Inc. Cray is a registered trademark of Cray Research, Inc. Bernoulli is a trademark of Iomega Corporation. PageMaker is a registered trademark of Aldus Corporation. TOPS is a registered trademark of Sun Microsystems, Inc. "Street" copyright © 1988 Bert Monroy. SuperMac products are available to resellers through major software distributors. SuperMac's family of utilities is compatible with Macintosh 512Ke, Macintosh Plus, Macintosh SE and Macintosh II personal computers. Copyright © 1989 SuperMac Software.

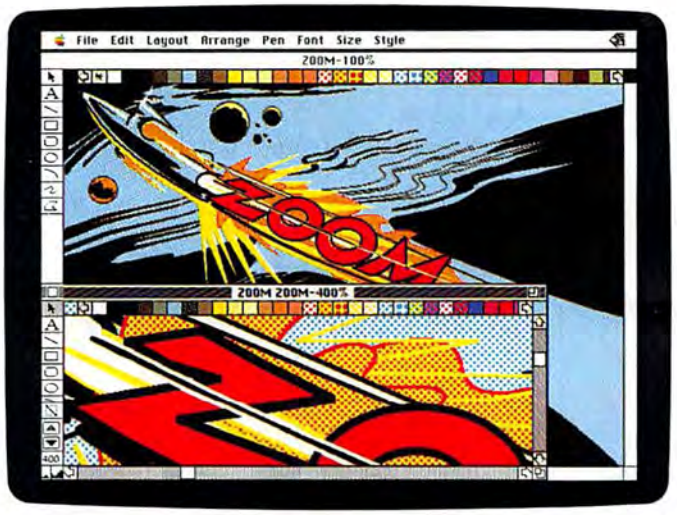


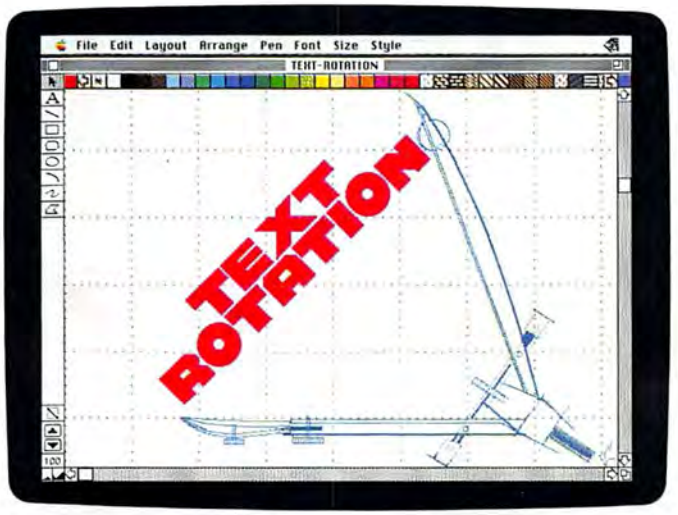


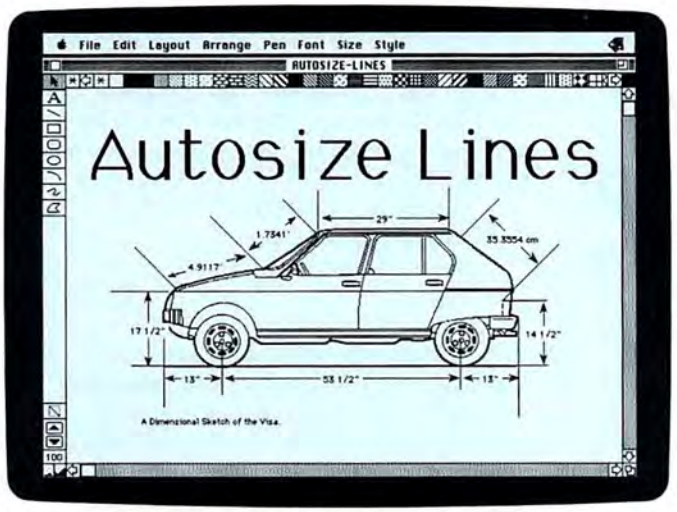




Nobody reads legal type, either. But try convincing our lawyers of that. © *1988 Claris Corporation, 440 Clyde Avenue, Mountain View, California;* ***(415) 962-8946.***



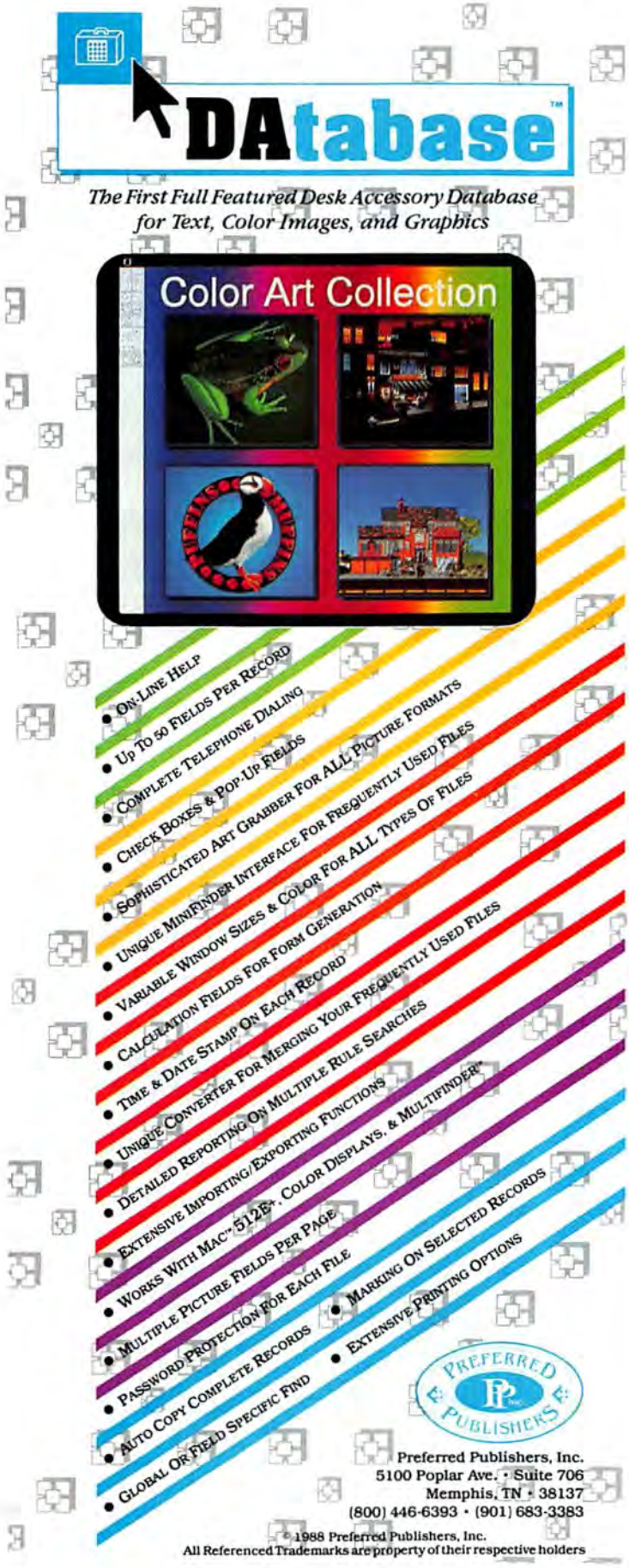




Claris is a trademark and MacDraw is a registered trademark of Claris Corporation. For more information or the location of the nearest Claris dealer, call 800-3CLARIS, ext. 260. In Canada, call 800-668-8948.

Nobody reads copy anyway. MacDraw II.

CLARIS



Circle 317 on reader service card

Letters

using DiskTop. I do it every day. The program also has a menu that enables me to select one of twenty applications from within another.

And I sure thought Suitcase was an INIT, not a DA. (Suitcase certainly is nice —I'm down to 90 DAs.)

James L. DeVries
Huber Heights, Ohio

Suitcase is, indeed, an INIT, and Disktop versions 3.0 and higher do enable you to launch documents from within another application. Opening MacWrite 5.0 documents from Disktop can occasionally result in a bomb, since the word processing program uses a DRVR resource for the spelling checker that conflicts with Disktop; MacWrite 5.01 solves the problem. —Ed.

Apple, Too

In reference to "Getting Started with Data Exchange" and your response in *Letters* (September 1988), I would like to bring to the attention of your readers the fact that owners of 5¼-inch disks on the Apple II family have a method for getting any and all types of text files to the Macintosh without the expense of purchasing a 3½-inch drive. MacTransfer, at $60, is one of the earliest Mac programs, and it comes with a File Convert utility that puts any database file transferred from the Apple family into a format that can be used by all database programs on the Macintosh.

We are not overlooking the Apple II 3½-inch-drive owner. Before the end of 1988, our own translator for Apple File Exchange will be available. It will convert any AppleWorks file into a format that can be used by any program on the Macintosh, not just MS Works.

George McClelland
Southeastern Software
New Orleans, Louisiana

Letters should be mailed to Letters, Macworld, *501 Second St., San Francisco, CA 94107, or sent electronically to CompuServe (70370,702) or MCI Mail (addressed to* Macworld*). Include a return address. We regret that, due to the high volume of mail received, we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of* Macworld. □

AT THE CORE OF EVERY GOOD APPLE

Capacity

The RX™ Series offers the largest internal storage capacity in a half-height hard drive *(140 megabytes)* you can find for your Macintosh SE™ and Macintosh II™ – along with the largest selection: 200 RX™ *(20 MB)*, 450 RX™ *(45 MB)*, 600 RX™ *(60 MB)*, 1000 RX™ *(100 MB)* and 1400 RX™ *(140 MB)*.

Speed

Coupling capacity with speed, the RX™ Series of hard disk drives provide you with one of the fastest average seek times *(24 milliseconds)* available for your Macintosh™!

Reliability

Rodime, a worldwide manufacturer of disk drives and the largest supplier of third party hard disk drives for the Macintosh™ line of computers offers you the level of reliability, innovation and support only an original manufacturer can provide.

Rodime Inc., 851 Broken Sound Blvd., NW
Boca Raton, Florida 33487
407-994-5585

Rodime, PLC, Nasmyth Road
Southfield Industrial Estates
Glenrothes, KY6 2SD, Fife, Scotland
592-774-704

Rodime Paris, Centre d'Affaire de Jouy-en-Josas
5 Bis Rue du Petit-Robinson
78350 Jouy-en-Josas, France
1-34-659798

THE RX SERIES FROM RODIME SYSTEMS

Moving towards the speed of mind.

Macintosh is a trademark licensed to Apple Computer, Inc.

©copyright 1988

Circle 149 on reader service card

Programs & Peripherals

Printers & Digitizers

AST Research TurboLaser P/S	Call	**Seikosha** SP1000 *(Imagewriter Comp.)*	235.
TurboScan Flatbed model	1329.	**Summagraphics** Bit Pad Plus	335.
Caere Omnipage	569.	**ThunderWare**	
Koala Technologies Corp.		ThunderScan V4.0 with Power Port	199.
MacVision 2.0 *(Digitizer)*	225.	Mac II Power Accessory	42.
Kurta IS ADB Tablet	259.	**Video Technology**	
Cordless 4 Button Cursor	99.	Laser I90 A (Imagewriter Compatible)	239.

Modems

Abaton InterFax 12/48	Call	**Practical Peripherals**	
Anchor Automation		Practical Modem Mini 1200SA	85.
MacPac 2400E w/software & cable	179.	Practical Modem 1200SA	109.
Epic		Practical Modem 2400SA	189.
Epic 2400 Int. SE	315.	MacCommpack	
Epic 2400 Int. Mac II	315.	*(2400SA w/Microphone & Cable)*	249.
Epic 2400 Mini Ext.		**Prometheus**	
(Hayes Compatible)	155.	Promodem 2400M Ext.	
Everex Emac 2400 Baud	225.	*(Software & Cable)*	199.
Hayes Microcomputing		Promodem 2400	
Smartmodem 1200	299.	*(Hayes Compatible)*	309.
Smartmodem 2400	449.	**Supra Corporation** Supra Modem 2400	149.
MDIdeas Commlink 2400	189.	**U.S. Robotics**	
Migent		Courier 1200 *(Hayes Compatible)*	199.
Migent Pocket Modem		Courier 2400 *(Hayes Compatible)*	349.
(ext. 300/1200 Baud)	115.	Courier 2400E *(Hayes Compatible)*	379.
Novation Novation Parrot 1200	109.	Courier HST 9600 *(Hayes Compatible)*	689.

Microphone II by Software Ventures

Microphone II is the communications package for the Mac that lets you do what you need to. Whether you're a novice logging on to CompuServe or a professional who demands flexibility and power, you're on the way to headache-free communications. *Microphone II* is fully compatible with all Hayes and non-Hayes modems, offers transfer rates of up to 57,600 baud, and supports XMODEM/ YMODEM, Kermit, MacTerminal, and ASCII transfer protocols. *Microphone II* offers powerful scripting features which let you pre-program often used routines and procedures. It's Multi-Finder and Mac II friendly, and offers background file transfer to save your valuable time.

Microphone II ..... **225.**

Accounting Packages

Aatrix Software Aatrix Payroll V3.0	99.	**Layered** Insight One Write	185.
Aatrix TimeMinder	109.	Insight Expert GL, AR, or AP	479.
Aatrix Payroll Plus	159.	**MECA** Managing Your Money	129.
Bedford Software		**Migent** In House Accountant	119.
Simply Accounting	219.	**Monogram** Business Sense	279.
Chang Labs		Dollars & Sense 4.0	81.
New Enhanced Version III Modules!		**North Edge Software** Timeslips III	119.
Rags to Riches 3-Pak 3.1 *(GL/AR/AP)*	289.	**Peachtree** Back To Basics Professional	
Rags to Riches GL, AR, or AP	120.	*(GL/AR/AP/INV)*	159.
Dac Software Dac-Easy Light	45.	**Survivor Software**	
Intuit Quicken	***Special*** 35.	MacMoney 3.0 *(Enhanced Version)*	62.

Networking Software & Hardware

CE Software Quick Mail	169.	Net Serial X232	309.
Infosphere		NetBridge	309.
MacServe *(Network Software)*	158.	**SuperMac Software** Acknowledge	349.
LaCie Silverserver	93.	Multi-User SuperLaserSpool	199.
Microsoft Microsoft Mail 1-4 users	195.	**Symantec** InBox-MacConnection	75.
Nuvotech		InBox-Starter Kit V2.0	
TurboNet 128/512k or TurboNet Plus	27.	*(3 Personal Connections)*	199.
Olduvai Software Clip Share	109.	**TOPS** Tops 2.0 or Net Print	119.
Font Sharer	149.	Tops Repeater	129.
Shiva NetModem V1200	359.	Tops FlashCard	169.
NetModem V2400	479.	Tops Teleconnector Din8 or DB9	39.

Cutting Edge 800K External Drive by Cutting Edge

The ***Cutting Edge 800K External Disk Drive*** is the solution for Mac owners who are tired of swapping disks when using large programs or files. This external drive does everything that Apple's does, at a much more reasonable price. It's fully compatible with the Mac 512KE, MacPlus, SE, and II. Use of the drive is exactly the same as for the internal drive you already own, so there are no new keyboard commands or other tricks to learn. Increase your computing efficiency economically with the *Cutting Edge 800K External Disk Drive* today!

Cutting Edge 800K External Disk Drive ..... **175.**

Communications Software

Compuserve Compuserve Starter Kit	24.	**Insigna** SoftPC	479.
Grolier On Line Encyclopedia	32.	**Peripherals Computers & Supplies**	
Compuserve Navigator	45.	VersaTerm	69.
DataViz MacLink Plus with Cable	145.	VersaTerm-Pro	199.
Dow Jones Desktop Express	95.	**Software Ventures**	
Freesoft Red Ryder V10.3	55.	Microphone II *(Includes Glue)*	***Special*** 225.
Hayes Smartcom II 3.0	88.	**Traveling Software** LAP-LINK	85.

Utility Software

ALSoft Disk Express	35.	**Olduvai Software** Icon-It! or MultiClip	39.
Font/DA Juggler Plus	42.	Read-It! TS *(For Thunderscan)*	79.
Berkeley System Design Stepping Out II	52.	Read-It! O.C.R. 2.0	
Beyond Inc. Fore Runner	32.	*(For Image Scanners)*	199.
CE Software		**PCPC** HFS Back-Up	28.
QuicKeys *(Macro Program)*	54.	**SuperMac Software** SuperSpool 5.0	54.
Central Point Software		SuperLaserSpool 2.0	82.
Copy II Mac *(Includes MacTools)*	20.	Diskfit 1.4	***Special*** 54.
PC Tools Deluxe Mac	49.	Sentinel 2.0	155.
Emerald City Software LaserTalk	187.	**Symantec** MacSQZ!	49.
Fifth Generation Systems Suitcase 2.0	44.	Symantec Utilities for Mac *(S.U.M.)*	59.
FastBack For The Macintosh	54.	**Williams & Macias**	
Power Station	37.	myDiskLabeler w/Color	31.
Infosphere Liaison	129.	myDiskLabeler w/LaserWriter Option	34.
Microlytics, Inc. GOfer	45.	**Working Software**	
Microseeds Redux	65.	Findswell 2.0 *(Document Finder)*	36.

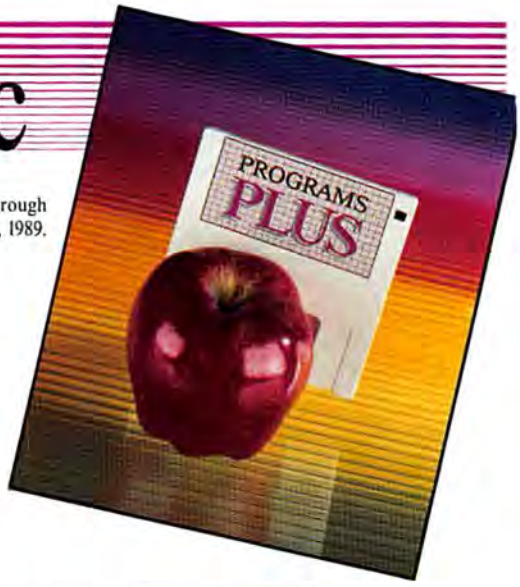
MacBottom SCSI Hard Disk Drives by PCPC

MacBottom SCSI Drives arrive completely formatted with easy-to-use software including a print spooler, a floppy disk duplicator and a backup program. *MacBottoms* come with everything you need to get started including cables, terminators, and an additional SCSI port. You can even get a Hayes compatible 1200 baud modem built right in. *MacBottoms* weigh less than five pounds and measure just two inches tall but no other hard disk stacks up!

Available in either platinum or beige color. Please specify.

MacBottom 21 MB Hard Drive ..... **659.**
MacBottom 32 MB Hard Drive ..... **699.**
MacBottom 45 MB Hard Drive ..... **859.**
MacBottom 70 MB Hard Drive ..... **999.**

to Polish Up Your Mac



Specials good through
January 31, 1989.

Game Software

Access World Class Leader Board Golf	34.	Beyond Zork, Zork Trilogy or QuaterStaff	30.
Accolade Hard Ball	23.	Zork Zero	42.
4th & Inches	24.	**Microsoft** Flight Simulator 1.02	32.
Activision Shanghai or Jinxter	24.	**Micro Sports** MSFL Pro Draft	26.
Corruption	30.	MSFL Pro League Football	
Universal Military Simulator or Manhole	32.	or 500 Great Teams	32.
Might and Magic	37.	**Miles Computing Inc.** Down Hill Racer	24.
Sky Travel	45.	Harrier Strike Mission II	
Artworx Bridge 5.0	22.	or The Fool's Errand	27.
Avalon Hill Mac Pro Football	30.	**Mindscape** Balance of Power 1990,	
Broderbund Ancient Art of War	27.	Crossword Magic or Citadel	30.
ShufflePuck Cafe or Ultima III	24.	Deja Vu: A Nightmare Comes True	30.
Poster Maker Plus	36.	King Of Chicago or Shadowgate	30.
Bullseye Software		Defender of the Crown, Colony	
P51 Mustang or Ferrari Grand Prix	32.	or The Uninvited	30.
Cassady & Greene, Inc. Crystal Quest	27.	**Practical Computer Applications**	
Crystal Quest w/Critter Editor	42.	MacGolf or Lunar Rescue	35.
Centron Crapsmaster,		MacCourses	32.
Roulettemaster or BlackJack Ace	27.	Road Racer	45.
Discovery Software Arknoid	30.	Mac Golf Classics	59.
Electronic Arts Ogre	20.	**Primera** Smash Hit Racquetball II	21.
ChessMaster 2000	28.	**Sierra On-Line** Leisure Suit Larry	23.
Chuck Yeager Flight Simulator		Space Quest or Space Quest II	29.
or Life & Death	32.	Police Quest	29.
Starfleet I	37.	**Silicon Beach Software**	
Scrabble	26.	Dark Castle or Apache Strike	27.
One-On-One, Pinball Construction Set,		Beyond Dark Castle	27.
Seven Cities of Gold, SkyFox, or		**Sir-Tech** Mac Wizardry	35.
Patton vs Rommel	15.	**SoftStream, Inc.** Colour Billiards	39.
EPYX Sub Battle Simulator	30.	Mac Man or Solitaire DA	24.
Hayden Software Sargon IV	29.	**Sphere, Inc.** Tetris	23.
H.J.C. Software, Inc.		GATO, Orbiter or Pt-109	26.
Air Traffic Control Simulator	29.	Solitaire Royale *(Mac or MacII)*	20.
Infinity Software, LTD.		Falcon 2.0	32.
Go or GrandSlam Tennis	27.	**Studio Zero** Orbital Mech	29.
Infocom Leather Goddesses of Phobos		**XOR Software** NFL Challenge	64.
or Hitchhiker's Guide	15.	Pro Challenge or Basketball Challenge	30.

MAC-101 Keyboard by DataDesk

If you are looking to replace your Mac's keyboard, the ***MAC-101*** by DataDesk is the way to go. It comes in an ADB version for the Mac SE and II, and a non-ADB version for the Mac 512 and MacPlus. The positive tactile, firm feel 101 includes a full numeric keypad, 15 function keys, 6 page control keys, and a T-style cursor pad. Keyboard status indicator lights let you know when everything is going smoothly. Includes *101-Keys* desk accessory software, a powerful macro utility which allows you to exploit the full power of the function keys with almost any Macintosh application.

MAC-101 Keyboard *(Specify ADB or non-ADB)*.....**139.**

Blank Media

Single Sided 3½" Diskettes		Sony 3½" DS/DD Disks *(box of 10)*	18.
Bulk *(Sony)* 3½" SS/DD Disks *(10)*	12.	Fuji 3½" DS/DD Disks *(box of 10)*	19.
Sony 3½" SS/DD Disks *(box of 10)*	13.	Maxell 3½" DS/DD Disks *(box of 10)*	20.
Double Sided 3½" Diskettes		Verbatim 3½" DS/DD Disks *(box of 10)*	19.
Bulk *(Sony)* 3½" DS/DD *(10)*	17.	3M 3½" DS/DD Disks *(box of 10)*	20.
Centech 3½" DS/DD Color Disks *(10)*	19.		

Languages

Borland Turbo Pascal	65.	**Microsoft** Microsoft Quick Basic	74.
Turbo Pascal Tutor	46.	**Smethers & Barnes** Prototyper	72.
Consulair Mac 68000 Dev. System	59.	**Symantec** Lightspeed C	95.
Mainstay V.I.P. 2.5		Lightspeed Pascal	65.
(Visual Interactive Programming)	109.	**T.M.L.** TML Pascal II *(Includes MPW)*	79.
Manx Aztec C	75.	TML Source Code Library II	42.
Aztec MPW C or SDB	115.	**Zedcore** ZBasic 5.0	119.

Now Shipping
Standard Air by FEDERAL EXPRESS®

Customer Service (203) 378-3662 • FAX (203) 381-9043
Monday thru Friday 9 A.M. to 9 P.M.
Saturdays 10 A.M. to 6 P.M. *(Eastern Time)*

OUR POLICIES

- We accept MASTERCARD and VISA with no added surcharge.
- Your credit card is not charged until we ship.
- If we must ship a partial order the shipment that completes the order is sent freight free.
- If you are ordering by mail, we accept private and company checks. With MASTERCARD and VISA orders include card number and expiration date. Connecticut residents add 7.5% sales tax.
- Locations more than 1 day away shipped via Federal Express Standard Air service.
- Federal Express Priority 1 service also available.
- Sorry, we cannot accept COD orders.

SHIPPING

- **Continental United States:** Add $3.00 per order to cover Federal Express Standard Air service. APO/FPO orders shipped 1st Class Mail *(add 3% $5.00 Min charge).* **Alaska, Hawaii and Outside Continental US:** call or write for information.

RETURNS

- Defective software will be replaced immediately by the same item. Defective hardware will be replaced or repaired at our own discretion. Call customer service at *(203) 378-3662* to obtain a Return Authorization Number before returning goods for replacement. Products purchased in error subject to a 20% restocking fee.

All items subject to availability. Prices subject to change without notice.
Mail-in orders (especially from foreign countries), please furnish telephone number.

Positively A Plus

PROGRAMS PLUS

800/832-3201

. . . Positively A Plus!

Educational/Creative Software

rs Nova Practica Musica	79.
arron's Barron's SAT	35.
ible Research	
he Word (KJV or NIV)	165.
logas Productions	
tudio Session	49.
tring Quartet, Country or Heavy Metal	15.
uper Studio Session	79.
Bright Star Technology	
Alphabet Blocks	32.
Talking Tiles	75.
Broderbund Clip Sounds	36.
Jam Session or Black & White Movies	30.
Sensei Geometry, Calculus or Physics	60.
Type!	20.
Where in the World is Carmen SanDiego?	25.
Coda Mac Drums	35.
Perceive	65.
Davidson & Associates Speed Reader II	39.
Math Blaster or Word Attack!	27.
Electronic Arts Mavis Beacon Typing	36.
Venture's Business Simulator	47.
Deluxe Music Construction Set V2.0	61.
1st Byte/Electronic Arts	
Kid Talk, Speller Bee, First Shapes, or Math Talk	32.
Great Wave Software	
KidsTime	26.
Number Maze	30.
Crystal Paint	41.
Individual	
Typing Instructor Encore	26.
Learning Company	
Reader Rabbit	33.
Mindscape Perfect Score SAT w/ The Perfect College	46.
Nordic	
MacKids Educational Programs *(each)*	28.
Simon & Schuster	
Typing Tutor IV	35.
Springboard Top Honors	64.
Family Matters or Atlas Explorer	32.

Quicken by Intuit

Quicken is the fast, easy way to cut through personal and small business paper work. In minutes you'll get a handle on your finances without having to bother with all the burdensome terminology and repetitive entry that most accounting packages require. *Quicken* is flexible; it lets you enter an unlimited number of transactions, expense and income categories, and checking accounts. *Quicken* lets you write checks, make and track budgets, manage cash flow, and even reconcile unbalanced accounts. *Quicken* is ideal for people who need to manage any sum of money in a small amount of time!

Quicken ..... **35.**

Graphics Software

3G Graphics Images with Impact!	59.
ABA Software Draw It Again Sam 2.0	79.
Graphist Paint II	289.
Adobe Systems Adobe Illustrator *88*	319.
Adobe Fonts *(Various volumes)*	Call
Aldus Freehand	349.
Altsys Corp. FONTastic Plus 2.0	54.
Fontographer 2.2	239.
Ashton Tate Full Paint	69.
Broderbund Print Shop or Clip Sounds	36.
Drawing Tables	79.
CE Software Calendar Maker 3.0	27.
Claris MacPaint 2.0	105.
MacDraw II 2.0	309.
Cricket Software Cricket Draw	169.
Pictograph	105.
Cricket Graph or Paint	119.
Cricket Presents	289.
Deneba Software Canvas DA 2.0	75.
Canvas 2.0 *(Includes Desk Accessory)*	169.
Dream Maker MacGallery *(Hypercard or Paint)*	29.
Cliptures	97.
Dubl-Click Software	
World Class Fonts: Various Vol. 1-6 *(ea)*	45.
WetPaint: Various Vol. 1-16 *(ea)*	45.
Electronic Arts Studio 8 *(MacII)*	319.
Enzan-Hoshigumi USA	
MacCalligraphy 2.0	109.
Japanese Clip Art	Call
Foundation Publishing Comic People	25.
Comic Strip Factory	45.
Generic Software Generic CADD	54.
Graphsoft Mini Cad 4.0	375.
novative Data Design Dreams	315.
cDraft 1.2B	149.
Laserware Laserpaint Color II	359.
Letraset ImageStudio 1.5	279.
Macromind Videoworks II	175.
Videoworks II Accelerator	118.
Videoworks II Driver for Hypercard	61.
Micro Illusions Photon Paint	179.
Micro CAD/CAM MGMStation	685.
Micro: Maps	
MacAtlas Paint 2.0 *(MacPaint Format)*	45.
MacAtlas Hyper Atlas	64.
MacAtlas Professional *(PICT/ MacDraw Version)*	129.
Microsoft Microsoft PowerPoint 2.0	249.
Olduvai Software	
Post-ART II *(4-Disk Set)*	59.
ArtFonts I, 2 or 3	*Special* 59.
Silicon Beach Software	
SuperPaint 2.0	109.
Digital Darkroom	159.
Super 3D	159.
Solutions International	
The Curator *(Catalog Your Art)*	79.
Springboard Certificate Maker	24.
Works of Art Assortment, Holiday, or Education	32.
Works of Art Laser Art or Fonts	64.
Springboard Publisher	119.
SuperMac Software Pixel Paint	209.
Symmetry	
Picture Base & Wet Paint Bundle	95.
T/Maker Click Art Letters I, Letters II, Personal Graphics, Effects, Business Image, or Holidays *(each)*	28.
Christian Images	35.
Click Art EPS Illustrations	75.
Zedcor DeskPaint 2.0	69.

ArtFonts 1, 2, or 3 by Olduvai

ArtFonts is the affordable, attractive three volume set of 'display' typefaces for PostScript laser printers from Olduvai. Add spice and splash to any document or publication with these unique typefaces, and use the symbols in banners, mastheads, and logos, or as decorative ornaments by themselves. You can use *ArtFonts* in all PostScript graphics programs (such as Illustrator, Cricket Draw or Freehand) to create dazzling special effects. And because all *ArtFonts* automatically download to laser printers, there are no surprises at the last minute. Each of the three volumes consists of six different, lively typefaces and a separate set of symbols.

ArtFonts 1, 2, or 3 ..... **59.**

Disk Drives/Hard Disks/Upgrades

Appied Engineering	
MacRAMS *(1 MB SIMMS Mac+, SE, II)*	489.
AST Research	
Mac286 Co-Processor *(Mac II)*	Call
CMS	
Compact Series SC30 *(Mac+/SE/II)*	649.
Compact Series SC45 *(Mac+/SE/II)*	859.
SD Series MacStack SD20 *(Mac+/SE/II)*	569.
SD Series MacStack SD60 *(Mac+/SE/II)*	849.
Cutting Edge	
Cutting Edge 800k Drive	*Special* 175.
Cutting Edge Wedge XL 30 Plus SCSI Hard Drive	629.
Cutting Edge Wedge XL 45 Plus SCSI Hard Drive	829.
Cutting Edge XL 30 Internal Hard Drive	505.
Cutting Edge XL 45 Internal Hard Drive	645.
Dove Computer Corporation *Marathon 020 Accelerator*	
MSE 1 (16 Mhz)	585.
MSE 2 (16 Mhz w/ 1MB)	1059.
MSE 3 (16 Mhz w/ Math Co-processor)	779.
MSE 4 (16 Mhz w/ 1MB & Math Chip)	1255.
MacSnap 524 *(512K to 1MB)*	315.
MacSnap 524E *(512E to 1MB)*	305.
MacSnap 524S *(512E to 1MB w/SCSI)*	379.
MacSnap 548 *(512K to 2MB)*	459.
MacSnap 548E *(512E to 2MB)*	549.
MacSnap 548S *(512E to 2MB w/SCSI)*	599.
MacSnap Plus 2 *(MacPlus to 2MB Non Expandable)*	439.
MacSnap 2SE or 1024 Option *(1MB or MacII Memory Exp.)*	439.
SCSI Interface/ Port	109.
MacSnap Toolkit *(torx driver, opener & grounding set)*	15.
Everex Emac 20D *(20Mg Hard Disk)*	520.
Emac 20 Deluxe	585.
Personal Computer Peripherals *Beige or Platinum Color. Optional Built-In Modems Available.*	
MacBottom HD-21 *(20+MB SCSI Hard Disk)*	*Special* 659.
MacBottom HD-32 *(32MB SCSI HD)*	*Special* 699.
MacBottom HD-45 *(45MB SCSI HD)*	*Special* 859.
MacBottom HD-70 *(70MB SCSI Hard Disk) Plat only*	*Special* 999.
Rodime Rodime 20 Plus Ext.	629.
Rodime 45 Plus *(Ext. 45MB SCSI)*	939.
Rodime 450RX *(Int. 45MB Mac SE/II)*	829.
Rodime 100 Plus *(Ext. 100MB SCSI)*	1169.
Rodime 140 Plus *(Ext. 140MB SCSI)*	1319.
Rodime 1000 RX *(Int. 100MB MacII)*	1045.
Video Technology	
Laser 800k External Drive	185.

FannyMac QT by Mobius

The new ***FannyMac QT*** by Mobius provides safe, effective cooling for your Macintosh with its low-profile, ultra-quiet fan. It reduces internal temperatures and helps delicate electronic parts last longer, especially the heat-generating Macintosh powerboard. The *FannyMac QT* also has a built-in surge protector which shields your Macintosh from harmful power spikes. Its elegant design fits perfectly inside the Macintosh's handle without compromising the Mac's clean lines and portability. With its low profile design, you'll still be able to put your Mac in its carrying case. Available in Platinum or Beige colors to match your Mac!

Fanny Mac QT ..... **65.**

Shipped Federal Express

Desk Accessory Programs

Affinity Microsystems	
Tempo II	89.
AffiniFile	46.
Beyond Inc. Menu Fonts 2	32.
Borland SideKick V2.0	65.
Cassady & Greene, Inc.	
HyperDialer	26.
QuickDex 1.4A	32.
CE Software DiskTop 3.0	27.
Deneba Software	
Comment 2.0	54.
Electronic Arts Disk Tools Plus	31.
Exodus Software Retriever	55.
Imagine Software	
Multi-User Appointment Diary with Smart Alarms	85.
Smart Alarms & Appointment Diary	35.
Mainstay	
Think'n Time	61.
Olduvai Software	
DA Switcher	25.
Solutions, International	
Super Glue	52.
SmartScrap & The Clipper 2.0	39.
Symmetry	
HyperDA *(Req. 512K)*	38.

DiskFit by SuperMac Software

DiskFit is the newest solution for hard disk owners in search of flexible, reliable, headache-free backups. *DiskFit* manages the entire backup process —just a few keystrokes and your backup is underway. *DiskFit* uses standard file formats, so your files are immediately accessible — one at a time, or all at once. *DiskFit* is fast enough to back up 50K of file changes in just three minutes. *DiskFit* supports floppies, other hard disks, Bernoulli cartridges, or 3M DC2000 tape cartridges. You can rest assured your data is safe when you have *DiskFit's* reliable, fast, compatible backups on your side!

DiskFit ..... **54.**

Accessories

Abaton ProPoint *(ADB Mouse for Mac SE & Mac II)*	99.
Asher Engineering	
Turbo Trackball *(Mac & Mac+ or Mac SE & Mac II)*	69.
CH Products Mirage: Quad or ADB *(Turns Joystick Into Mouse)*	39.
Mach IV Plus: Quad or ADB	65.
Curtis Manufacturing	
Emerald-Surge Suppressor-SP-2	36.
Ruby-Surge Suppressor-SPF-2	55.
Cutting Edge Cutting Edge EADB-105 Keyboard *(Mac SE & Mac II)*	125.
DataDesk	
MAC-101 Keyboard/Beige *(128k/512K & MacPlus)* *Special*	139.
MAC-101 ADB Keyboard/Platinum *(Mac SE & Mac II)* *Special*	139.
Ergotron Mousecleaner 360°	15.
MacTilt or MacTilt SE *(Platinum Color)*	68.
Farallon MacRecorder Sound System *(Mac SE or Mac II)*	139.
Impulse Audio Digitizer w/soundware	149.
I/O Design *Mac Luggage in Navy*	
Macinware Plus Carrying Case	64.
Macinware SE Carrying Case	76.
Imageware II Carrying Case	49.
HDware	54.
Kalmar Designs	
Teakwood Roll-Top Disk Cases:	
Micro Cabinet *(holds 45 disks)*	14.
Double Micro Cabinet *(holds 90 disks)*	23.
Triple Micro Cabinet *(holds 135 disks)*	32.
Kensington External Disk Drive Cover	8.
Extra Long ADB Keyboard Cable	25.
Macintosh II Stand	20.
Macintosh II Monitor Extension Cable	33.
Mouse Pocket *(Reg. or ADB)*	8.
Mouseway *(Mousepad)*	8.
ImageWriter or ImageWriter II Cover	9.
Macintosh Plus/SE Dust Cover	9.
Macintosh SE w/extended Kybd Cover	9.
Mouse Cleaning Kit w/Pocket	17.
Disk Drive Cleaning Kit	20.
Tilt/Swivel	22.
Apple Security Kit	34.
Antiglare Polarizing Filter	33.
Modem/Fax Protector 10	15.
Modem/Fax Protector 20	29.
Power Tree Surge Suppressors (10, 20, or 50)	Call
Printer Muffler Stand *(80 & 132)*	24.
Printer Muffler 80	43.
System Saver Mac *(Beige or Platinum)*	64.
Super Base	34.
System Saver SE	59.
Masterpiece Mac II	105.
New Turbo Mouse *(Reg. or ADB)*	119.
Mobius	
Fanny Mac QT *(Beige or Plat.)* *Special*	65.
Mouse Systems A+ Mouse *(MacPlus)*	65.
A+ ADB Mouse *(Mac SE/Mac II)*	85.
Moustrak MousePad 7"x9" Size	8.
MousePad 9"x11" Size	9.
Orange Micro Grappler C/Mac/GS	79.
Grappler L/Q	92.
Ribbons	
Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold	
ImageWriter Ribbon	4.
ImageWriter Black 6-pack	20.
ImageWriter Rainbow Pack *(6 Colors)*	20.
ImageWriter II-Four Color Ribbon	9.
ImageWriter LQ Black	17.
ImageWriter LQ Four Color	20.
Seikosha Ribbon Black	6.
Silicon Comforts MacChimney *(Very Effective Cardboard Laminate Convection Cooling Device)*	16.
Smith & Bellows	
Mahogany Disk Case *(holds 96)*	30.
Sopris Softworks	
High Trek Carry Cases - Platinum Gray, Navy	
Imagewriter II Case	49.
Macintosh Plus, SE w/Standard Kybd	59.
Macintosh SE & Extended Kybd Case	69.
Targus (Canada)	
Imagewriter II Carry Case Blk.	45.
Macintosh Plus Carry Case Blk.	59.
Deluxe MacPlus-XKB Blk.	69.

DataBase Management

Acius 4th Dimension	489.
4D Runtime	239.
Activision Focal Point II	95.
Reports for Hypercard	59.
Focal Point & Business Class Bundle	49.
City To City	30.
Apple Computer HyperCard	42.
Ashton Tate dBASE Mac 1.0	295.
Blythe Software	
Omnis 3 Plus/*Express*	275.
Borland Reflex Plus	165.
Claris FileMaker II	239.
Fox Software Fox Base Plus	2(
Ideaform Hyper Book Maker	3
Microsoft Microsoft File	11
Nordic HyperCONTROL	4
Odesta Double Helix II	33
GeoQuery or DataDesk Professional	29
Park Row Incorporated	
Publish or Perish	2
ProVUE Development OverVUE 2.1E	14
Software Discoveries	
RecordHolderPlus	4:
Telegraphics Hypertutor	2

Business Software

Abacus Concepts StatView II *(Mac+, SE, II w/68020 & 68881)*	369.
StatView SE+ Graphics	229.
Access Technology Trapeze 2.1	159.
Ashton Tate Full Impact	249.
Borland Eureka! The Solver	129.
BrainPower ArchiText	182.
StatView 512 Plus	175.
Math View Professional	145.
DataScan	119.
Bravo Technologies MacCalc	79.
Chang Laboratories	
C.A.T. Contacts•Activities•Time	229.
Claris MacProject II	395.
Cognition Technology	
MacSMARTS	135.
D2 Software MacSpin 2.0	189.
Individual 101 Macros For Excel	44.
Informix Software, Inc. Wingz	349.
Legisoft/Nolo Press WillMaker 3.0	35.
Lundeen & Associates	
WorksPlus Commands	60.
Mainstay	
Capture	42
Mac Flow 2.0 or Mac Schedule	115
Meta Software Design/2.0	199
Micro Planning Software	
Micro Planner 6.0	349
Microsoft Microsoft Excel 1.5	249
Microsoft Works 1.1 with Spellswell	189
Satori Software	
Bulk Mailer 3.2	79.
Bulk Mailer Plus	195.
Components GL	389.
Legal Billing	369.
Project Billing	409.
Select Micro Systems, Inc.	
Exstatix or MapMaker	219.
Shana Enterprises	
Fast Forms	89.
Synex Mac Envelope 4.0	59.
Mac Invoice	32.
Systat Systat 3.2 *(Specify MacPlus, SE or Mac II)*	459.

Word Processors & Desktop Publishing

Access Technology Mind Write 2.0	95.
Mind Write Express	149.
Allan Bonadio Associates	
Expressionist 2.0	79.
Aldus Corporation	
PageMaker 3.0	399.
Ashton Tate	
FullWrite Professional	269.
Claris MacWrite 5.0	105.
Letraset	
Ready, Set, Go! 4.5	279.
Letra Studio	369.
LetraFonts *(Various Vol. 1-45 ea.)*	69.
Microsoft Microsoft Word 4.0	249.
Postcraft International, Inc.	
Laser FX Font Packs 1-6 ea.	29.
Laser FX	115.
Quark, Inc. QuarkXPress V2.0	499.
Silicon Beach Software	
Silicon Press	41.
Symantec More II	Call
Symmetry Acta V2.0	42.
T/Maker Company	
WriteNow V2.0	109.
Word Perfect Corporation	
Word Perfect	185.

Spelling & Grammar Checkers

Aegis Development	
Doug Clapp's Word Tools	42.
A.L.P. Systems	
MacProof 3.0	115.
Deneba Software	
Coach Merriam Webster's Thesaurus 2.0	36.
Spelling Coach 3.0 *(Webster's/Medical/Legal/Hyphenation)*	54.
Spelling Coach 3.0 Professional	109.
Electronic Arts Thunder! 1.23	30.
Lundeen & Associates	
WorksPlus Spell 1.1	46.
Microlytics, Inc.	
Word Finder *(Synonym Finder)*	35.
Sensible Software Sensible Grammar	55.
Working Software	
Spellswell 2.0	45.
Lookup *(Makes Spelling Suggestions)*	29.

PROGRAMS PLUS

800/832-3201

75 Research Drive, Stratford, CT 06497

See us at MacWorld Expo, Booth #528

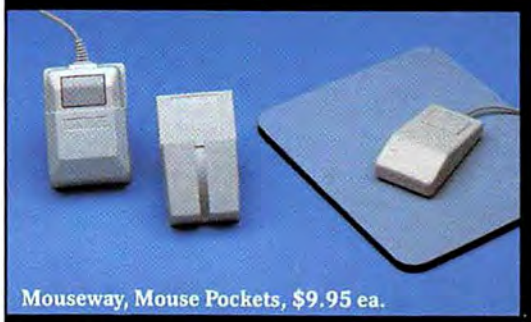
"This baby is loaded with extras..."

Kristi Coale, MacUser magazine

Master Piece® Mac II, $159.95

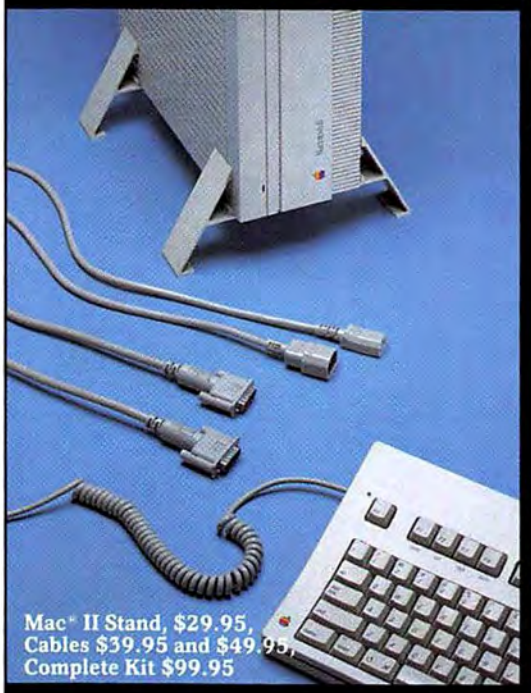
System Saver™ SE, $79.95

Apple® Security System, $49.95



Mouseway, Mouse Pockets, $9.95 ea.

Maccessories SuperBase™, $49.95



Mac® II Stand, $29.95,
Cables $39.95 and $49.95,
Complete Kit $99.95

Maccessories® Anti-Glare Filter, $49.95

Universal Printer Stand, $24.95

Power Backer™ UPS's, $399 to $1,399

When Kristi Coale of MacUser magazine looked at our Master Piece® Mac II, she had expected it to have extra outlets, individual and master switches, surge suppression, and noise filtering. But she was impressed to find modem surge suppression and a swivel base, too. All for $159.95.

And we were delighted with her comment, since that's exactly what we aim for when we design accessories for the Mac—to build in the most benefits at the best price possible.

That's how we came to feature a fan in our System Saver Mac. How we slipped an extra shelf under our SuperBase. And popped a paper catcher in behind our Printer Stand.

In fact, we've figured out so many ways to enhance and protect your Macintosh, we can't fit them all on one page.

So, give us a call, and we'll send you a free 20 page brochure. And we guarantee—this baby's loaded!

Call (800) 535-4242

KENSINGTON®

251 Park Avenue South NY, NY 10010
(212) 475-5200, Fax (212) 475-5996

Circle 30 on reader service card

and the Kensington logo/ Kensington Microware Ltd. Apple, Mac, Macintosh/Apple Computer, Inc. © 1988 Kensington Microware Ltd.

David Bunnell

Mission Very Possible

In which I do what I'm told, and spread the word about a one-pound newsletter

If you've been reading *Macworld* for a while, you've probably noticed its growing heft. I'm very happy about that, because advertising dollars allow magazines to carry more editorial pages, so we can cover more ground in terms of news, features, and reviews. But it would take more pages than all of the Macintosh magazines combined to do what a huge and popular user group has been able to do with five people working around the clock. I'm talking about BMUG's (the Berkeley Macintosh User Group's) semiannual "newsletter." I use quotation marks because the latest issue is a perfect-bound volume containing 353 pages of useful, readable, funny information.

We've extolled the virtues of user groups for some time, so I don't need to go on about how helpful and objective they can be for beginners and heavy-duty hackers alike. But I was so taken with BMUG's latest publishing effort, and the fun I had reading it, that I have decided to follow its nondisclosure agreement, which reads in part: "By flipping this page, you have implicitly agreed to...tell as many people as possible about the *BMUG Newsletter,* or we'll take back your copy. Got it?" Okay, since I want to keep my copy, I'll comply.

The latest issue, Volume IV, Number 2, has an impressive array of articles on telecommunications, including a list of hundreds of Mac bulletin boards—perfect for those who want more help than they get from program documentation. (And who doesn't?) It's all I can do not to check out BBSs called Maltese Alien, Overflow Valve, and Tao of the Telecomms immediately.

Another 50-page section, "Hacking," has excellent articles on how to build customized 4th Dimension applications, how to create tear-off menus you can move around on the screen, and even "How to Raise the Dead, Part II," which is one of the most instructive articles I've ever seen about resurrecting crashed files and disks.

For people who don't want to hack, but do want greater productivity from their Macs, there are articles on page design and typeface basics; reviews of spreadsheet, project management, and graphics programs; and a "Tire Kicker's Guide to Word Processors." There's a terrific 15-page glossary of Macintosh terms which must be one of the clearest reference tools ever on Mac concepts and elements. (With true user-group chutzpah, the definition of *software piracy* reads: "We have no idea what this word means.") You can learn how to make your own icons in HyperCard, and how to use superfonts to get higher-quality printing out of an ImageWriter.

"Choice Products" is an opinionated, readable article highlighting mainstream programs and hardware as well as cheap, unknown products. It includes BMUG's ideas about the best floppy disks, databases, mail-order vendors, Mac repair shops, the "best Macintosh newsletter (other than this one)," and a category called "Most sexist use of a Mac"—BMUG asks why David (Bruce Willis) has a Mac II on the TV show "Moonlighting," but Maddie (Cybill Shepherd) only has an SE. "We figure she's the power user!" writes the editor.

The assumption throughout the newsletter, of course, is that the Mac is absolutely the only personal computer worth exploring, working on, and playing with. If for some mysterious reason your fervor needs rekindling, check out "IBM PC vs. Macintosh: The Movie," by David Morgenstern. He writes that "anyone who used the early Macs . . . remembers the smug, derisive comments from the users of the Blue machines. . . .this persecution only hardened our religious fervor. . . . Now a couple of years later, the Blue bloods are the ones defending their products." He worries that "if the PC is going to come up to the Mac, won't the Mac have to come down? No one likes a smug winner." A point well taken, and I'll practice being a little more humble about my machine of choice. (But only a little.)

From this description, you can see that you needn't live in Berkeley to take advantage of the BMUG newsletter. And in addition to the printed material, all BMUG members get unlimited help from real (and very knowledgeable) people on the phone about hardware, software, system design, and anything else you might possibly need, as well as access to BMUG's bulletin board. You can also order from over 20 pages of program disks and HyperCard stacks, ranging from business applications to pictures to fonts to sound effects and music. And the group has just announced that its entire software library *and* all back issues of the newsletter (published since 1984) are now available on CD ROM.

Membership in BMUG is defined by the *term,* a six-month period during which you get one issue of the fat newsletter plus all telephone and BBS access. One term costs $25 per person, two terms cost $40; a company can join for $100 per year. Even if you only got one issue of the newsletter, a membership would pay for itself in no time.

We pause now for the commercial break: You can contact BMUG at 1442A Walnut Street, #62, Berkeley, California 94709; 415/549-2684. And I want you to know that I've gotten no prompting to encourage your membership—and I'm not getting any kickbacks, either. I'm just following BMUG's credo: "We're in the business of giving away information." □

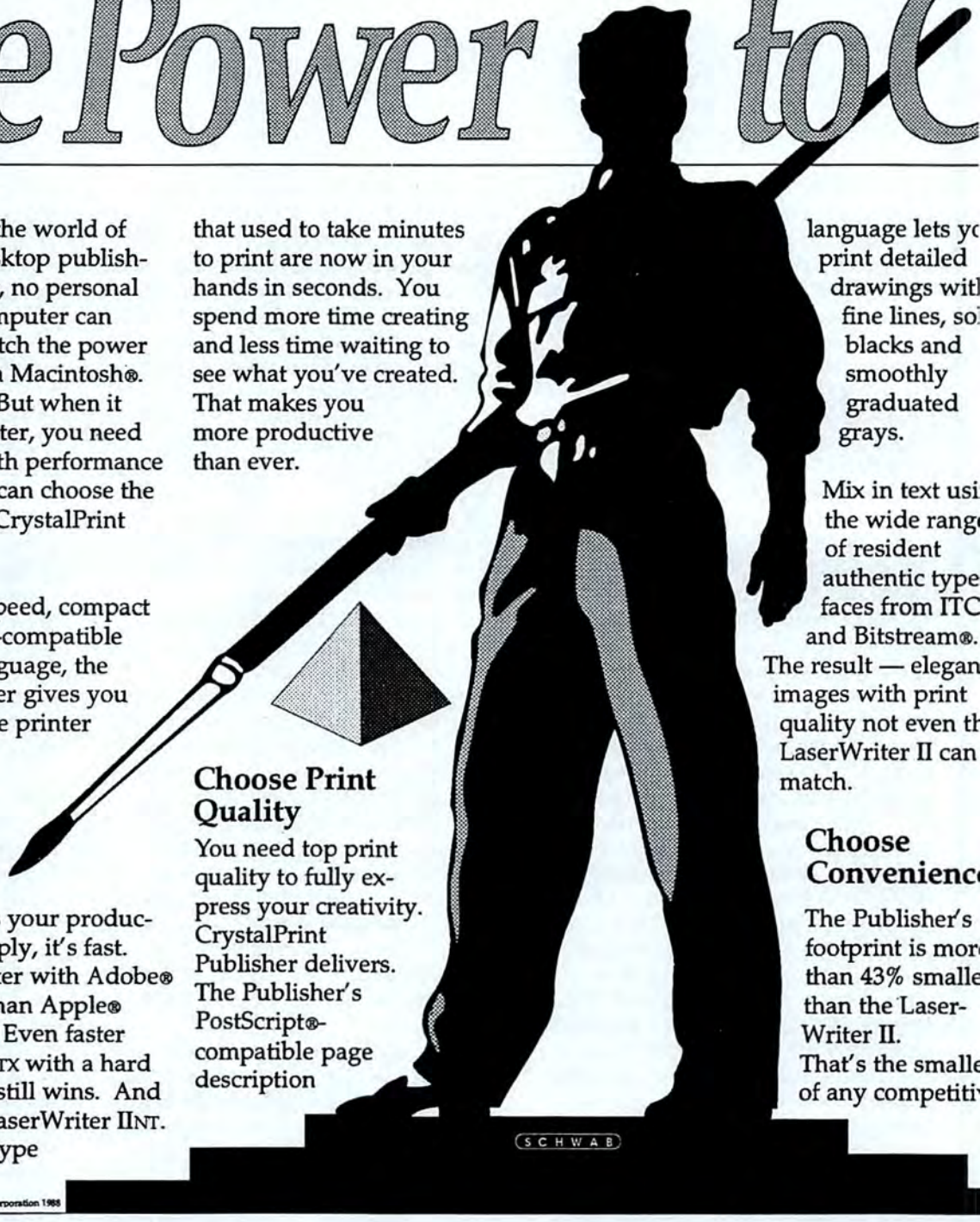
The Power to C

In the world of desktop publishing, no personal computer can match the power of a Macintosh®. It's the only choice. But when it comes to a page printer, you need to choose the one with performance to match. Now you can choose the power of the Qume CrystalPrint Publisher™.

With its ultra-high speed, compact size and PostScript®-compatible page description language, the CrystalPrint Publisher gives you choices no other page printer can.

Choose Productivity

CrystalPrint Publisher maximizes your productivity. Put more simply, it's fast. Faster than any printer with Adobe® PostScript® Faster than Apple® LaserWriter® IINTX . Even faster than LaserWriter IINTX with a hard disk. The Publisher still wins. And at a price less than LaserWriter IINT. So illustrations and type that used to take minutes to print are now in your hands in seconds. You spend more time creating and less time waiting to see what you've created. That makes you more productive than ever.



Choose Print Quality

You need top print quality to fully express your creativity. CrystalPrint Publisher delivers. The Publisher's PostScript®-compatible page description language lets yo print detailed drawings witl fine lines, sol blacks and smoothly graduated grays.

Mix in text usi the wide rang of resident authentic type faces from ITC and Bitstream®. The result — elegan images with print quality not even th LaserWriter II can match.

Choose Convenienc

The Publisher's footprint is mor than 43% smalle than the Laser-Writer II. That's the smalle of any competiti

©Qume Corporation 1988

©Qume Corporation, 1988. Qume and the Qume logo are registered trademarks of Qume Corp. CrystalPrint Publisher is a trademark of Qume Corp. Apple, Macintosh and LaserWriter are registered trademarks of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corp. Adobe and Adobe Illustrator 88 are trademarks of Adobe Systems, Inc. PostScript is a registered trademark of Adobe Systems, Inc. Bitstream is a trademark of Bitstream, Inc. ITC is a trademark of International Typeface Corp.

hoose™

page printer. Which means the Publisher stays close and convenient — where you need it— even in the most space conscious environments.

Compare, Then Choose

Let your Qume dealer show you the power of the CrystalPrint Publisher. Ask them to print this page on the Publisher and then on an Apple LaserWriter II. After that, the choice is yours. Choose the winner and you'll choose CrystalPrint Publisher. With its speed, print quality and convenience, no other page printer can match the power of your Macintosh. CrystalPrint Publisher is the power to choose. For information or a demonstration, contact your nearest Qume dealer or distributor. Or contact Qume at (800) 223-2479.

Qume®

The Company with Peripheral Vision.

CrystalPrint Publisher™

Graphic Proof of Quality and Speed

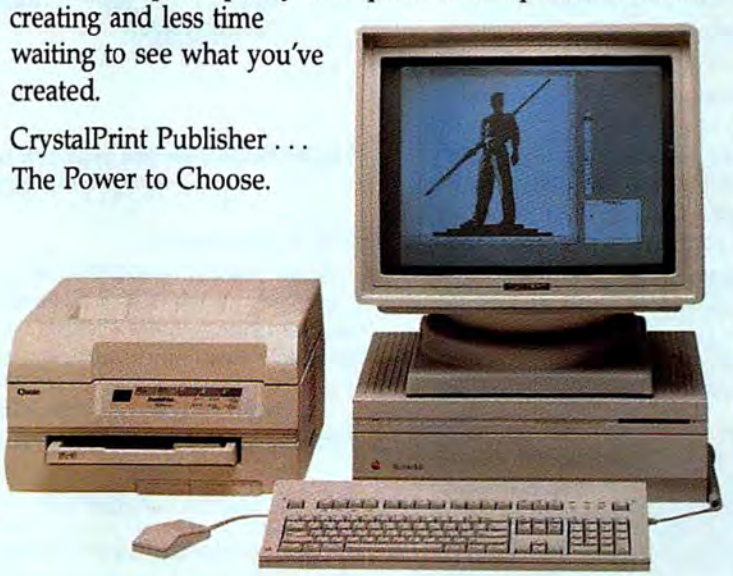
You know graphic quality when you see it. That's why we used an original printout taken directly from the CrystalPrint Publisher to produce the artwork for the adjacent page. So you can see the fine lines, the well-formed characters and uniform blacks for yourself.

You also know the importance of speed.
The LaserWriter IINT takes 172 seconds longer to print the same page. Even the expensive, top-of-the-line LaserWriter IINTX takes longer.

CrystalPrint Publisher *LaserWriter IINTX* *LaserWriter IINT*

Now, the choice is yours. Choose CrystalPrint Publisher and choose print quality and speed. Then spend more time creating and less time waiting to see what you've created.

CrystalPrint Publisher . . .
The Power to Choose.



Artwork composed using Aldus PageMaker™ and Adobe Illustrator 88™

Qume Corporation, 500 Yosemite Drive, Milpitas, CA 95035 (800) 223-2479

End users circle 353 on reader service card
Dealers circle 115 on reader service card

How to speed up your accounting cycle

Whether you're shopping for your first computerized accounting system or making do with some other "solution", you owe it to yourself to see why Bedford's Simply Accounting is the fastest way to get your small business from transaction to report.

"Simply Accounting is one of the best all-in-one programs"
Macworld October 1988

Quick to setup...

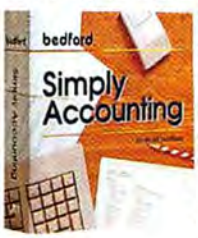
Installation is as easy as copying the program onto a working diskette and double-clicking the icon.

Easy to learn...

Within minutes you will be moving easily through the six fully integrated functions using only your mouse. The sample accounting records and self-paced tutorial allow you to get comfortable with the program before entering your own company's data.

A snap to use...

With Simply Accounting you'll need to enter transactions only once. Payroll, Payables and Receivables data are instantly transferred to General Ledger, Inventory and Jobcost as required.



On-screen lists of your chart of accounts, suppliers, customers, employees and inventory pop up with a simple click and drag of your mouse.

If you need your bottom line in a hurry or a quick check of a client's payment status, a few clicks is all it takes to display any report instantly.

"small businesses owe it to themselves to give this product a hard look"
MacUser September 1988

If you require additional help, our exclusive Comfort Guarantee provides free technical support and program updates for your first thirty days.

Unlike software that was never built for speed, Macintosh™ based Simply Accounting has been optimized to give your small business the boost it needs.

Stop wasting time...

Blast down to your nearest Bedford dealer or Apple® reseller today and, for only $349 complete, let Simply Accounting show you the easiest way to speed up your accounting cycle.

Call 1-800-255-8361 for more information.

bedford®
making software comfortable™

Bedford Software Corporation • 15311 N.E. 90th Street • Redmond, WA 98052 • Fax (206) 885-0859 • (206) 883-0074

Apple is the registered trademark of Apple Computer, Inc. • Macintosh is a trademark of Apple Computer, Inc. • Bedford is the registered trademark of Bedford Software Corp. • Simply Accounting is a trademark of Bedford Software Corp.

Circle 10 on reader service card

Steven Levy

Adventures in the RAM Trade

The memory shortage encourages back-door deals and money grubbing

Peter Killcommons is a fresh-faced former orthopedic surgeon—he looks a little like the actor Jeff Daniels—who brokers in the esoteric field of RAM chips. The other day I visited him. His company, Network Specialties, is located in an area of Manhattan now called NoHo, which sounds a lot better than *the Bowery*; Skid Row is a crack-bottle-throw away. From his renovated building, he supervises the production of some neat networking products, but mostly he deals in the RAM trade. These days it is like something out of a Thomas Pynchon novel.

It seems we are in a crisis. A worldwide shortage of *DRAM*. (RAM, of course, stands for random access memory, where the computer stores and processes information in a given session. The *D* stands for dynamic memory and is pronounced separately, as in *dee-ram*. The other variety of RAM chip is called static memory, but no one talks about *ess-ram*.) Some people refer to this shortage as though they're speaking of a natural disaster, like a drought. Actually, it's a scam, though sufficiently complex to cloud the issue of where the villainy lies. In the confusion, people like Peter have found a handy profit center.

Peter works through a guy whose name he doesn't want me to print. This guy has contacts with some of the big chip makers. Often Peter will get a call from his friend, saying that a certain number of chips is available. Then Peter finds someone who wants the chips. After that, the real fun begins.

JEFFERY NEWBURY

In these, the days of the RAM crisis, Peter explains, there are no organized methods for getting chips to customers. The exceptions are standing contracts that chip makers have with big companies: Apple, for instance, has survived the worst of the disaster so far by having "locked in" good prices from its Far East suppliers. Everybody else has to scuffle, and even the big computer firms need more chips than their contracts provide. So they have to go to the spot market, through brokers who buy from what is called "the back door" of the factories. The price is whatever the market will bear. And that price is further inflated by the odd conglomerate of brokers and subbrokers that has managed to insinuate itself between a chip manufacturer and the eventual purchaser. Each broker gets a piece of the deal.

In the Chips

Peter protects himself with something he calls a "noncircumvent" agreement, which assures that he will not be cut out of the profits. "I crawl through the chain of

(continues)

Steven Levy is a Macworld *columnist and the author of* The Unicorn's Secret: Murder in the Age of Aquarius, *recently published by Prentice-Hall.*

Announcing

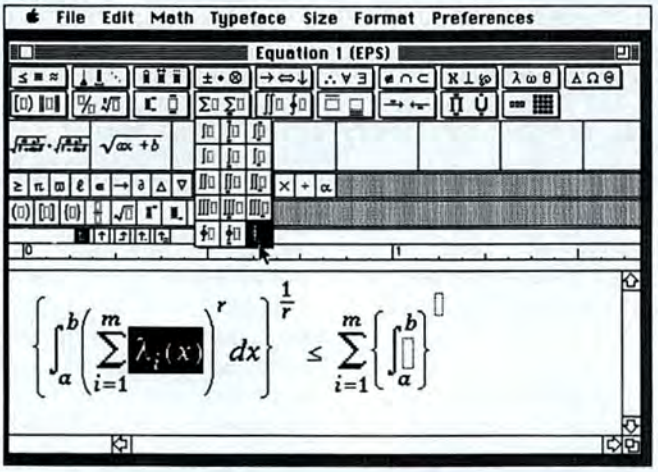
MathType

2.0

Welcome to the 2nd generation of equation editors. Major new features include:

- Encapsulated PostScript (EPS) output with positioning to 1/32nd of a point
- User-definable expression macros
- Compatibility with upcoming MS/DOS version
- User-modifiable interface
- On-line, context-sensitive, help system
- Fractional point sizes

And that's not all! Other features include PICT file output, rulers & tabs, access to all symbols & templates from the keyboard, multiple windows, and much more. Still only $149. Call or write for a **FREE** demo disk and brochure.



Design Science

See us at the MACWORLD Expo

6475-B East Pacific Coast Highway, Suite 392
Long Beach, CA 90803 • (213) 433-0685

Circle 165 on reader service card

Steven Levy

brokers—I've gone through as many as 12," he says. He has to keep a sharp eye out because as a self-described "little guy" he can't afford to buy the chips first and then find a buyer; he must do it the other way around. The danger is that he might find a buyer, only to find the chips are no longer available. The phenomenon of "vapor chips" would erode his credibility, in which he takes pride.

On the other hand, he has to make sure his buyer will actually pay up when the chips come, so he procures what the trade calls an RWA document, pledging that the buyer is "ready, willing, and able" to pay for those chips at the quoted price.

Peter's mysterious partner has done well. In a time when, according to Peter, "a lot of guys are running around Japan with wads of money trying to buy parts," he seems to come up with plenty. Only one time was there trouble: the partner heard of 2 million Samsung 256ers (translation: 256K chips made by the Korean conglomerate Samsung) and flew to Seoul to check them out. They were labeled legitimately and rated at 120 nanoseconds. (This rating is key, since certain processing speeds are required for certain uses: for instance, chips that work at 150 nanoseconds are fine for the Mac SE but won't work in the Mac II, whose processor requires a faster rating.) But 12 hours after paying for them, when the partner actually tested the chips, it turned out that a significant percentage ran at the laggardly speed of 200 nanoseconds—the chips were obviously rejects. Killcommons and partner had been burned.

More common, though, was the successful order, like the one consummated the week before I visited Network Specialties. Peter showed me the order: half a million Samsung 256ers at $10.30 a unit. In other words, a half-million-dollar sale.

This was very good for Peter. But I couldn't help thinking that if things had been working the way they should have been, the price of those chips would have been more in the neighborhood of a hundred thousand dollars. But things have not been working the way they should. Something is rotten in memoryland.

(continues)

Put your storage problems behind you.

We have a very novel way to hide up to 100MB of mass storage. Put it behind your Mac Plus or SE with a Jasmine BackPac.™ The BackPac hardly takes up any room at all. In fact, your Mac will still fit in its carrying case to go wherever you go.

You can let the world come to you with the TalkBac™—BackPac's optional internal 2400 baud modem.

The BackPac is remarkably easy to install. You'll be up and running with the preformatted BackPac within minutes. And once installed, you'll barely know it's there.

Available in 20MB, 45MB, 70MB, and 100MB capacities, BackPac comes with Symantec Utilities for Macintosh™ to prevent data loss, Redux™ from Microseeds—the best backup software written for the Macintosh. And DriveWare,™ which offers true SCSI partitioning. A feature which enables you to allocate distinct storage partitions while you manage everything from the control panel. Plus over 9MB of public domain software and shareware.

So put your storage problems behind you. Call toll free to order a BackPac with full, two-year limited warranty.

And if it's not everything we say it is, return it in 30 days and we'll refund your money.

But we think you'll find the best storage solution is right here in front of you.

BackPac 20— $629
BackPac 45— $879
BackPac 70—$1079
BackPac 100—$1479

Jasmine

1-800-347-3228

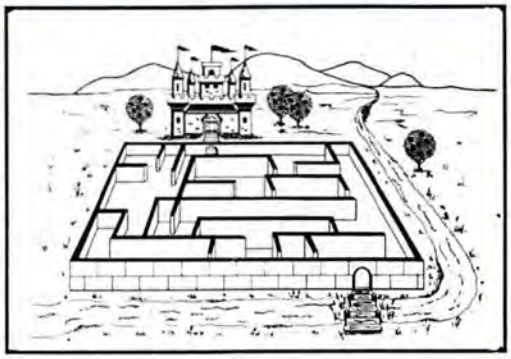
Circle 457 on reader service card

Jasmine Technologies Inc., 1740 Army Street, San Francisco 94124 FAX 415-648-1625 415-282-1111

© 1988 Jasmine Technologies Inc. BackPac, DriveWare and TalkBac are trademarks of Jasmine Technologies Inc. Macintosh is a registered trademark of Apple Computer, Inc. Symantec Utilities for Macintosh is a trademark of Symantec Corp. Redux is a trademark of Microseeds.
Prices subject to change.

Mathematics Excellence with NumberMaze™!

NumberMaze combines the fun of solving mazes with the challenge of solving math problems.



NumberMaze contains many different math levels with the ability to create and customize new math levels. Statistics are kept for each child and include such facts as percentages of correct answers and identification of difficulties. Animation, sound, and graphics are some of the many features which make **NumberMaze** fun to play and exciting to learn.

Suggested Retail Price
$49.95

Recommended Ages: 5 to 12 years
Requires 512K or larger Macintosh

Products are trademarks of their respective manufacturers.

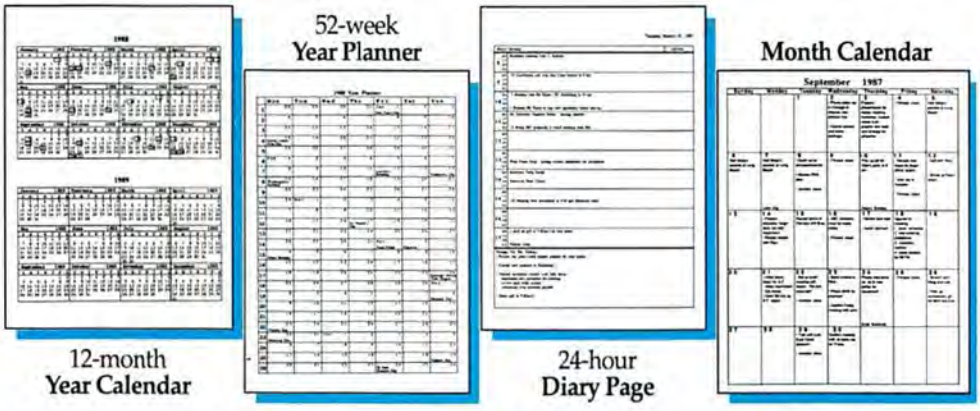
Great Wave Software
5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990
Software Excellence for All the Ages™

Circle 251 on reader service card

Rendezvous™ VERSION 2.0

A UNIFIED ELECTRONIC APPOINTMENT DIARY

With an Automatic Reminder Feature to remind you of your appointments while working within any Macintosh application. Fully Mac II and MultiFinder compatible.



At last a full scale software package that can put you in control of your schedule and help you manage your time more effectively. Yes, Rendezvous is a PERSONAL TIME MANAGEMENT TOOL with all the features you need for now and always. You never need to order another refill for your diary or calendar. Complete with executive binder for $200. Plus $5 shipping.

PMC Telesystems Inc. P. O. Box 5127, Vancouver, B.C. V6B 4A9 • **(604) 255-9949**

Circle 395 on reader service card

Steven Levy

The Price Drop That Didn't

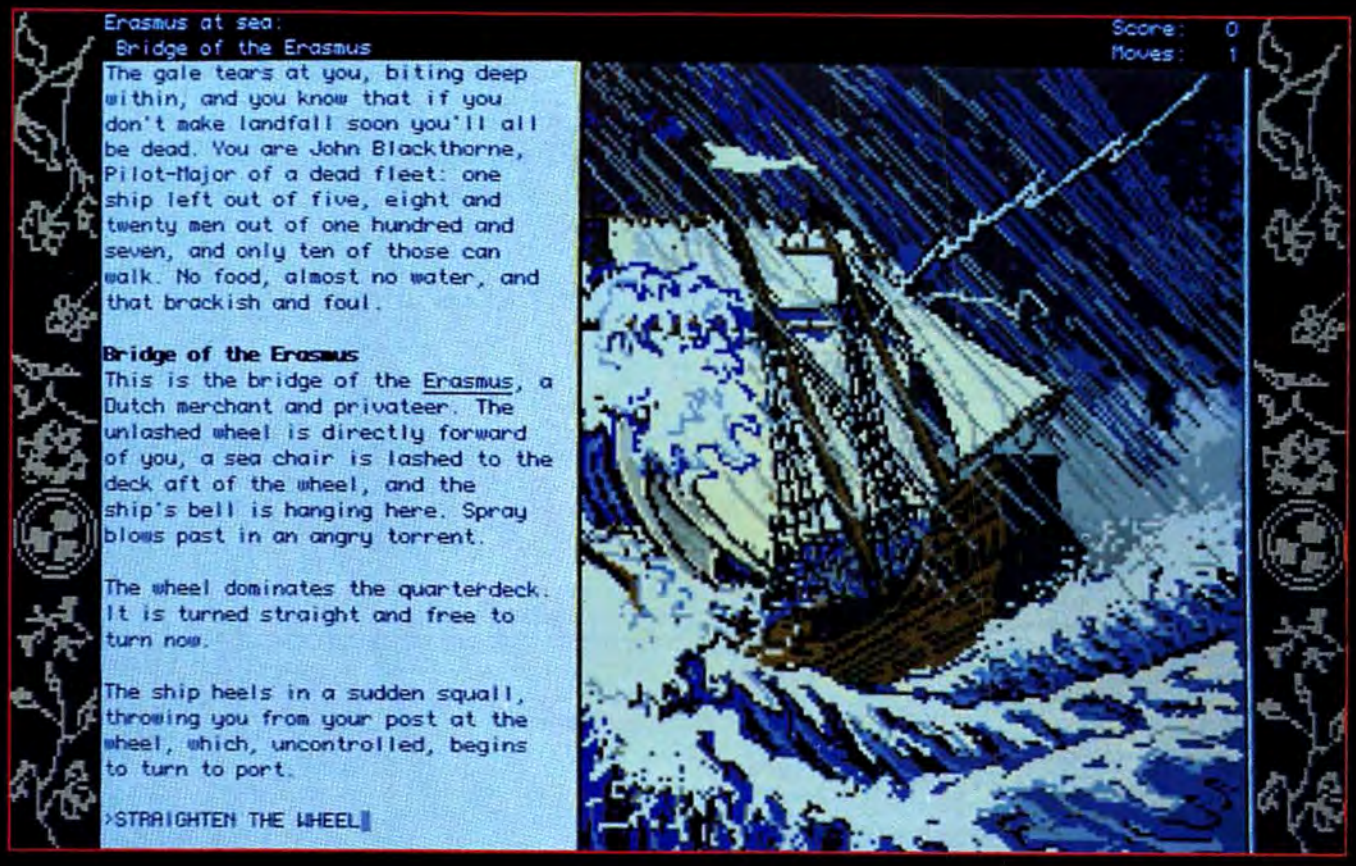
While the DRAM shortage offers Peter a repertoire of amusing tales, it spells disaster for the user, particularly in the Macintosh market. Although Apple Computer professes not to be overly bothered by the crisis, this RAM thing is costing too many people too much money and is gumming up the entire Macintosh community at a time when it's growing like a bean sprout.

The ripple effect from this rip-off is that memory upgrades are very expensive—sometimes prohibitively so—at a time when they are needed most. And new computers are not coming down in price. For the first time in memory, they are going *up*. That's right—in the midst of a general consensus that Macintoshes cost too much, Apple Computer celebrated September by raising the prices of SEs and Mac IIs. All because of memory.

This crisis first hit the Macintosh world in August 1987, when almost everybody who had a Macintosh suddenly needed more RAM in order to run HyperCard and MultiFinder, two programs that made obsolete the memory configuration of 1 megabyte. At that time, you could add 2 megabytes to your Mac's RAM (using the preferable 1MB SIMMs) for about $600, if you shopped well. I recall doing so and grumbling about it—because if history was to be my guide, the same memory upgrade would cost about $200 in a year or so.

That's the way memory prices have gone, at least until recently. You old-timers can recall the original Macintosh, with the mighty powerhouse of 128K of memory. You could write maybe six pages of a document before the curtain came down; a spreadsheet would go blooey if your numbers approached six figures. So when Apple finally unveiled the "Fat Mac," with a whopping 512K of memory, some people paid for the upgrade immediately—a thousand dollars. Not long afterward, Apple cut its prices to $600, then to around $400. By then, the street price of an upgrade was about $200. The same phenomenon occurred when people upgraded to a megabyte.

Why? For the same reason our computers now are less expensive and more powerful than they were a decade ago—after chips are designed, and the factories that make them are built, they cost almost nothing to produce. So while the first 64K RAM chips were costly, they could be had



INFOCOM'S NEW GRAPHICS WILL BLOW YOU OUT OF THE WATER...

(Top) The Great Underground Empire comes alive with spellbinding graphics.

(Center) Look for *Zork Zero* at a software retailer near you.

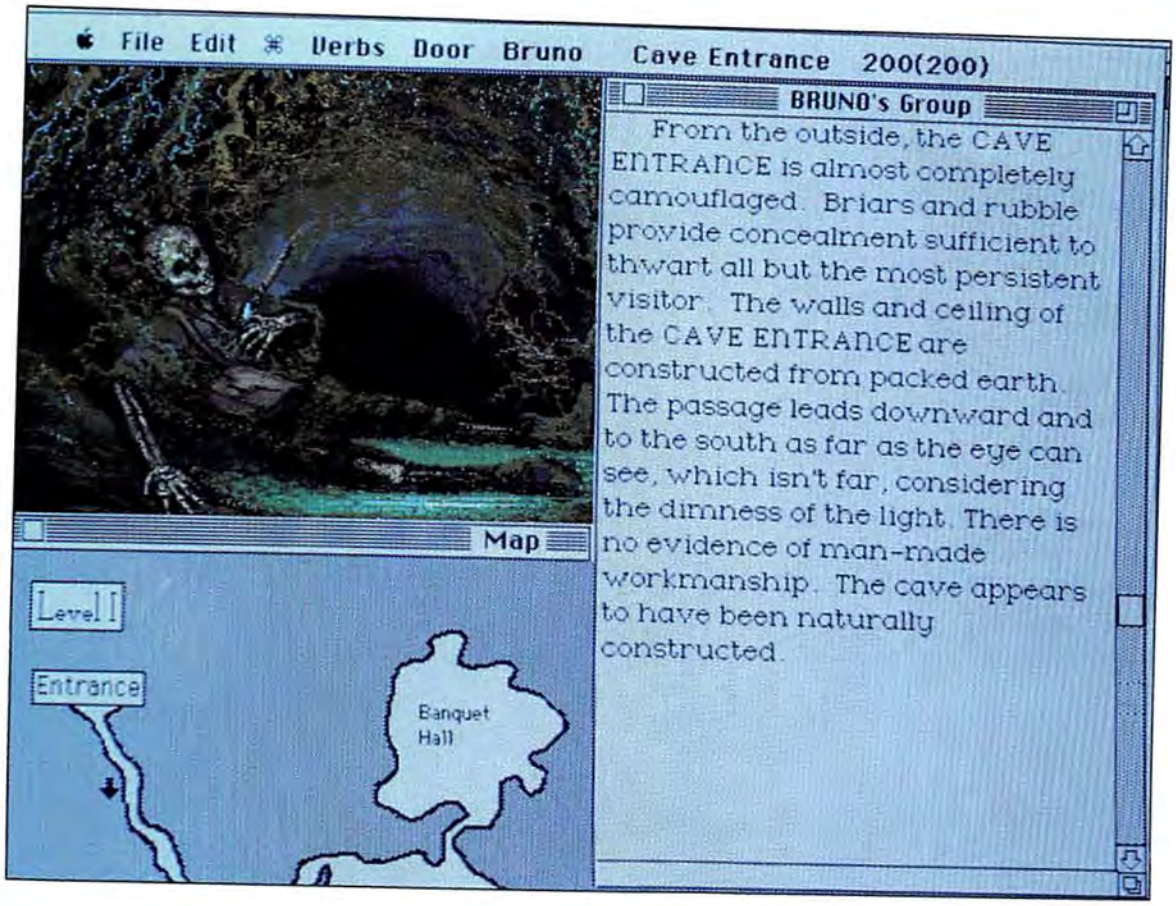
(Bottom) New visual puzzles will challenge you like never before.

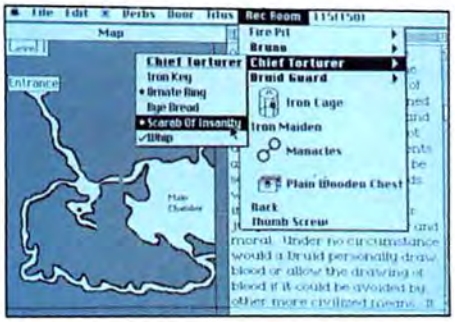
ZORK ZERO

The game that started it all has a new beginning! *Zork Zero* is the interactive fiction prequel to the *Zork Trilogy*, the most popular entertainment software product of all time. In *Zork Zero*, an unpredictable jester challenges you with puzzles, paradoxes and plenty of fun as you seek out objects ranging from the curious to the sublime.

- One million satisfied game players can't be wrong! Discover the origins of the Great Underground Empire in this new and exciting chapter of *Zork*.
- *Zork Zero* integrates graphics into the game play with visual puzzles, illustrated maps and a Zorkian encyclopedia.
- *Zork Zero* includes our most requested features: a friendlier parser for easier typed-in commands, on-screen hints, mapping, optional mouse interface and sound.
- *Zork Zero* is by Steve Meretzky, author of *Leather Goddesses of Phobos*, *The Hitchhiker's Guide to the Galaxy* and *Planetfall*.
- Your *Zork Zero* package includes the game disk, a secret spell, "Lives of the Twelve Flatheads" Calendar and an unusual blueprint.
- *Zork Zero* is available for most personal computers. See the order form on the reverse side for machines and prices.

INFOCOM Graphic INTERACTIVE FICTION





(Top) Superb graphics, on-screen mapping, and a dramatic story create a realistic role playing experience.

(Center) Quarterstaff is the fantasy role playing game for true RPG players.

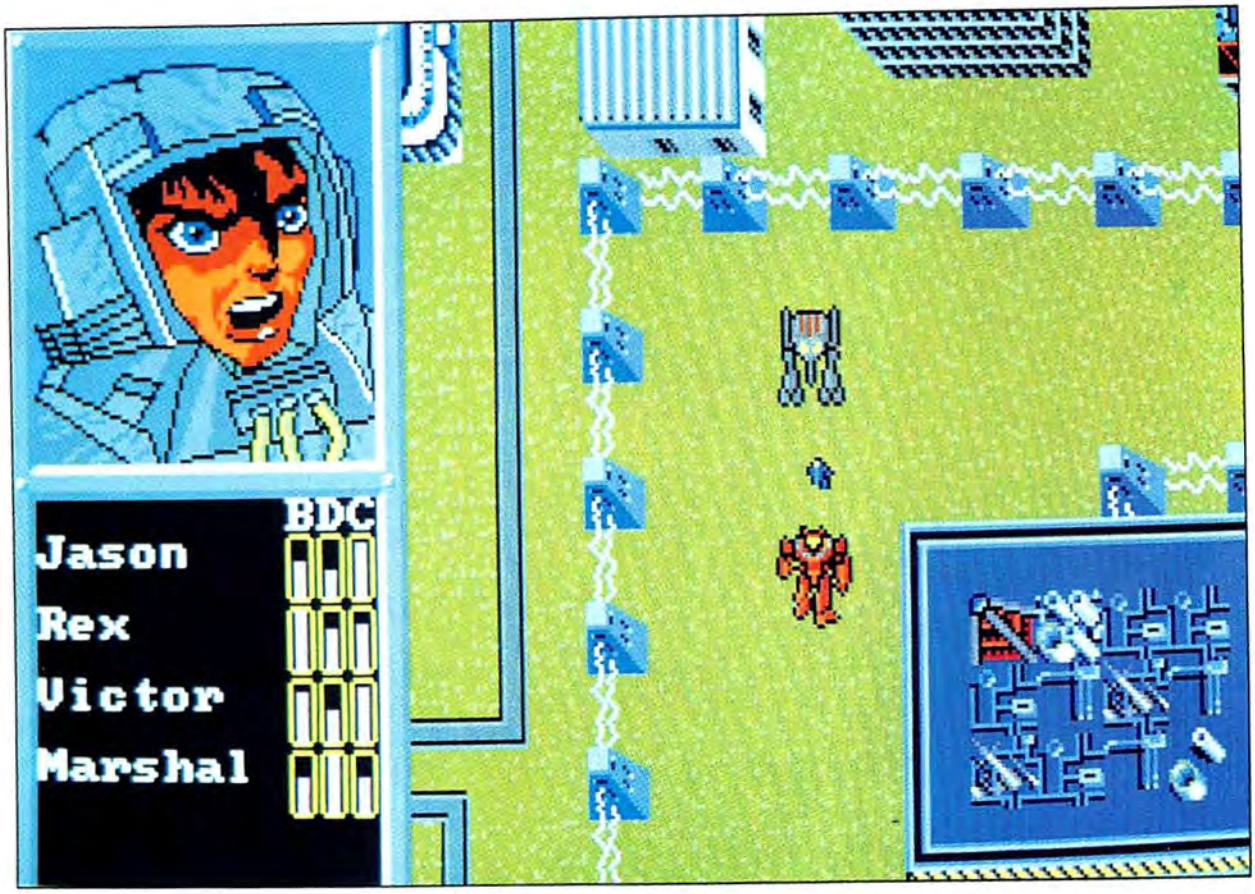
(Bottom) Quarterstaff is easy to play using logical, sophisticated menus.

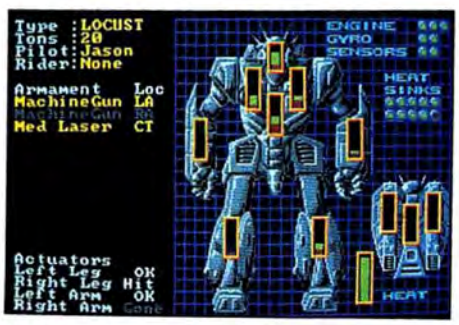
QUARTERSTAFF™: THE TOMB OF SETMOTH™

Three months ago, the Tree Druid Colony vanished without a trace. A search party is sent to discover what fate befell these peaceful people, and to save any who may survive. In *Quarterstaff,* it is your mission to guide this ever-changing band of warriors through cavern and crypt in search of an unknown demon.

- *Quarterstaff* is the first computer role playing game to capture the mood and feel of pen-and-paper RPG's.
- *Quarterstaff* features the most realistic environment of any fantasy role playing game. Characters need to eat and sleep, objects have size and weight, and even monsters have motives.
- The Macintosh version of *Quarterstaff* features the ultimate in Macintosh interfaces, with hierarchical menus, realistic sound, context-sensitive hints and a dynamic map window.
- When *Quarterstaff* was developed by Scott Schmitz and Ken Updike, *Dragon Magazine*™ gave it a perfect rating. This new version is refined and enhanced with Infocom's distinctive brand of storytelling.
- Your *Quarterstaff* package includes the game disks, a dazzling poster, a mystical ritual parchment and a Druid coin. Macintosh version also has an extra color graphics disk.
- *Quarterstaff* is available for the Macintosh, Apple II GS, and IBM and 100% compatibles. See the order form on the reverse side for specifications and prices.

INFOCOM RPG ROLE PLAYING GAME





(Top) Animated outtakes let you zoom in on the action.

(Center) The package tells you that *BattleTech* means business.

(Bottom) Detailed scan helps keep track of damage sustained in combat.

BattleTech®: The Crescent Hawk's Inception™

In the 31st Century, brutal wars are waged in giant machines, and human lives are cheaper than water. In this action-packed RPG, you are Jason Youngblood, a warrior cadet who must fight to preserve his planet, his honor and his life.

- *BattleTech* is the first computer RPG set in the powerful BattleTech universe.
- *BattleTech* includes "The Arena," a gladiatorial module you can play again and again to hone your skills and accumulate supplies.
- *BattleTech* features the richness of plot and depth of detail that you have come to expect from Infocom games.
- You will see animated game sequences rendered in the distinctive style of Japanese "monga" comics.
- *BattleTech* features the largest RPG universe ever created, with over four million different locations on the computerized playing board.
- *BattleTech* features the most explosive warfare and complicated strategy of any computer RPG.
- *BattleTech* is a fully integrated part of FASA's BattleTech universe. It was developed with Westwood Associates, creators of Phantasie™ III, Questron™ II and Summer Games.®
- Your *BattleTech* package includes a game disk, an exciting full-color poster, and an official Weapon and 'Mech Recognition Guide.
- *BattleTech* is available for IBM PC and 100% compatibles, Apple II series, Commodore 64/128 and the Amiga. See the order form on the reverse side for specifications and prices.

INFOCOM RPG ROLE PLAYING GAME

PAST THE GHOULISH CRYPT, BEYOND THE ELFIN CAVERNS, THROUGH THE FUBLIO VALLEY AND INTO THE 31ST CENTURY.

INTRODUCING FIVE SPECTACULAR NEW GAMES FROM INFOCOM.™

We swore we'd never add graphics to our games until we could make the pictures on the screen as compelling as the ones in our mind. And we've kept our promise. Now our screens are bursting with color, form and shadow. And that's not all.

We've meshed storytelling and graphics into exciting new types of games. Role playing games. Interactive fiction. Fantasies. And a new hybrid of interactive fiction and traditional RPG's we call "role-play chronicles.™" You've never seen anything like it!

And every title is jammed full of the most riveting plots, compelling descriptions, and dastardly puzzles ever to fit on a floppy.

Now you don't have to choose between a great story and great graphics. Because Infocom brings you both. Take a look at our pixel-popping new entertainment products. We're sure they will blow you out of the water.

ONLY $14.95!*

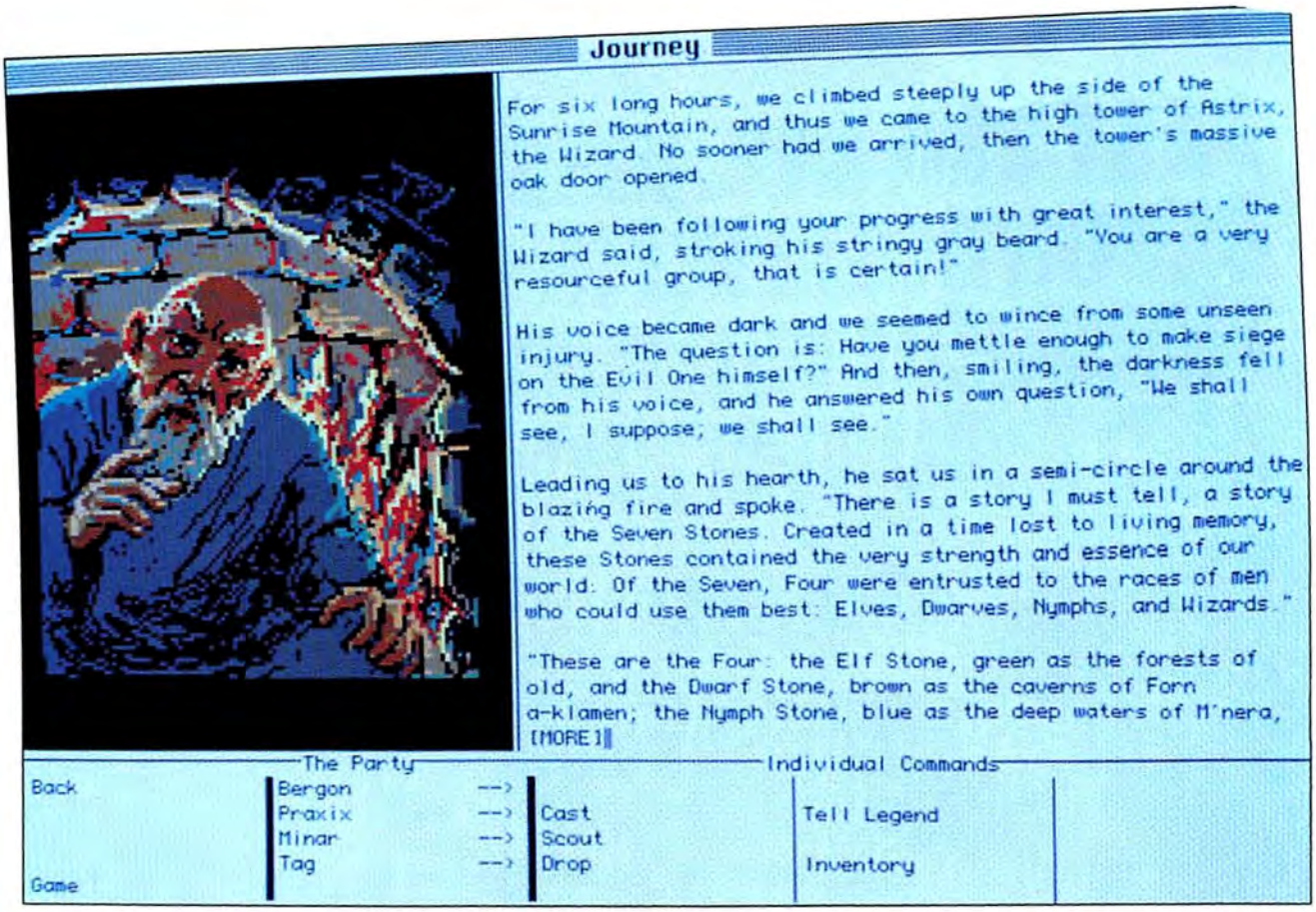
SOLID GOLD TITLES

Now you can enjoy Infocom's most popular games for a mere $14.95*! *Zork® I, The Hitchhiker's Guide to the Galaxy,™ Planetfall,® Wishbringer,® and Leather Goddesses of Phobos®* have been re-packaged with everything you'll need to play—including on-screen hints! You can't afford to pass up this solid gold opportunity!

*Most systems—see order form

INFOCOMICS™

Yikes! The classic comic book comes to your computer screen! Infocomics have sophisticated cinematic effects like panning, zooming and animation, but are ridiculously easy to use. Priced at just $12.00, there's a fabulous Infocomic fantasy, comedy or superhero adventure for everyone!



(Top) Magical creatures and wondrous wizards inhabit the world of *Journey.*

(Center) Ask for *Journey* at your favorite software retailer.

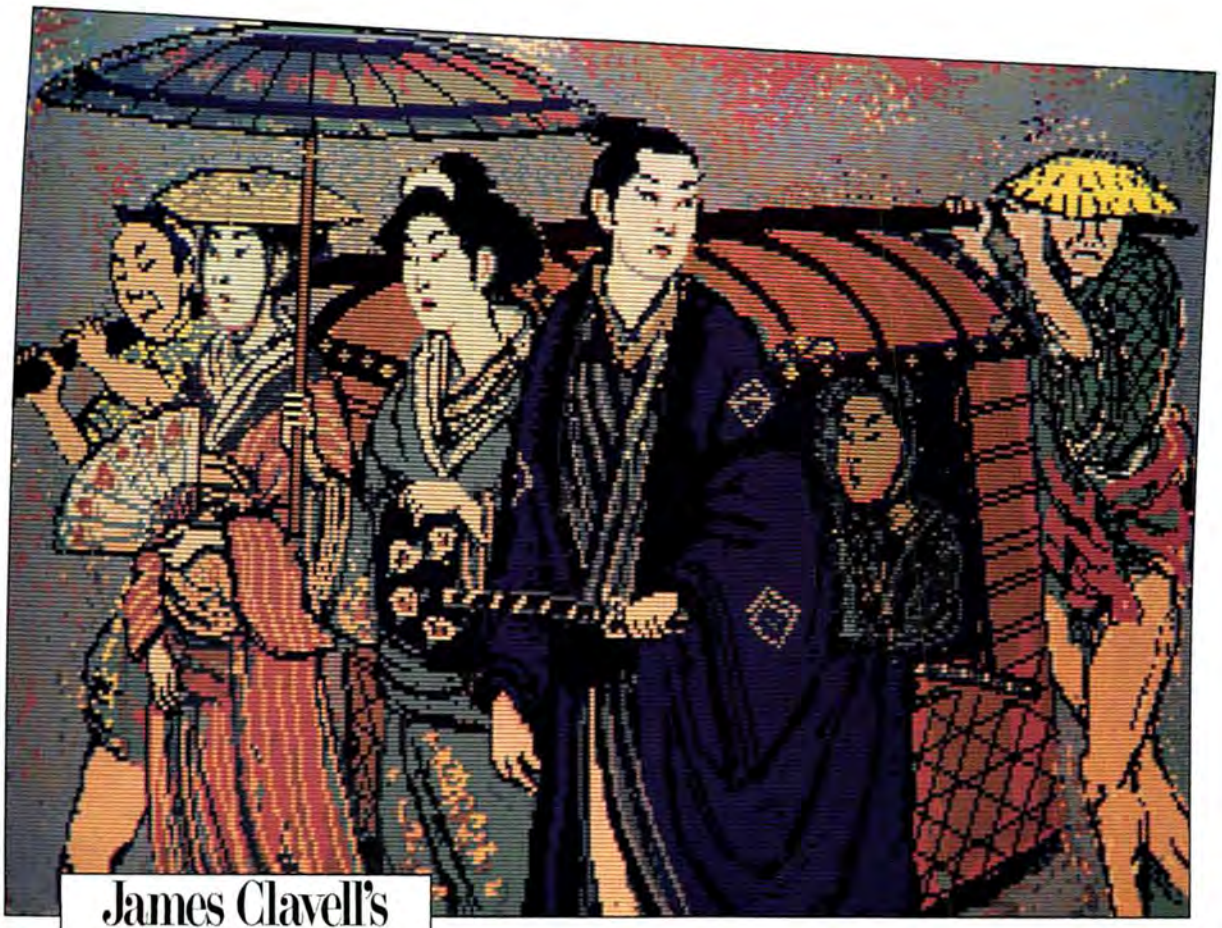
(Bottom) You must interpret what you find for your journey to be successful.

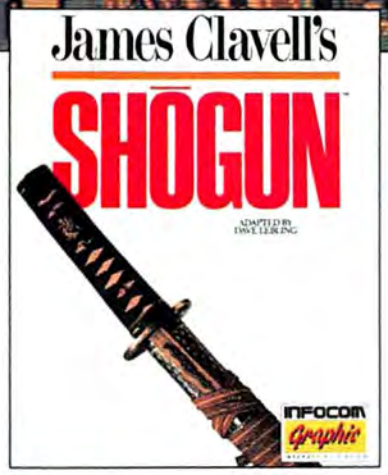
JOURNEY™

Journey into a world of natural beauty and unnatural magic, a world of monsters and melee, an entirely new world of entertainment software. In *Journey,* you lead a party of four adventurers on a noble quest to save the countryside from evil. *Journey* combines Infocom's storytelling expertise with the essence of role playing games to create the truly new genre of "role-play chronicles."

- *Journey* requires no typing and can be played entirely with a keyboard, a joystick, or a mouse.
- If you like RPG's, interactive fiction or fantasy stories, you'll love the saga of *Journey.*
- Over one hundred stunning graphics give you new vistas to explore at every stage of your quest.
- Favorite Infocom writer Marc Blank, author of *Zork, Deadline*® and *Enchanter,* has developed *Journey* and the new role-play chronicles.
- Your *Journey* package includes a game disk, a beautifully illustrated map and a quartz crystal secured in a velvet pouch.
- *Journey* is available for most personal computers. See the order form on the reverse side for machines and prices.

INFOCOM
ROLE-PLAY
Chronicles





(Top) Experience the drama and pageantry of 16th Century Japan in *Shogun.*

(Center) Infocom's *Shogun* captures all the power of the novel.

(Bottom) Rich text and vivid graphics weave a gripping story of honor, intrigue, and survival.

JAMES CLAVELL'S SHOGUN™

Now James Clavell's compelling saga of power and intrigue in 16th Century Japan comes to life in a riveting work of interactive fiction. You play the English sea-pilot John Blackthorne, a stranger who must learn to survive in the exotic world of feudal Japan. How you act, what you say and whom you befriend will determine your fate and the course of the game.

- *Shogun* is an adaptation of James Clavell's novel in which you actually become the hero. If you enjoyed the book or television miniseries, you will love the interactive version of *James Clavell's Shogun.*
- *Shogun*'s breathtaking graphics are designed in the style of 16th Century Japanese painters. You have never seen computer screens like these.
- *Shogun* features on-screen hints and friendlier language interface.
- *James Clavell's Shogun* is a collaboration between two extremely popular authors: James Clavell, whose bestselling novels include Noble House™ and Tai Pan,™ and Dave Lebling, author of the *Zork Trilogy* and *Enchanter.*®
- Your *Shogun* package includes a game disk and Blackthorne's map of the known world.
- *James Clavell's Shogun* is available for most personal computers. See the order form on the reverse side for machines and prices.

INFOCOM
Graphic
INTERACTIVE FICTION

NEW GAMES! SPECTACULAR GRAPHICS FASCINATING STORIES!

The excitement and challenge is yours—order today!

☐ Zork Zero
- ☐ IBM PC and 100% compatible‡* $59.95
- ☐ Macintosh** $59.95
- ☐ Apple II series‡ $49.95
- ☐ Apple II GS‡ $59.95
- ☐ Amiga† $59.95

☐ James Clavell's Shogun
- ☐ IBM PC and 100% compatible*‡ $[illegible]5
- ☐ Macintosh**‡ $[illegible]5
- ☐ Apple II series‡ $[illegible]5
- ☐ Apple II GS† $[illegible].95
- ☐ Amiga† $[illegible].95

☐ BattleTech
- ☐ IBM PC and 100% compatible* $49.95
- ☐ Apple II series† $49.95
- ☐ Commodore 64/128‡ $39.95
- ☐ Amiga† $49.95

☐ Journey
- ☐ IBM PC and 100% compatible†* $49.95
- ☐ Macintosh**‡ $49.95
- ☐ Apple II series† $49.95
- ☐ Apple II GS† $49.95
- ☐ Amiga† $49.95

☐ Quarterstaff
- ☐ Macintosh†† $49.95
- ☐ Apple II GS† $49.95
- ☐ IBM PC and 100% compatibles†# $49.95

*Requires CGA, EGA, VGA, MCGA or Tandy Graphics.
**Also supports color Mac II.
†Available Spring, 1989.
Requires EGA, VGA, MCGA or Tandy Graphics.
‡Available February, 1989.
††Requires Mac Plus, SE or II with 1 MB RAM.
Color requires MAC II with 2 MB RAM and 16 color video card.

SOLID GOLD TITLES

All Solid Gold games are available for:
- ☐ IBM PC and 100% compatible $14.95
- ☐ Macintosh $19.95
- ☐ Apple II series $14.95
- ☐ Commodore 64/128 $14.95

☐ Solid Gold Zork I

☐ Solid Gold Hitchhiker's Guide to the Galaxy

☐ Solid Gold Leather Goddesses of Phobos

☐ Solid Gold Planetfall

☐ Solid Gold Wishbringer

Infocom games are available wherever fine software is sold. Or order direct using the order form below.

Last name | First name | M.I.

Address

City | State | Zip Code

Country, if not the U.S.

Please indicate the payment method you've used:
☐ Check ☐ Money Order ☐ MasterCard ☐ Visa ☐ Amex

Card Number | Exp. date (Mo. & Yr.)

Signature

Make checks payable to Infocom, Inc. (Please do not send cash.)
If outside of the U.S., make check out in U.S. funds.

Quantity	Product	Computer	Price Ea.	Total Price

Subtotal
CA orders add 6% sales tax; TX orders add 7½% sales tax
Add $3.90 shipping, handling and insurance charges
If outside the U.S., add $2.00 export handling charge
TOTAL ENCLOSED

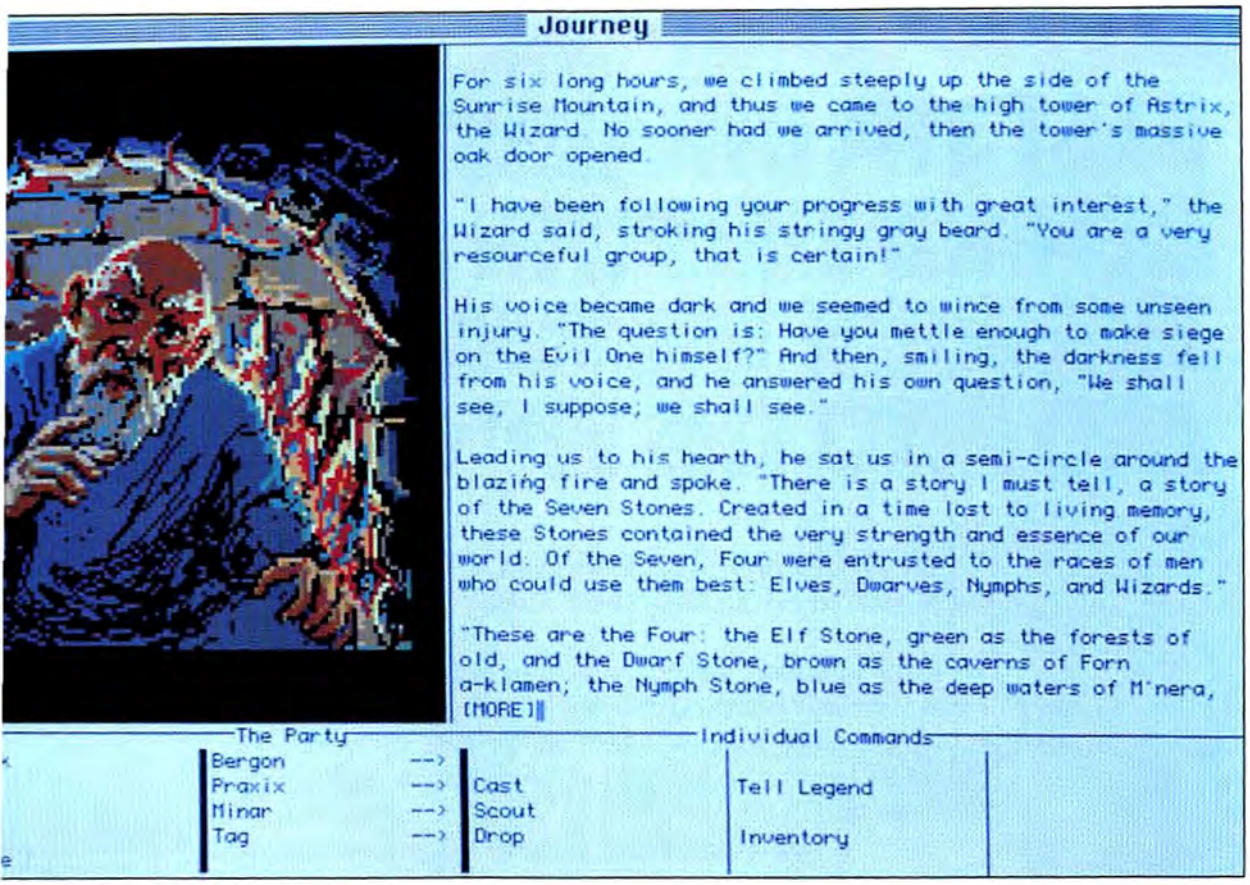
INFOCOM™

125 CambridgePark Drive
Cambridge, MA 02140

For telephone orders, please call **1-800-227-6900** and have the above information ready. Or send completed order form with payment in a stamped, business-size envelope to: **TRITON PRODUCTS CO., P.O. Box 8123, San Francisco, CA 94128.** Please allow 3–4 weeks for delivery

© 1988 Infocom, Inc. *Zork, Planetfall, Wishbringer, Leather Goddesses of Phobos, Enchanter* and *Deadline* are registered trademarks and *Journey*, role-play chronicles, *The Crescent Hawk's Inception, Quarterstaff, The Tomb of Setmoth*, and *Infocomics* are trademarks of Infocom, Inc.
BattleTech is a registered trademark of FASA Corporation. *The Hitchhiker's Guide to the Galaxy* is a trademark of Douglas Adams. *Shogun, Noble House* and *Tai Pan* are trademarks of James Clavell. *Phantasie III* and *Questron II* are trademarks of Strategic Simulations, Inc. *Summer Games* is a registered trademark of Epyx.
DRAGON MAGAZINE is a registered trademark of T S R, Inc.

CA CC CE CG CJ CM CB CD CF CH CK C



Top) Magical creatures and wondrous wizards inhabit the world of *Journey.*

Center) Ask for *Journey* at your favorite software retailer.

Bottom) You must interpret what you find for your journey to be successful.

JOURNEY™

Journey into a world of natural beauty and unnatural magic, a world of monsters and melee, an entirely new world of entertainment software. In *Journey,* you lead a party of four adventurers on a noble quest to save the countryside from evil. *Journey* combines Infocom's storytelling expertise with the essence of role playing games to create the truly new genre of "role-play chronicles."

- *Journey* requires no typing and can be played entirely with a keyboard, a joystick, or a mouse.
- If you like RPG's, interactive fiction or fantasy stories, you'll love the saga of *Journey.*
- Over one hundred stunning graphics give you new vistas to explore at every stage of your quest.
- Favorite Infocom writer Marc Blank, author of *Zork, Deadline*® and *Enchanter,* has developed *Journey* and the new role-play chronicles.
- Your *Journey* package includes a game disk, a beautifully illustrated map and a quartz crystal secured in a velvet pouch.
- *Journey* is available for most personal computers. See the order form on the reverse side for machines and prices.

INFOCOM
ROLE-PLAY
Chronicles

PAST THE GHOULISH CRYPT, BEYOND THE ELFIN CAVERNS, THROUGH THE FUBLIO VALLEY AND INTO THE 31ST CENTURY.

INTRODUCING FIVE SPECTACULAR NEW GAMES FROM INFOCOM.™

We swore we'd never add graphics to our games until we could make the pictures on the screen as compelling as the ones in our mind. And we've kept our promise. Now our screens are bursting with color, form and shadow. And that's not all.

We've meshed storytelling and graphics into exciting new types of games. Role playing games. Interactive fiction. Fantasies. And a new hybrid of interactive fiction and traditional RPG's we call "role-play chronicles.™" You've never seen anything like it!

And every title is jammed full of the most riveting plots, compelling descriptions, and dastardly puzzles ever to fit on a floppy.

Now you don't have to choose between a great story and great graphics. Because Infocom brings you both. Take a look at our pixel-popping new entertainment products. We're sure they will blow you out of the water.

SOLID GOLD TITLES

Now you can enjoy Infocom's most popular games for a mere $14.95*! *Zork*® *I, The Hitchhiker's Guide to the Galaxy,*™ *Planetfall,*® *Wishbringer,*® and *Leather Goddesses of Phobos*® have been re-packaged with everything you'll need to play—including on-screen hints! You can't afford to pass up this solid gold opportunity!

*Most systems—see order form

INFOCOMICS™

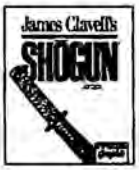
Yikes! The classic comic book comes to your computer screen! Infocomics have sophisticated cinematic effects like panning, zooming and animation, but are ridiculously easy to use. Priced at just $12.00, there's a fabulous Infocomic fantasy, comedy or superhero adventure for everyone!

NEW GAMES! SPECTACULAR GRAPHICS! FASCINATING STORIES!

The excitement and challenge is yours—order today!

☐ Zork Zero

☐ IBM PC and 100% compatible‡*	$59.95
☐ Macintosh**	$59.95
☐ Apple II series‡	$49.95
☐ Apple II GS‡	$59.95
☐ Amiga†	$59.95



☐ James Clavell's Shogun

☐ IBM PC and 100% compatible*‡	$59.95
☐ Macintosh**‡	$59.95
☐ Apple II series‡	$49.95
☐ Apple II GS†	$59.95
☐ Amiga†	$59.95

☐ BattleTech

☐ IBM PC and 100% compatible*	$49.95
☐ Apple II series†	$49.95
☐ Commodore 64/128‡	$39.95
☐ Amiga†	$49.95

☐ Journey

☐ IBM PC and 100% compatible†*	$49.95
☐ Macintosh**‡	$49.95
☐ Apple II series†	$49.95
☐ Apple II GS†	$49.95
☐ Amiga†	$49.95

☐ Quarterstaff

☐ Macintosh††	$49.95
☐ Apple II GS†	$49.95
☐ IBM PC and 100% compatibles†#	$49.95

*Requires CGA, EGA, VGA, MCGA or Tandy Graphics.
**Also supports color Mac II.
†Available Spring, 1989.
Requires EGA, VGA, MCGA or Tandy Graphics.
‡Available February, 1989.
††Requires Mac Plus, SE or II with 1 MB RAM.
Color requires MAC II with 2 MB RAM and 16 color video card.

SOLID GOLD TITLES

All Solid Gold games are available for:

☐ IBM PC and 100% compatible	$14.95
☐ Macintosh	$19.95
☐ Apple II series	$14.95
☐ Commodore 64/128	$14.95

☐ Solid Gold Zork I

☐ Solid Gold Hitchhiker's Guide to the Galaxy

☐ Solid Gold Leather Goddesses of Phobos

☐ Solid Gold Planetfall

☐ Solid Gold Wishbringer

Infocom games are available wherever fine software is sold. Or order direct using the order form below.

Last name | First name | M.I.

Address

City | State | Zip Code

Country, if not the U.S.

Please indicate the payment method you've used:
☐ Check ☐ Money Order ☐ MasterCard ☐ Visa ☐ Amex

Card Number | Exp. date (Mo. & Yr.)

Signature

Make checks payable to Infocom, Inc. (Please do not send cash.)
If outside of the U.S., make check out in U.S. funds.

Quantity	Product	Computer	Price Ea.	Total Price

Subtotal	
CA orders add 6% sales tax; TX orders add 7½% sales tax	
Add $3.90 shipping, handling and insurance charges	
If outside the U.S., add $2.00 export handling charge	
TOTAL ENCLOSED	

INFOCOM™

125 CambridgePark Drive
Cambridge, MA 02140

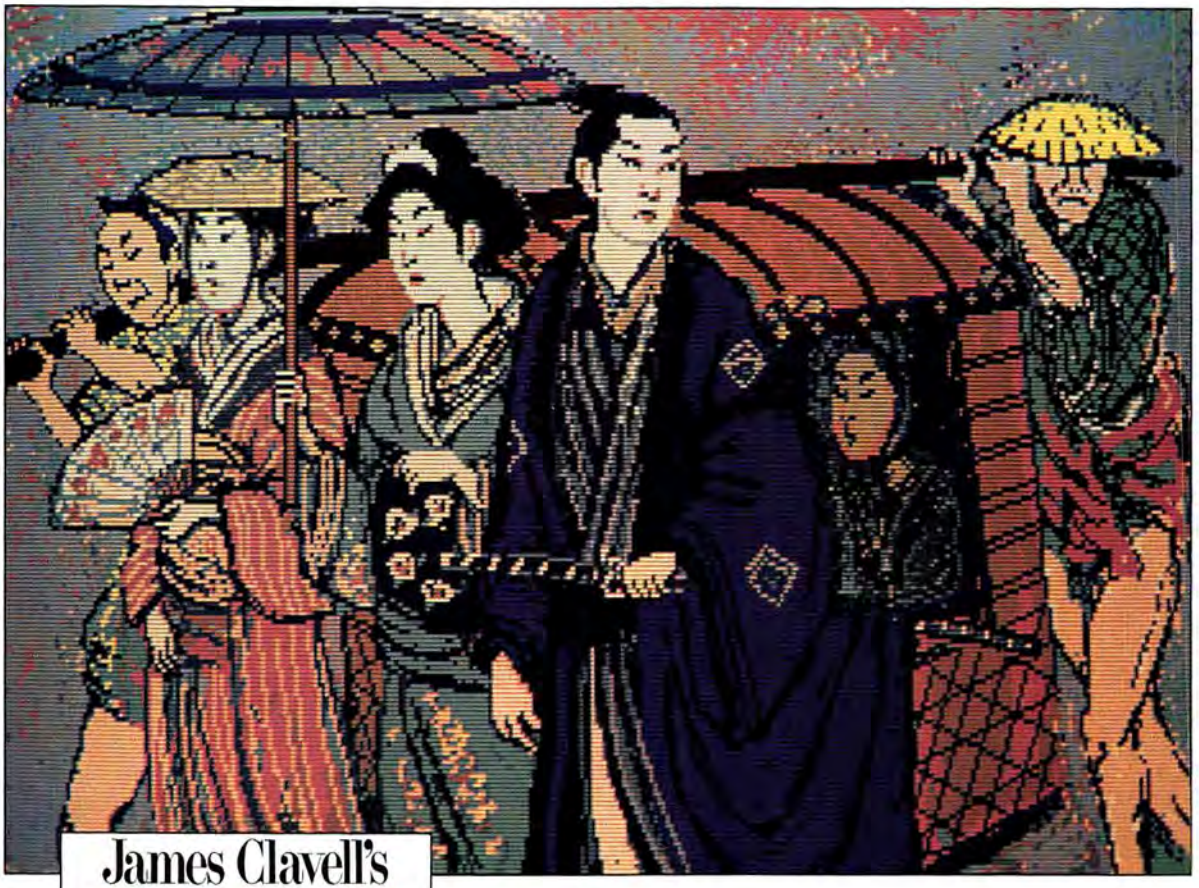
For telephone orders, please call **1-800-227-6900** and have the above information ready. Or send completed order form with payment in a stamped, business-size envelope to: **TRITON PRODUCTS CO., P.O. Box 8123, San Francisco, CA 94128.** Please allow 3–4 weeks for delivery.

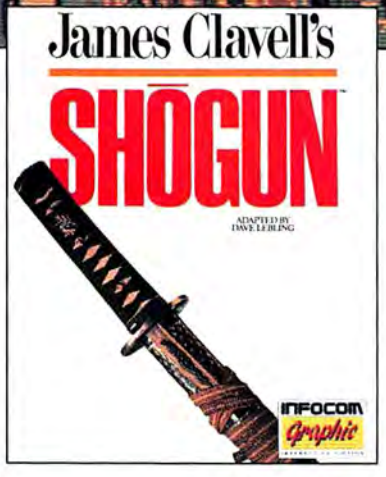
© 1988 Infocom, Inc. *Zork, Planetfall, Wishbringer, Leather Goddesses of Phobos, Enchanter* and *Deadline* are registered trademarks and *Journey*, role-play chronicles, *The Crescent Hawk's Inception, Quarterstaff, The Tomb of Setmoth*, and *Infocomics* are trademarks of Infocom, Inc.

BattleTech is a registered trademark of FASA Corporation. *The Hitchhiker's Guide to the Galaxy* is a trademark of Douglas Adams. *Shogun, Noble House* and *Tai Pan* are trademarks of James Clavell. *Phantasie III* and *Questron II* are trademarks of Strategic Simulations, Inc. *Summer Games* is a registered trademark of Epyx.

DRAGON MAGAZINE is a registered trademark of T S R, Inc.

CA CC CE CG CJ CM CB CD CF CH CK CP





(Top) Experience the drama and pageantry of 16th Century Japan in *Shogun.*

(Center) Infocom's *Shogun* captures all the power of the novel.

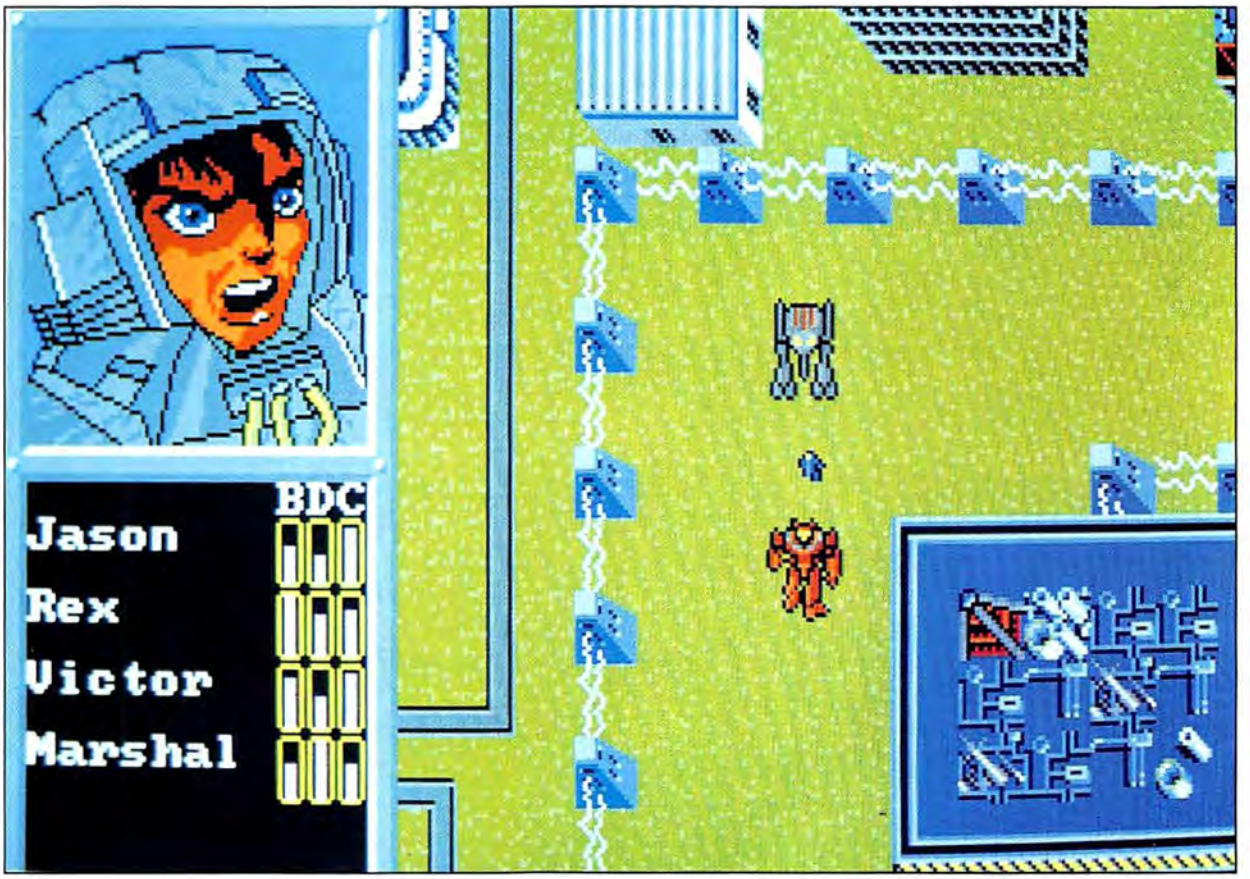
(Bottom) Rich text and vivid graphics weave a gripping story of honor, intrigue, and survival.

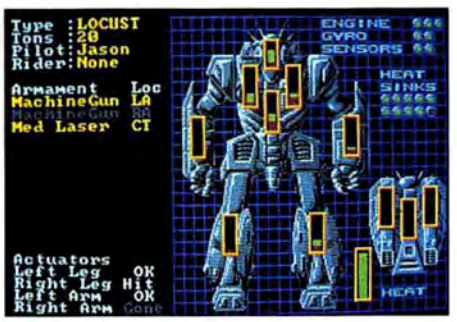
JAMES CLAVELL'S SHOGUN™

Now James Clavell's compelling saga of power and intrigue in 16th Century Japan comes to life in a riveting work of interactive fiction. You play the English sea-pilot John Blackthorne, a stranger who must learn to survive in the exotic world of feudal Japan. How you act, what you say and whom you befriend will determine your fate and the course of the game.

- *Shogun* is an adaptation of James Clavell's novel in which you actually become the hero. If you enjoyed the book or television miniseries, you will love the interactive version of *James Clavell's Shogun.*
- *Shogun*'s breathtaking graphics are designed in the style of 16th Century Japanese painters. You have never seen computer screens like these.
- *Shogun* features on-screen hints and friendlier language interface.
- *James Clavell's Shogun* is a collaboration between two extremely popular authors: James Clavell, whose bestselling novels include Noble House™ and Tai Pan,™ and Dave Lebling, author of the *Zork Trilogy* and *Enchanter.*®
- Your *Shogun* package includes a game disk and Blackthorne's map of the known world.
- *James Clavell's Shogun* is available for most personal computers. See the order form on the reverse side for machines and prices.

INFOCOM
Graphic
INTERACTIVE FICTION





(Top) Animated outtakes let you zoom in on the action.

(Center) The package tells you that *BattleTech* means business.

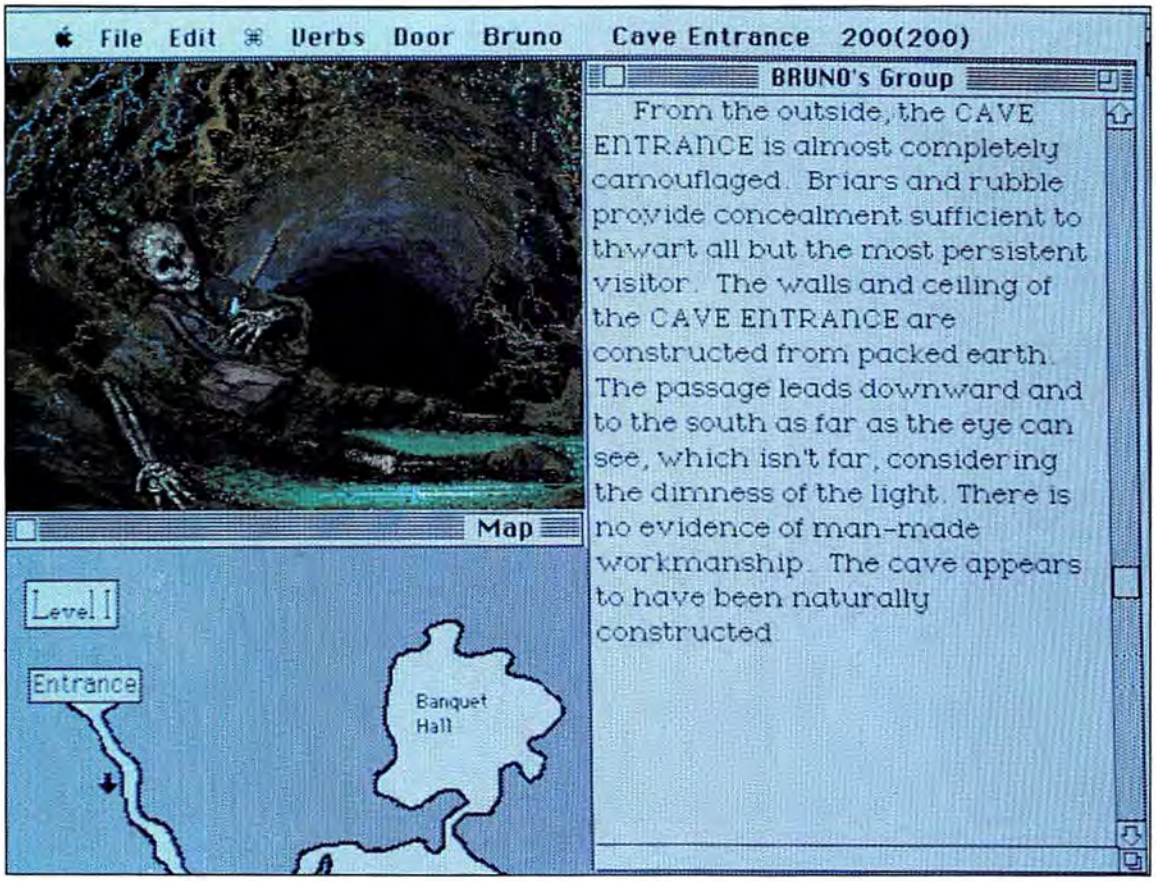
(Bottom) Detailed scan helps keep track of damage sustained in combat.

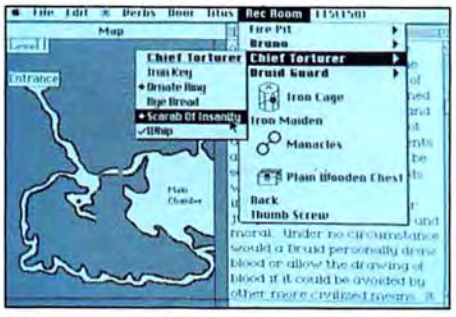
BattleTech®: The Crescent Hawk's Inception™

In the 31st Century, brutal wars are waged in giant machines, and human lives are cheaper than water. In this action-packed RPG, you are Jason Youngblood, a warrior cadet who must fight to preserve his planet, his honor and his life.

- *BattleTech* is the first computer RPG set in the powerful BattleTech universe.
- *BattleTech* includes "The Arena," a gladiatorial module you can play again and again to hone your skills and accumulate supplies.
- *BattleTech* features the richness of plot and depth of detail that you have come to expect from Infocom games.
- You will see animated game sequences rendered in the distinctive style of Japanese "monga" comics.
- *BattleTech* features the largest RPG universe ever created, with over four million different locations on the computerized playing board.
- *BattleTech* features the most explosive warfare and complicated strategy of any computer RPG.
- *BattleTech* is a fully integrated part of FASA's BattleTech universe. It was developed with Westwood Associates, creators of Phantasie™ III, Questron™ II and Summer Games.®
- Your *BattleTech* package includes a game disk, an exciting full-color poster, and an official Weapon and 'Mech Recognition Guide.
- *BattleTech* is available for IBM PC and 100% compatibles, Apple II series, Commodore 64/128 and the Amiga. See the order form on the reverse side for specifications and prices.

INFOCOM RPG
ROLE PLAYING GAME





(Top) Superb graphics, on-screen mapping, and a dramatic story create a realistic role playing experience.

(Center) Quarterstaff is the fantasy role playing game for true RPG players.

(Bottom) Quarterstaff is easy to play using logical, sophisticated menus.

QUARTERSTAFF™: THE TOMB OF SETMOTH™

Three months ago, the Tree Druid Colony vanished without a trace. A search party is sent to discover what fate befell these peaceful people, and to save any who may survive. In *Quarterstaff*, it is your mission to guide this ever-changing band of warriors through cavern and crypt in search of an unknown demon.

- *Quarterstaff* is the first computer role playing game to capture the mood and feel of pen-and-paper RPG's.
- *Quarterstaff* features the most realistic environment of any fantasy role playing game. Characters need to eat and sleep, objects have size and weight, and even monsters have motives.
- The Macintosh version of *Quarterstaff* features the ultimate in Macintosh interfaces, with hierarchical menus, realistic sound, context-sensitive hints and a dynamic map window.
- When *Quarterstaff* was developed by Scott Schmitz and Ken Updike, *Dragon Magazine*™ gave it a perfect rating. This new version is refined and enhanced with Infocom's distinctive brand of storytelling.
- Your *Quarterstaff* package includes the game disks, a dazzling poster, a mystical ritual parchment and a Druid coin. Macintosh version also has an extra color graphics disk.
- *Quarterstaff* is available for the Macintosh, Apple II GS, and IBM and 100% compatibles. See the order form on the reverse side for specifications and prices.

INFOCOM RPG ROLE PLAYING GAME

at drastically reduced prices once there were millions of them. Same with the 256K chips involved in the Fat Mac upgrade. And supposedly the same thing would happen with the 1MB chips currently in vogue.

But that's not happening. The upgrade I grumbled about at $600 would cost almost $1000 today.

Behind the Drought

To explore the factors behind the shortage I called up Dataquest, a high-tech consulting firm that studies the memory business and often uses its information to make predictions, some of which are worth the time of day. A friendly fellow named Sheridan Tatsuno provided the background for the problem.

The 1986 "antidumping" chip agreement the United States made with Japan artificially set a "fair-market" value for chips. But not all companies had to toe that line —Korean giants like Samsung weren't covered, nor was NEC, which made its chips in America. So the Japanese companies that held to the agreement couldn't get the fair-market value, since Samsung and others undersold them. As a result, those companies stopped making DRAMs, and fewer chips were available. Also, some chip factories were switching from the manufacture of 256K chips to a newer, 1MB version. As a result, they were out of commission for a while, and then some of the new factories had problems yielding quality chips. Meanwhile, the demand for RAM was higher than ever, in both the Mac and MS-DOS worlds. All of that spelled drought; thus began the price increases, as well as the intense underground brokering.

Dataquest believes that the shortage will ease in 1989. "With more factories coming on line, and demand softening, prices will come down steadily," says Tatsuno. His colleague at Dataquest, Vic de Dios, predicts that by midyear the market price of a 1MB chip will drop by over half.

On the other hand, there is Peter Killcommons. It's his theory that the chip makers are doing so well in selling out the back door, so to speak, that they have no incentive to supply big companies with lower chip prices. "A factory knows a good deal when it sees it," he says. "If a company has ongoing purchase orders at $2.90 a chip, why honor it when you can sell the same chip for $6 out of the back door?"

(continues)

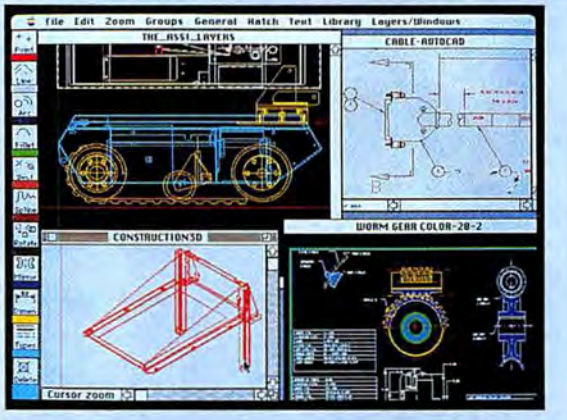
Number One in Macintosh® CAD

"Highest CAD ratings from both users and reviewers."
Gary Meyers, Publisher, *MacGuide*

"Experienced users of both AutoCAD and MGMS will like the latter's accuracy of object placement and speed of drawing construction. MGMS's user interface makes designing easier with MGMS than with AutoCAD..."
***Byte Magazine* Review, January, 1988**

"Its refinement shows. Despite the influx of new CAD software, including heavyweights from the MS-DOS world, MGMStation rates as one of the best values in the field."

"The program also includes excellent correct-by-design dimensioning capabilities, something we first saw on mainframe CAD — and something you don't expect at this price level."
***Macintosh Buyer's Guide* Comparison Test, Fall 1988**



MGMStation™ is part of a fast, sophisticated, cost-effective CAD/CAM package. Its performance, features and ease-of-use make it the best value for serious Macintosh CAD users. This professional-level CAD program can interface to other CAD packages via the optional IGES/DXF file conversion package. And, if you're designing mechanical parts, you may be interested in our CAM package.

FREE

If you're evaluating CAD or have outgrown your present software see your dealer or write us for a free HyperCAD™ demo stack.

MGMStation
from Micro CAD/CAM Systems, Inc.

5900 Sepulveda Boulevard, Van Nuys, California 91411
(818) 376-0008 Fax: (818) 901-0617 Telex: (650) 310-7078 MCI-UW

Circle 209 on reader service card

Quit wasting time.

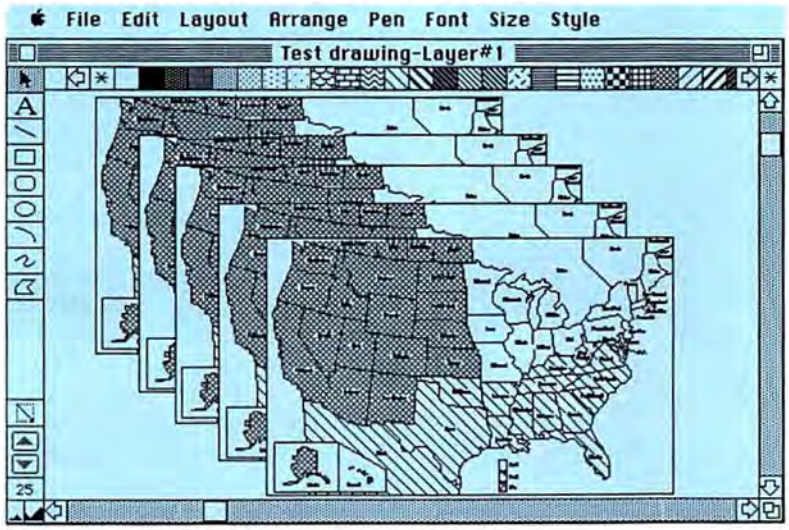
File Edit Formula Format Data Options Macro Window

F500 =D500+E500

Fill Down

	A	B	C	D	E	F
1	Base Point	1st Quarter	Q-2 YTD	Q-3 YTD	Foreign	Total YTD
2	11.50	23.50	35.00	58.50	93.50	152.00
3	12.00	24.00	36.00	60.00	96.00	156.00
4	12.50	24.50	37.00	61.50	98.50	160.00
5	13.00	25.00	38.00	63.00	101.00	164.00
6	13.50	25.50	39.00	64.50	103.50	168.00
7	14.00	26.00	40.00	66.00	106.00	172.00
8	14.50	26.50	41.00	67.50	108.50	176.00
9	15.00	27.00	42.00	69.00	111.00	180.00
491	256.00	268.00	524.00	792.00	1,316.00	2,108.00
492	256.50	268.50	525.00	793.50	1,318.50	2,112.00
493	257.00	269.00	526.00	795.00	1,321.00	2,116.00
494	257.50	269.50	527.00	796.50	1,323.50	2,120.00
495	258.00	270.00	528.00	798.00	1,326.00	2,124.00
496	258.50	270.50	529.00	799.50	1,328.50	2,128.00
497	259.00	271.00	530.00	801.00	1,331.00	2,132.00
498	259.50	271.50	531.00	802.50	1,333.50	2,136.00
499	260.00	272.00	532.00	804.00	1,336.00	2,140.00
500	260.50	272.50	533.00	805.50	1,338.50	2,144.00
501						

Excel with Excel. It takes almost 17 seconds to fill this spreadsheet on the Mac SE. Or less than 4 seconds with the Excelerator XL25 board.



Be quicker on the draw. You can draw this on the Mac SE in about 42 seconds. Or under 6 seconds with the Excelerator XL25 board.

Enough of this dillydallying.

If you're doing business with a Mac, you're spending time you don't have to spend.

Starting now, you can put a new fleet of power products from Irwin to work on your Mac.

And fly through all sorts of productivity tasks like never before.

If that's beginning to sound like blue sky, just take our Excelerator™ XL25 board as hard and fast proof.

It drives a Mac SE up to eight full times faster.

That's right. Faster than a Mac II. Or faster than you can clap your hands.

And not just on Excel and MacDraw like we've shown you here.

But on data bases like FileMaker II. Where a 1,500-record sort that takes almost 2 minutes on a Mac SE is wrapped up in less than 12 seconds with the help of the Excelerator.

On word processors like MacWrite II. Where a 46-page report is opened in less than 30 seconds instead of over 2 minutes.

And on and on. Because with an onboard math coprocessor, the Excelerator moves things even faster. Up to 100 times faster on all those number crunching jobs that make a Mac dawdle.

Or for that matter, you can access up to 8 megabytes of high speed memory. In no time at all.

And with that, we're back to our time-saving point.

The Excelerator XL25 is just one of the new MacPower™ products from Irwin. Products that include high-performance accelerators, flicker-free monitors and no-hassle tape backups.

From the people who already back up more people than anybody.

Any and all of which can make you many times more productive.

To see for yourself, take a walk over to your local computer store.

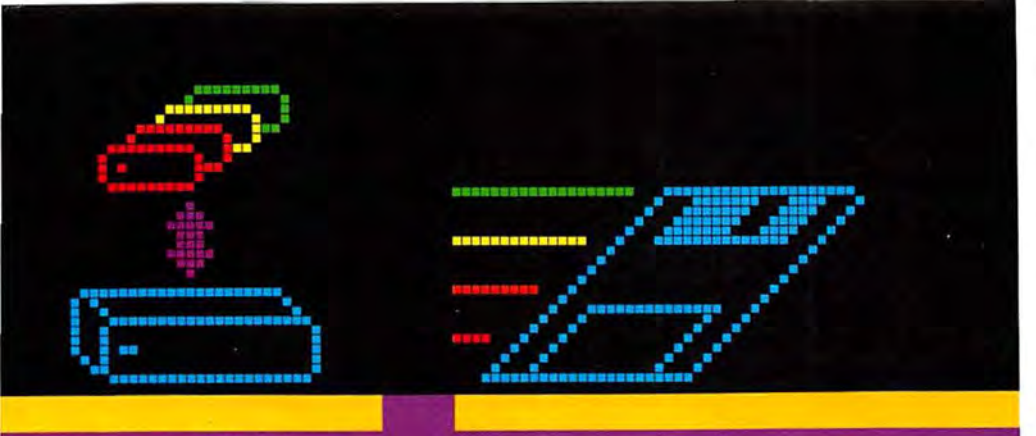
Or just call 1-800-222-5871 for the name of the dealer nearest you.

So. What are you waiting for?

IRWIN®

© 1988 Irwin International, Inc., 2101 Commonwealth Blvd., Ann Arbor, MI 48105. Excelerator and MacPower are trademarks of Irwin International, Inc. Other brand or product names are trademarks or registered trademarks of their respective holders.

Circle 82 on reader service card



MultiDisk™

The sensational new disk partitioning utility!

Hard disk makers recognize the need to partition a disk. As hard disks have increased in size, the need has become critical. However, the Macintosh File System is so complex and users are so demanding, no adequate utility has been offered. We challenged the Macintosh disk experts who created DiskExpress to deliver a solution. They succeeded with MultiDisk.

MultiDisk provides you with effortless partitioning. You can add or delete partitions at any time without having to erase your disk. MultiDisk has the **exclusive** ability to create partitions that occupy fragmented space (SUM and Hard Disk Partition™ need DiskExpress to defragment the free space). Another **exclusive** is the ability to enlarge a partition without having to recreate it. You can start with a small partition and then grow it as needed. This prevents the waste of your valuable disk space caused by other partitioning software. A third **exclusive** is the ability to create partitions within partitions. Plus, partitions you've created with SUM or Hard Disk Partition can be converted into fixed-sized MultiDisk partitions.

You can conveniently open partitions with a desk accessory. You can also have MultiDisk automatically open the partitions of each disk as they appear on the desktop. Network users of AppleShare™ and TOPS® can remotely access partitions opened on a server.

You can protect partitions with a password. For more security, you can assign automatic quick-encryption to each partition.

MultiDisk partitions your HFS disks on SCSI and non-SCSI drives and has the **exclusive** ability to work correctly with your removable disks.

Introductory Price $39.95

DiskExpress™

Apple Computer says . . .

"Ideally, a file would be stored contiguously, however, the contents of a particular file are usually stored in different parts of a disk. This increases the time required to access that file."
Apple Computer - Inside Macintosh™ Volume IV.

DiskExpress is the only optimizer for your Macintosh disks. It is the fastest way to straighten out your files to speed the loading of your data. It does the same to your free space to reduce future delays. Only DiskExpress straightens out your disk's directory to speed access to everything.

Only DiskExpress is 100% compatible with your other software. It works with your AppleShare™ file server and your hard disk back up program. Only DiskExpress requires no free space to operate. It cleans up all your files regardless of their size.

DiskExpress can look for bad spots on your disk. It can also show you how your free space is spread around.

". . . DiskExpress should be packaged with every hard disk sold." C.J. Weigand -**MACazine**.

Don't be fooled by simple file copy programs included with SUM or PC Tools™ that falsely *claim* to be disk optimizers. They want to sell you a "package" while DiskExpress is the only real solution. Come on, SUM and PC Tools, **you're no DiskExpress!!**

MacWEEK agrees. "ALSoft's DiskExpress has always been the Rolls Royce . . . only it truly optimizes and prioritizes a disk." - Dennis Klatzkin.

Suggested Retail $49.95

ALSoft

ALSoft, Inc. / P.O. Box 927, Spring, Texas 77383-0927, (713) 353-4090

ALSoft, MultiDisk, and DiskExpress are trademarks of ALSoft, Inc. - All other trademarks acknowledged.

© 1988 ALSoft, Inc.

Circle 202 on reader service card

Steven Levy

In other words, if you're waiting for the price of memory to drop like a stone before buying that upgrade, don't hold your breath. You're going to need a bank loan before you equip your machine for MultiFinder and FullWrite.

Happy Apple

As a coda to this dire scenario I must report that Apple Computer seems rather unperturbed by the situation. When asked about the DRAM shortage, an Apple spokesperson said several times that the company had experienced 50 percent growth for several quarters. So how bad could the problem be? Apple had long ago won favorable contracts from chip makers, she said, adding that the chip makers are virtually "partners" with Apple, sharing strategies and cementing a "very secure long-term relationship." So forget about those rumors that Apple will attempt to assure its supplies by building its own chip factory, as IBM has. Apple doesn't need to. As far as the RAM crisis goes, "We've always portrayed ourselves as being very fortunate," she said.

Not so fortunate, of course, are Apple's customers. The long-term deals Apple cut with chip makers did not include sufficient RAM for the ever-important upgrade kits that would allow Mac users to take advantage of the growing list of memory-hog programs. While the backlog of orders grew, the prices went up. In May 1988, a 2MB Apple upgrade rose from $599 to $849, and then, three months later, to $1100. And in September, as I mentioned before, Apple did the unthinkable—it increased the price of Macintoshes.

By then, said the spokesperson, Apple itself had been forced to go to the spot market to find DRAM for its machines. In other words, Apple is now doing business out of the back door of chip factories—probably those same companies who have the "partnership" with Apple. Interesting.

Though Apple does not claim prescience, it expects the chip shortage will continue into the first part of 1989, and then ease. But people have been wrong in predicting the end of this shortage before. And those making bucks off of the shortage have a vested reason in continuing it. This does not sound like a prescription for prosperity, but more like one for profit grabbing. □

The $19.32 Modem.

Now everyone on even the biggest Macintosh network can have the power of modem communication for less per Mac than the cost of a box of floppy disks. Because the Hayes®-compatible NetModem™ V2400 can be shared, just like you share a LaserWriter.® So there's no need for the cost or complexity of multiple modems and phone lines. The NetModem V2400 is easy to set up – just plug it in and turn it on. And it's easy to use. You can hear the progress of your call, no matter where in your office the NetModem is, because it feeds familiar modem sounds back to your own Mac's speaker. It also displays a modem front-panel icon, with 'LED' status lights, in your Mac's menu bar.

If you're away from the office, you can call in through any ordinary modem and the NetModem V2400 connects you to the office network. You can access files, use TOPS,® AppleShare,® electronic mail, printers or any other network resource, just as if you were sitting in front of your office Mac. Find out how the NetModem V2400 can make your Macintosh network more productive. Call 1-800-458-3550, or write Shiva, 155 Second Street, Cambridge, MA 02141.

NetModem™
by Shiva

We're Putting Networks To Work

Circle 421 on reader service card

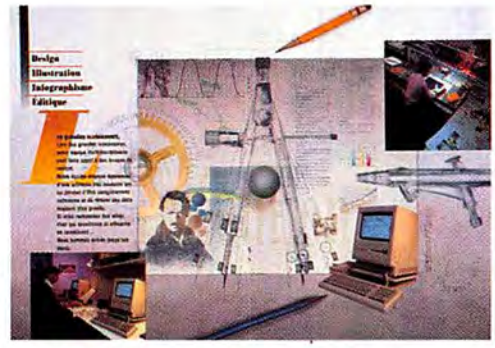
WIN A MAC II, A TRUEVISION 32-BIT COLOR BOARD, OR A TEKTRONIX COLOR PRINTER!

Macintosh Masters II Art Contest

Categories

Fine Arts
Illustration
Graphic Design
Animation/Video
Technical Illustration
3-D/Image Synthesis
Architectural Rendering/Elevations
Business/Informational Graphics
Wild Card*

*Projects that don't fit into any of the other categories. Try us.



Prizes

Three grand-prize winners will take away a Macintosh II, a 32-bit NuVista color capture and display board, or a Tektronix color image printer. Winners in each contest category will choose from a selection of top graphics and publishing software products. In addition, winners' work will be published in a *Macworld* feature article and in our 1990 graphics calendar. Grand-prize winners will also receive an expenses-paid trip to Macworld Expo Boston to claim their prizes.

Rules

Entries must be received no later than March 10, 1989, and must be accompanied by an entry form. Please send hard and disk copies of each piece (disks may be omitted when pieces run to more than 800K). Slides are acceptable hard copy for color graphics and for mixed-media or sculptural pieces. For judging purposes, however, originals are preferable; these will be returned if you include return postage and packaging. Animated entries may be on disk or half-inch videotape, as appropriate. Since work will be judged on technical innovation as well as aesthetic value, each piece should be accompanied by a detailed description of how it was produced. Please submit no more than four works (include an entry form for each). *Macworld* reserves the right to reproduce winning entries.

Entry Form

Send one entry form with each submission to Macintosh Masters, *Macworld*, 501 Second Street, San Francisco, CA 94107.

Name _____

Phone #(s) _____

Address _____

_____

Title of work _____

Contest category _____

Submission format(s):

___On disk ___Hard copy ___Slide ___VHS video ___Beta video

Required to view disk copy:

Software _____

Hardware _____

All submissions must be received by March 10, 1989

[art credits]

Dick Hodges [vessel], Concept-Exclusif [brochure], Brian E. Pinz [dog], David C. Dickinson [mountain], Gunter Dunz-Wolff [camera]

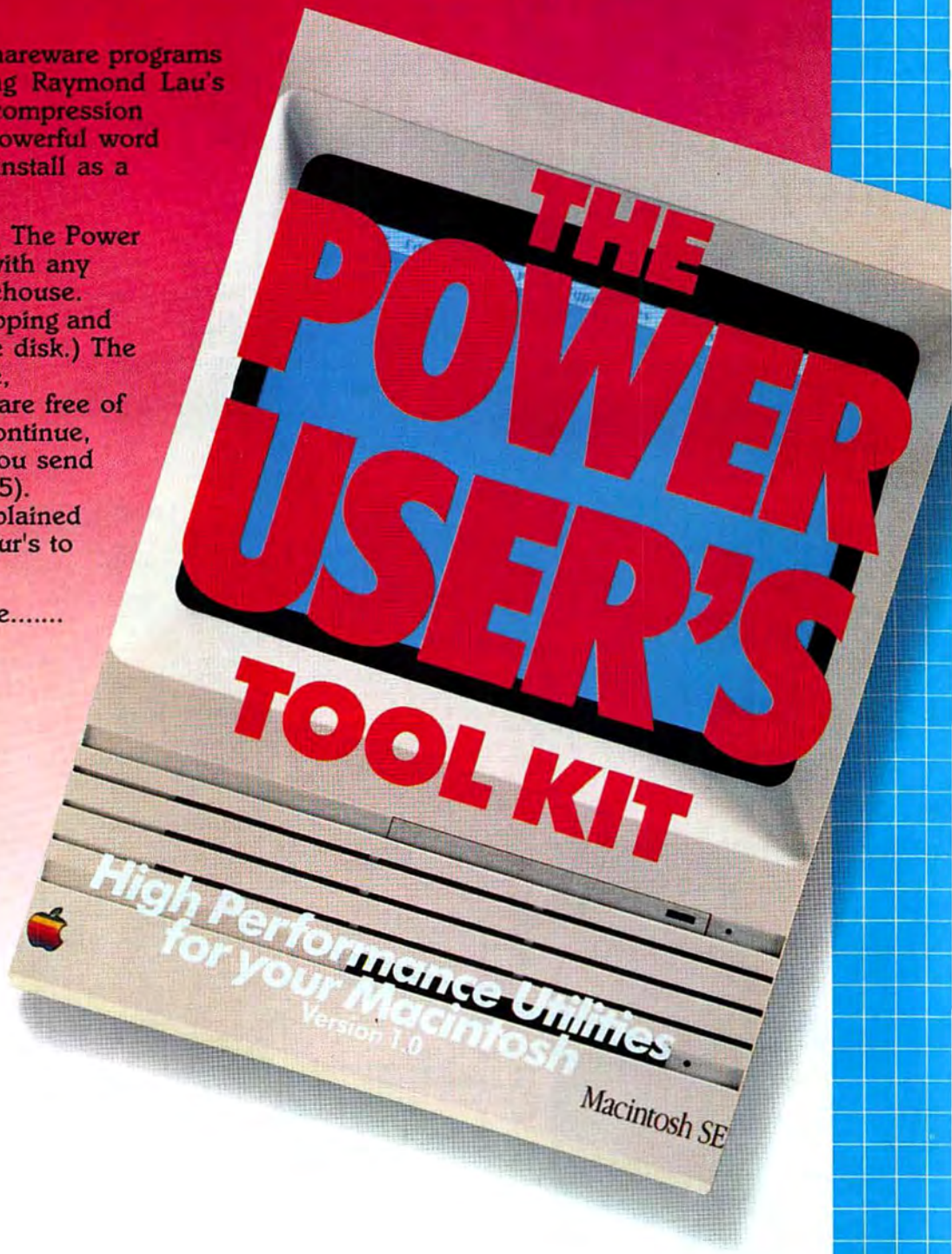
MACWORLD

FREE

Seventeen of the best Shareware programs available today including Raymond Lau's sensational StuffIt file compression utility. There's even a powerful word processor that you can install as a desk accessory.

And here's the best part. The Power User's Tool Kit is free with any purchase from MacWarehouse. (You pay only $1.50 shipping and handling if you want the disk.) The programs are Shareware, so you can try the software free of charge. If you wish to continue, some authors ask that you send them a small fee ($5 - $25). All of the details are explained on the disk, which is your's to keep anyway.

from MacWarehouse.....



OVERNIGHT DELIVERY

ONLY $3.00
(see details below)

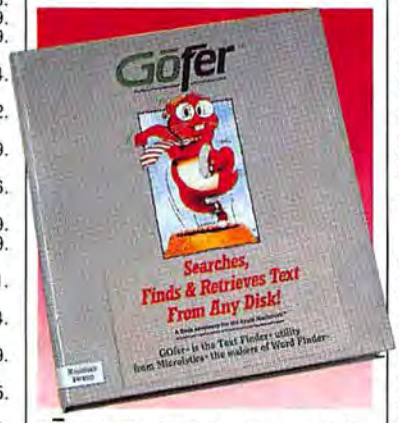
PC Tools Deluxe For The Macintosh (Central Point Software) – Now the world's best-selling utilities are available for the Mac . . . features UNDELETE, HARD DISK BACKUP, SMART LOCATE, FILE ENCRYPTION AND COMPRESSION, DISK RECOVERY and TRACK BLOCK EDITOR. Everything you need to keep your data safe and secure. *(utilities)* **$40.**

HYPERWARE

Activision
Hyperware Birthday Bundle - includes Business Class & Focal Point ..... 48.
Focal Point II ..... 89.
Reports! for HyperCard ..... 59.
Bantam
Complete HyperCard Handbook ..... 24.
BrainPower
ArchiText ..... 182.
Bright Star Technology
HyperAnimator ..... 89.
DataDesk
HyperDialer ..... 26.
Hyperpress Publishing
Script Expert ..... 49.
Icon Factory ..... 29.
MacroMind
VideoWorks II HyperCard Driver ..... 61.
MicroMaps
HyperAtlas ..... 64.
Power Up
HyperTutor ..... 29.
Softworks, Inc.
HyperTools #1 or #2 ..... ea 65.
Symmetry
HyperDA ..... 38.

UTILITIES

Affinity
Tempo II ..... 89.
Berkeley System Design, Inc.
Stepping Out II ..... 52.
Beyond, Inc.
MenuFonts 2 ..... 32.
CE Software
DiskTop 3.0.2 ..... 27.
QuicKeys *(new macro programmer)* ..... 54.
Central Point
Copy II Mac *(with MacTools)* ..... 20.
PC Tools Deluxe For Mac ..... 40.
Design Software/Electronic Arts
DS Backup ..... 49.
Emerald City Software
Lasertalk 1.0 ..... 187.
Fifth Generation
PowerStation ..... 32.
Suitcase 2.0 ..... 44.
ICOM Simulations
On Cue ..... 36.
Kent Marsh
MacSafe or NightWatch ..... ea 89.
LaCie
SilverServer ..... 99.
Mainstay
Capture ..... 42.
TypeNow ..... 30.
Microlytics
GOfer ..... 45.
Olduvai
ClipShare ..... 109.
FontShare ..... 149.
Icon-It! ..... 40.
MultiClip ..... 45.
PCPC
HFS Backup 3.0 ..... 54.



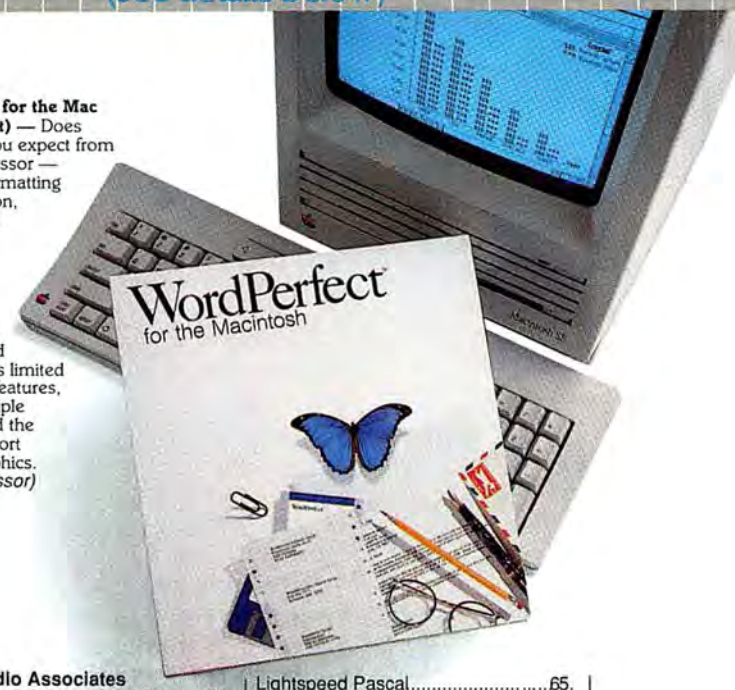
GOfer™ (Microlytics) — The new high speed text-retrieval accessory from Microlytics. Summon GOfer™ with one keystroke to search out information in your disk files. Enter one or two words and have a document at your fingertips within seconds! Works with almost any file. *(utilities)* **$45.**

Simon and Schuster
Fully Powered Mac ..... 24.
Software Power Company
PowerOP 1.4 ..... 39.
SuperMac
DiskFit or SuperSpool 5.0 ..... ea 54.
SuperLaserSpool 2.0 ..... 82.
Symantec Corporation
Symantec Utilities for Macintosh ..... 59.

DESK ACCESSORIES

Affinity
AffiniFile ..... 46.

AVAILABLE NOW!
MacSnap 1 Meg surface mount CMOS SIMMs for the Macintosh Plus, SE and Mac II (**Dove**) Expand your Plus or SE to 2560K using **MacSnap 2S**. Preserves future expandability. **$750.** For Maximum memory in the Plus and SE, or a 4 Meg expansion for the Mac II, the **MacSnap 4S** utilizes state of the art, low profile 1 Meg surface mount CMOS SIMMs. **$1488.** The **MacSnap 8S** expands the Mac II to 8 megs for the ultimate in power and memory. *(memory upgrades)* **$2975.** Included with each MacSnap Product is the high-performance RamSnap software utility.



WordPerfect for the Mac (WordPerfect) — Does everything you expect from a word processor — automatic formatting and pagination, macros, mail merge, indexing, veritcal text centering, footnoting, spell-checking, and outlining. Has limited page layout features, such as multiple columns, and the ability to import and size graphics. *(word processor)* **$185.**

Allan Bonadio Associates
Expressionist 2.0 *(equation edtr)* ..... 79.
Borland
Sidekick 2.0 ..... 65.
Exodus Software
Retriever ..... 59.
Greene
QuickDEX ..... 32.
Solutions
SmartScrap & The Clipper ..... 35.
TENpointO
Open IT! ..... 49.

LANGUAGES

Borland
Turbo Pascal ..... 65.
Turbo Database Mac ..... 66.
Consulair
68000 Development System ..... 59.
Manx Software Systems
Aztec C ..... 65.
Aztec C+SDB ..... 99.
Microsoft
Basic Interpreter 3.0 ..... 62.
QuickBasic ..... 74.
SmethersBarnes
Prototyper ..... 72.
Symantec
CAPP's Lightspeed C or Pascal ..... 49.
Lightspeed C 3.0 ..... 95.
Lightspeed Pascal ..... 65.
Zedcor
ZBasic 5.0 ..... 99.

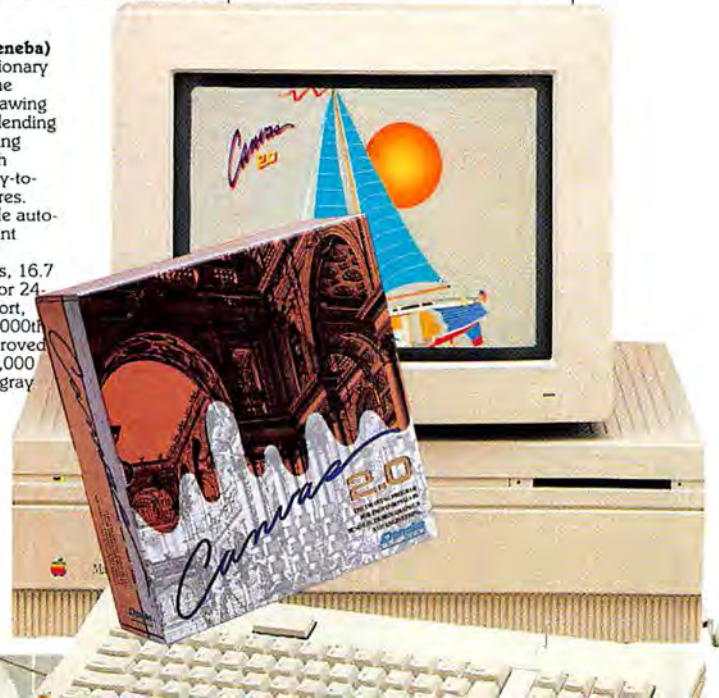
COMMUNICATIONS

CE Software
QuickMail ..... 165.
CompuServe
CompuServe Navigator ..... 45.
Computer Applications
II In A Mac ..... 109.
DataVIZ
MacLink Plus w/Cable ..... 145.
Dow Jones
Desktop Express ..... 95.
FreeSoft
Red Ryder 10.3 ..... 55.
Hayes
Smartcom II *(communications)* ..... 88.
Peripherals Computers & Supplies
Versa Term Pro ..... 199.
Software Ventures
Microphone II ..... 225.
SuperMac
Acknowledge ..... 349.
Traveling Software
LAP-LINK ..... 84.

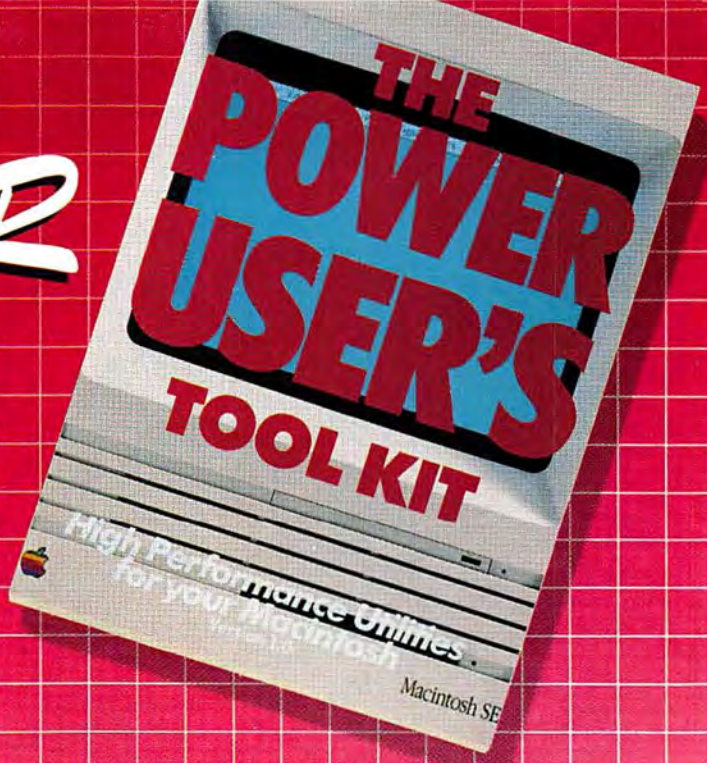
DATABASE SOFTWARE

Acius
4th Dimension ..... 489.

Canvas 2.0 (Deneba) — This revolutionary upgrade sets the standard for drawing programs by blending powerful drawing capabilities with convenient easy-to-use paint features. Features include auto-trace, multi-point Bezier curves, unlimited layers, 16.7 million colors for 24-bit Mac II support, hairlines to 1/1,000th of an inch, improved precision to 64,000 dpi, PostScript gray scales in one-degree increments, TIFF and bit-map editing, and zoom capacity ranging from 3% to 3,200%. *(graphics)* **$169.**



FREE OFFER



The MacWarehouse technical staff and the publishers of the popular Power User's Manual have put together a great new disk of utilities, desk accessories and applications. THE POWER USER'S TOOL KIT. You'll find yourself coming back to these handy programs again and again. There's even a powerful word processor you can install as a desk accessory.

And here's the best part. The Power User's Tool Kit is free with any purchase from MacWarehouse. You pay only $1.50 for shipping and handling (if you want the disk). The programs are shareware, so you can try the software free of charge. If you wish to continue, some authors ask that you send them a small fee ($5 – $25). Some of the programs are absolutely free. All of the details are explained on the disk, which is yours to keep anyway.

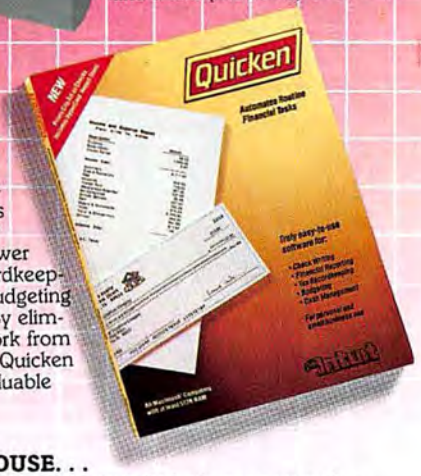
FREE CATALOG

But that's not all. You'll also receive the brand new MacWarehouse catalog. We've added hundreds of new products and updated all the information from our previous catalogs to bring you the latest answers to your questions about compatibiliy, copy protection, and features. The catalog will be included with your order, or you can mail us the coupon below for your free copy.

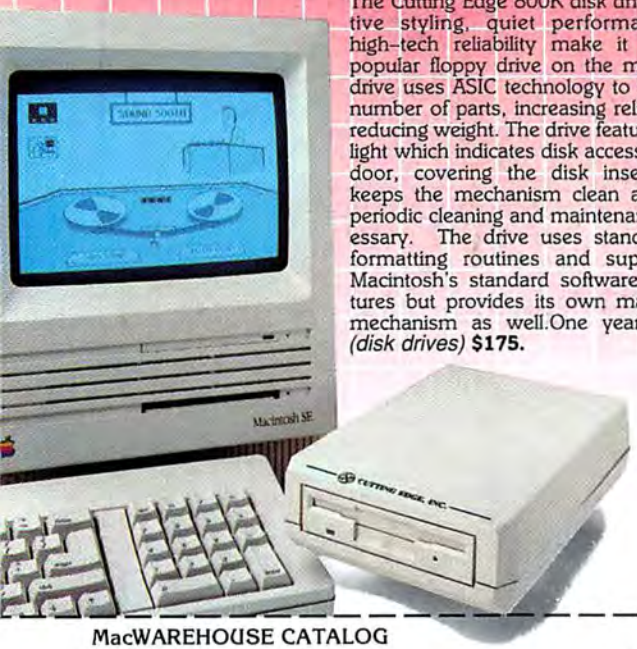
Take a look at the MacWarehouse specials and call us with your order to receive your free catalog and THE POWER USER'S TOOL KIT.

SmartOne 2400/1200XMAC Modem (Best Data) — Receive electronic mail, check out stock portfolios or flight information and reservations. . . the SmartOne's possibilities are endless. Features include Quicklink, MacNet, Compuserve software and cable, auto answer/auto dial capabilities, full Hayes compatibility, a two year warranty, a national technical support hotline and more. *(modems)* **$169.**

Quicken (Intuit) — Forget financial hassles with Quicken - the fast, easy way to do your personal or small business finances. Quicken's screens look and act just like your checkbook. Offers the power of check writing, tax recordkeeping, financial reporting, budgeting and cash management. By eliminating tedious clerical work from managing your finances, Quicken will save you hours of valuable time. *(finance)* **$35.**



New 800K Drive (Cutting Edge) — The Cutting Edge 800K disk drive's attractive styling, quiet performance, and high-tech reliability make it the most popular floppy drive on the market. The drive uses ASIC technology to reduce the number of parts, increasing reliability and reducing weight. The drive features an LED light which indicates disk access. A hinged door, covering the disk insertion slot, keeps the mechanism clean and makes periodic cleaning and maintenance unnecessary. The drive uses standard Apple formatting routines and supports the Macintosh's standard software eject features but provides its own manual eject mechanism as well.One year warranty *(disk drives)* **$175.**



CHOOSE MacWAREHOUSE. . .

For price, quality and service you won't find a better source for your Mac needs. If you don't see it here, give us a call. Most likely we'll have it in stock. Our sales representatives are here to help!

I'm Kerry, call me at:

MacWAREHOUSE™

1-800-255-6227

(1-800-ALL MACS)
Inquiries: 201-367-0440
Canada: 800-255-6447
FAX # 201-905-9279
MONDAY THRU FRIDAY
8A.M. TO 11 P.M.
(Eastern Time)
SATURDAY 8 A.M. TO
8 P.M. (Eastern Time)
NOW OPEN SUNDAYS!
8 A.M. to 8 P.M.
(Eastern Time)

MacWAREHOUSE CATALOG
1690 Oak Street
P.O. Box 1579
Lakewood, NJ 08701

FCA9

I don't need to order right now, but please RUSH me my FREE copy of the brand new MacWarehouse Catalog.

NAME _____

ADDRESS _____ APT# _____

CITY _____ STATE _____ ZIP _____

Circle 78 on reader service card

FROM MacWAREHOUSE™

DiskFit 1.41
DiskFit makes it easy to back up or restore files on your hard disk drive. SmartSet feature provides for intelligent, incremental backups—automatically. The fastest backup available. *(utilities)* **$54.**

For the Record
Contains over 200 categories to organize your personal, financial and legal records and makes them easy to retrieve. Both an estate planning and personal productivity tool. *(business)* **$29.**

WillMaker
Prepare you own valid will without a lawyer. WillMaker asks a series of questions on-screen covering major will provisions, then creates your personal legal document around the answers. *(business)* **$35.**

New Business Clip Art
Create professional publications and presentations with over 150 sharp, contemporary PostScript images. Contains computers, occupational and public symbols and much more! *(graphics)* **$65.**

Electronic Arts
Studio/8 ..... 319.
MicroIllusions
Photon Paint ..... 179.
MicroMaps
MacAtlas Pro *(MacDraw format)* ..... 129.
Silicon Beach
Digital Darkroom or Super 3D .... ea 159.
SuperPaint 1.1 ..... 79.
Solutions
Curator *(graphics management)* ..... 79.
SuperMac
PixelPaint ..... 209.
Symmetry
PictureBase 1.2 ..... 58.
T/Maker
ClickArt Business or Publications ..... 28.
ClickArt EPS Illustrations ..... 75.
Zedcor
DeskPaint 2.0 ..... 69.

DESKTOP PUBLISHING PRODUCTS

Adobe
Illustrator 88 ..... 319.
Aldus
PageMaker 3.0 ..... 399.
Broderbund
DTP Advisor ..... 49.
Letraset
Image Studio or Ready,Set,Go! 4 .. 279.
ReadySetShow ..... 189.
Olduvai
Read-It! 2.0 *(OCR)* ..... 199.
Solutions
SuperGlue 1.05 ..... 52.
Springboard
Springboard Publisher ..... 114.
Target
Scoop ..... SPECIAL 189.

NETWORKING PRODUCTS

Connect Inc.
MacNet ..... 43.
Farallon
PhoneNET ..... Call.
Timbuktu 2.0.1 ..... 81.
Nuvotech
TurboNET ..... 27.
SuperMac
Network DiskFit ..... 199.
TOPS
TOPS 2.0 ..... 159.

FONTS

Adobe
Fonts *(various volumes)* ..... Call.
Altsys
Fontastic Plus 2.0 ..... 54.
Olduvai
Art-Fonts ..... 59.
Postcraft
Laser FX ..... 115.

CAD/CAM

Graphsoft
MiniCad 4.0 ..... 375.
MiniCad Plus ..... Call.
Innovative Data
MacDraft 1.2a *(power drafting)* ..... 155.
Dreams ..... 319.
Micro CAD/CAM
MGMStation *(professional CAD)* .... Call.

FINANCIAL AND ACCOUNTING SOFTWARE

Aatrix
Payroll 3.01 ..... 99.
Payroll PLUS ..... 169.
Bedford
Simply Accounting ..... 219.
Chang
Rags to Riches 3 Pak ..... 289.
Intuit
Quicken ..... 35.
MECA
Managing Your Money ..... 129.
Monogram
Business Sense ..... 279.
Dollars & Sense ..... 81.
ShopKeeper Software
Bill-It 1.06 ..... 99.
Softview
MacInTax ..... Call.
TaxView Planner ..... 49.
Survivor
MacMoney 3.02 ..... 62.

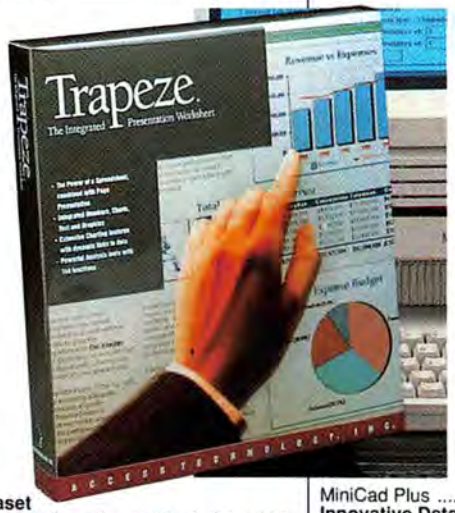
STATISTICAL ANALYSIS

Abacus Concepts
StatView II *(req. Mac II, or Plus/SE w/68881 co-processor)* ..... 369.
StatView SE+Graphics ..... 229.
BrainPower
StatView 512+ *(requires 512k)* ..... 175.
D2 Software
MacSpin 2.0 ..... 165.
Odesta
Data Desk Professional ..... 295.
Select Micro Systems, Inc.
Exstatix ..... 219.

MUSIC AND SOUND

Coda
MacDrums ..... 35.
Electronic Arts
Deluxe Music Construction 2.0 ..... 61.
Farallon Computing
MacRecorder *(records sound)* ..... 139.
Great Wave
ConcertWare + MIDI 4.0 ..... 79.
Impulse
Impulse Audio Digitizer w/SoundWave ..... 149.
Opcode Systems
Music Mouse ..... 39.

SmartScrap & The Clipper(Solutions) — Improved scrapbook searches for graphics by keyword or picture. Select a part of the graphic with a bitmap lasso or selection marquee. Trim or scale graphics with the Clipper. Handles full Color. *(desk accessories)* **$35.**
SuperGlue (Solutions) — Standard for sharing formatted text and graphics among applications. Print to disk rather than to printer from an application to create Glue format files. Cut, paste, resize graphics and proportions stay intact. Send images through e-mail or LAN. *(desktop publishing)* **$52.**



Trapeze 2.1(Access Technology) — An integrated presentation worksheet which combines the power of a spreadsheet with sophisticated, presentation-quality charts. Simple calculations or complex data analysis together with WYSIWYG text, charting, and graphics on the same page give your analysis and presentations dynamic emphasis. *(business)* **$159.**

Read it! OCR (Olduvai) Brings Optical Character Recognition to your Mac. Use any scanner to input virtually any printed text, including typeset and laser printed documents. New "EasyLearn" superfast training option, built-in speech option and file export to any Macintosh application. Requires only one Megabyte of RAM. *(desktop publishing)* **$199.**

MORE FOR YOUR MONEY...

Ashton-Tate
dBase Mac ..... 295.
Borland
Reflex Plus ..... 165.
Claris
FileMaker II ..... 239.
Fox Software
FoxBASE+/Mac ..... 209.
Odesta
Double Helix II ..... 349.
GeoQuery ..... 299.
Park Row Incorporated
Publish or Perish ..... 21.
Personal Bibliographic
Pro-Cite ..... 199.
Software Discoveries
Record Holder Plus ..... 45.

BUSINESS SOFTWARE

Access Technology
Trapeze 2.1 ..... 159.
Ashton-Tate
Full Impact ..... 249.
Bravo
MacCalc ..... 79.
BreakThrough Productions
Market Master ..... 185.
Claris
MacProject II ..... 395.
Cognition Technology
MacSMARTS 3.2 ..... 135.

SilverServer (La Cie)— These powerful Macintosh utilities lets local and remote users share hard disks and modems . . . anyplace . . . anytime. Requires no user participation at remote end. Provides complete hard disk management, fast disk duplication, and network chatter. *(utilities)* **$99.**

Cricket
Cricket Graph *(advanced graphing)* 119.
Cricket Presents ..... 289.
MicroPlanning International
MicroPlanner Plus ..... 325.
Microsoft
Excel 1.5 ..... 249.
PowerPoint 2.0 ..... Call.
Works 2.0 ..... 189.
nView Corporation
MacViewFrame ..... 1299.
Nolo Press
For the Record ..... 29.
WillMaker ..... 35.
North Edge Software
Timeslips III *(time/expense tracking)* 119.
Satori
Bulk Mailer 3.2 ..... 79.
Select Micro Systems
FlowMaster ..... 369.
Shana Enterprises
FastForms! Construction Kit ..... 89.
Softview
FormSet ..... 59.
MacInUse ..... 42.

Suitcase 2.0 (Fifth Generation) — Packed with power, control, and flexibility — this font and desk accessory removes limitations on the number of fonts for DAs you can have giving you access to as many as 255 items in each. Has the ability to autoload font/DA files at startup. *(utilities)* **$44.**

Spectrum Digital
TrueForm ..... 269.
Symantec
More II ..... Call.

WORD PROCESSORS AND OUTLINERS

Ashton-Tate
FullWrite Professional ..... 269.
Claris
MacWrite 5.0 ..... 105.
Microsoft
Word 4 *(updated word processor)* .. 249.
Write 1.0 *(new word processor)* ..... 113.
Niles & Associates
End Note ..... 85.
Paragon
Qued/M ..... 109.
Symmetry
Acta Advantage w/DA ..... 65.
T/Maker
WriteNow 2.0 *(word processor)* ..... 109.
WordPerfect Corp.
WordPerfect ..... 185.

SPELLING CHECKERS

Aegis
Doug Clapp's Word Tools ..... 42.
A.L.P.
MacProof 3.0 ..... 115.
Deneba Software
Spelling Coach 3.0 ..... 54.
Spelling Coach Pro ..... 109.
Electronic Arts
Thunder *(spelling checker)* ..... 30.
Microlytics
Word Finder *(synonym finder)* ..... 35.
Sensible Software
Sensible Grammar ..... 55.
Working Software
Spellswell 2.0 *(spelling checker)* ..... 45.

GRAPHICS

3G Graphics
Images w/Impact
Graphics & Symbols 1 ..... 59.
New Business Clip Art ..... 65.
Aba Software
Draw It Again Sam 2.0 ..... 79.
GraphistPaint (B&W) ..... Call.
GraphistPaint II ..... 289.
Aldus
Freehand ..... 349.
Broderbund
Drawing Table ..... 79.
PosterMaker Plus ..... 36.
Print Shop *(cards and more)* ..... 36.
VideoWorks II ..... 175.
CE Software
CalendarMaker ..... 27.
Claris
MacDraw II 2.0 ..... 329.
MacPaint 2.0 ..... 105.
Cricket
Cricket Draw ..... 169.
Cricket Paint ..... 99.
Pict-O-Graph *(color on the Mac II)* .. 105.
Deneba
Canvas 2.0 ..... 169.
Dream Maker
Cliptures, Vol. 1 Business Images .... 97.
MacGallery ..... 29.
Dubl-Click
Wet Paint - Both Volumes ..... 45.

MWA9

- VISA and MASTERCARD accepted. No surcharge.
- Your credit card will not be charged until your order is shipped.
- If we must 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. Cash, money order, or cashier's check.
- Corporate purchase orders accepted subject to credit approval.
- All products are covered by a 120 day limited warranty.*
- CT residents add 7.5% sales tax. NJ residents add 6.0% sales tax.

SHIPPING

- All orders add $3.00 per order. We ship Airborne Express overnight unless UPS ground delivers overnight. (Some rural areas require an extra day.)
- Orders placed by 5:00 pm Eastern time (weekdays) for "in stock" items ship same day (barring 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). Charge is $6 including shipping.
- Alaska, Hawaii, outside continental U.S., APO/FPO call 201-367-0440 for information.

*Defective software replaced immediately. Hardware replaced or repaired at our discretion.

I'm Kerry, call me at:

1-800-255-6227

(1-800-ALL-MACS)

Inquiries: 201-367-0440 Canada: 800-255-6447 FAX # 201-905-9279

MacWAREHOUSE™

1690 Oak Street, P.O. Box 1579,
Lakewood, NJ 08701
MONDAY THRU FRIDAY 8 A.M.TO 11 P.M. (Eastern Time)
SATURDAY 8 A.M. to 8 P.M. (Eastern Time)
NOW OPEN SUNDAYS! 8 A.M. to 8 P.M. (Eastern Time)

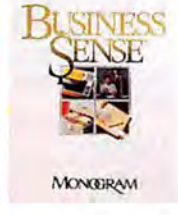
© Copyright 1988 MicroWarehouse, Inc. MacWAREHOUSE™ is a division of MicroWarehouse, Inc. MacWAREHOUSE™ and MicroWarehouse are trademarks of MicroWarehouse, Inc. Item availability and price subject to change without notice.

Managing Your Money
A fully integrated software program addressing every aspect of personal and small business finance. Write and print checks, set up a personal budget, estimate your taxes and more ! *(finance)* **$129.**

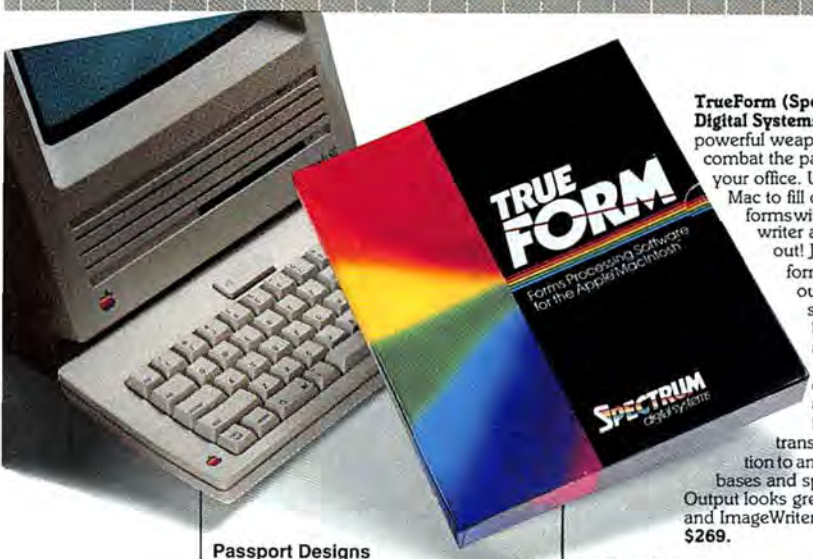
Symantec Utilities for Macintosh
A set of six utility programs... from crashed disk and deleted file recovery to hard disk partitioning and optimization. Easy to use with powerful protection for your valuable data. *(utilities)* **$59.**

SuperLaserSpool 2.0 — SuperLaserSpool lets you use your Mac while printing documents — no more waiting! LaserQueue accessory lets you control where and when your document is printed - even allows you to preview your spooled documents. *(utilities)* **$82.**

Business Sense
The easiest and most powerful integrated accounting program for businesses up to 100 employees. GL, AR, AP, Payroll, Invoicing and Budgeting are completely integrated and designed *from scratch* for the Macintosh. *(finance)* **$279.**



OVERNIGHT ... ONLY $3.00



TrueForm (Spectrum Digital Systems) — A powerful weapon to combat the paper war in your office. Use your Mac to fill out existing forms without a typewriter and white out! Just scan the form and fill it out on your screen! Each blank is automatically recognized as a data field - transfer information to and from databases and spreadsheets. Output looks great on Laser and ImageWriters. *(business)* **$269.**

Passport Designs
Master Tracks Pro ..... 259.
NoteWriter ..... 169.

EDUCATIONAL/ PERSONAL

Bright Star Technology
Alphabet Blocks ..... 32.
Talking Tiles ..... 75.
Broderbund
Calculus ..... 60.
Davidson
Math Blaster ..... 27.
Speed Reader II ..... 39.
Great Wave
Kids Time ..... 26.
Learning Company
Reader Rabbit ..... 33.
Mindscape
Perfect Score S.A.T. ..... 46.
Palantir
MacType ..... 31.

LapLink Mac Release 2 (Traveling Software) — Moves files between Macintosh and IBM compatibles! New Release 2 adds a series of file translators that convert popular word processing files into MacWrite and MS-Word Macintosh format. Its fast (57,600 baud), easy to use and versatile. Just connect the LapLink Mac universal cable to the PC and the Mac and you're moving files in both directions. Comes complete with translators, cable, 3.5" and 5.25" diskettes. *(communications)* **$84.**

Simon & Schuster
Typing Tutor IV ..... 35.

GAMES

Activision
Shanghai *(strategy)* ..... 24.
Artworx
BRIDGE 5.0 ..... 22.
GrailQuest ..... 19.
Beyond Dark Castle ..... 27.
Simon & Schuster
Star Trek:Kobayashi Alternative ..... 24.
Spectrum HoloByte
Falcon ..... 32.
PT109, Gato ..... ea. 26.
Solitare Royale ..... 20.
Tetris ..... 23.
The Software Toolworks
The Hunt for Red October ..... 29.

GrailQuest
An adventure game with adult situations and sensibilities. Interactive graphics and digitized sound put you inside the legendary world of King Arthur and Knights of the Round Table. Requires 800K disk drive. *(entertainment)* **$19.**

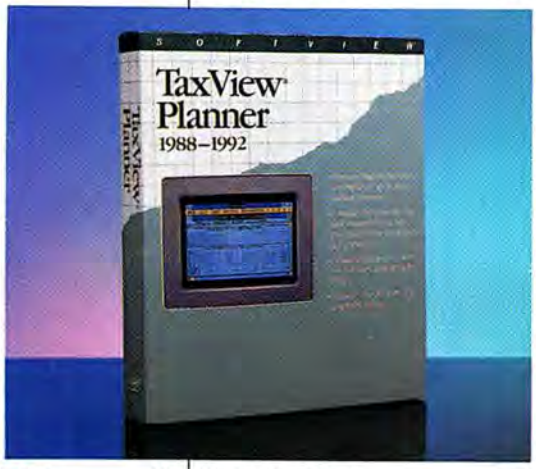
Payroll PLUS
This complete payroll program offers Federal, State, Local, and FICA plus 8 user-defined miscellaneous deductions. Calculates hourly wages or salary, prints paychecks and more. *(finance)* **$169.**

The Hunt for Red October
The Ultimate in Submarine Combat Simulation. You command Red October, the latest in Soviet ballistic terror. The U.S. wants you. The Russians must stop you. The chase is on. *(entertainment)* **$29.**

DISK DRIVES/ MEMORY UPGRADES

1 MEG SIMMS ..... Call.
AST
Mac286 Co-Processor *(Mac II)* ..... 1079.
CMS
CMS TapeStack 60 Meg ..... Call.
MacStack 20 Meg ..... 569.
MacStack 40 Meg ..... 789.
MacStack 60 Meg ..... 849.
Cutting Edge
800K Disk Drive "NEW" ..... 175.
Wedge XL 30 Plus ..... 629.

TaxView Planner 1988-1992 (Version 1.0) (Softview) — Helps users optimize tax and investment decisions by calculating the one to five-year liability of up to five alternative financial strategies. Specially-designed worksheets assist in summarizing financial information from which the program automatically calculates nineteen significant taxable amounts *(finance)* **$49.**



Broderbund
Ancient Art of War At Sea ..... 27.
Shufflepuck Cafe ..... 22.
Where in the World is Carmen San Diego ..... 25.
Bullseye
Ferrari Grand Prix *(racing)* ..... 32.
P51 Mustang ..... 32.
Casady & Greene
Crystal Quest II ..... 26.
Centron Software, Inc.
BlackJack Ace ..... 27.
Crapsmaster or Roulette ..... 27.
Ciasa
Handwriting Analyst ..... 29.
Discovery Software
Arkanoid ..... 28.
Electronic Arts
Chessmaster 2000 *(deluxe chess)* ... 29.
Patton vs. Rommel *(strategy)* ..... 15.
Scrabble ..... 27.
Starfleet I: The War Begins ..... 37.
Chuck Yeager Adv. Flight Trainer ..... 32.
Epyx
Sub Battle Simulator ..... 29.
Infocom
Leather Goddess of Phobos ..... 24.
Micro Sports
MSFL Pro League Football ..... 32.
Mindscape
Balance of Power, Deja Vu - ..... ea 30.
Shadowgate, Uninvited - ..... ea 30.
PBI
Strategic Conquest Plus ..... 46.
PCAI
MacCourses ..... 32.
MacGolf 2.0, MacRacquetball - .... ea 35.
Road Racer ..... 39.
Primera
Smash Hit Racquetball II ..... 22.
Sierra On-Line
Leisure Suit Larry ..... 23.
Silicon Beach
Apache Strike, Dark Castle - ..... ea 27.
Wedge XL 45 Plus ..... 829.
XL 30 Internal ..... 505.
XL 45 Internal ..... 645.
Dayna Communications
DaynaFile single 360K *(5 1/4")* ..... 529.
Dove
MacSnap 2S ..... 750.
MacSnap 2SE ..... 439.
MacSnap 4S ..... 1488.
MacSnap 8S ..... 2975.
MacSnap SCSI Interface Port ..... 129.
MacSnap 524 *(512k to 1 meg)* ..... 299.
MacSnap 524S ..... 379.
MacSnap 548 *(512k to 2 meg)* ..... 559.
MacSnap 548S ..... 599.
MacSnap Plus 2 ..... 439.
MacSnap 1024
Memory Expansion Board ..... Call.
MaraThon 020 Accelerators ..... Call.
Everex
EMAC 20D *(hard drive)* ..... 520.
EMAC 20D Deluxe *(0 footprint)* ..... 585.
EMAC 40D Deluxe *(0 footprint)* ..... 995.

Arkanoid (Discovery Software) — The #1 Coin-Op Game has come home, offering the breathtaking animation, digitized sound, and dazzling game play you've been seeking! Features Multiple Levels, Arcade High-Score Table, Variable Skill levels and more! Guaranteed to push you to the limit . . . and beyond! *(entertainment)* **$28.**

FROM MacWAREHOUSE™

Spelling Coach Professional
Complete on-line spelling and reference system includes Merriam-Webster's 158,000 word dictionary, 245,000 synonym thesaurus, hyphenation, and a dictionary with 85,000 real definitions! *(spelling)* **$109.**

BASF 3.5" High Density Micro Diskettes
High capacity diskettes with no capacity for error. Every bit, every bite, on every track of each BASF 3.5" Micro Diskette is certified 100% error-free, warranted for life. *(media)* **$16.**

MacMoney 3.02
This versatile, powerful and intuitive accounting package from Survivor Software is a full double-entry personal bookkeeping system and financial planning tool. Integrates with MacInTax. *(finance)* **$62.**

MiniCad Plus
A professional level CAD and Analysis program. Integrated 2D & 3D in the same win-dow. Integrated spreadsheet also in same window. Programmable macros. Mac Plus compatible *(cad/cam)* **Call.**

EMAC 60T *(tape backup)* ..... 895.
EMAC FS-102 ..... 2495.
Impact 40 MB Hard Drive ..... Call.
Impact 66 MB Hard Drive ..... 999.

PCPC
MacBottom HD21 (SCSI) ..... Call for
MacBottom HD32 (SCSI) ..... special
MacBottom HD45 (SCSI) ..... 859.
MacBottom HD21 w/Modem ..... 779.

Fanny Mac QT (Mobius Products) — Safe, effective cooling for your Mac with low-profile, ultra-quiet fan. Reduces internal operating temperatures. Includes built-in surge protector. *(accessories)* **$60.**

MacBottom HD32 w/Modem ..... 829.
MacBottom HD45 w/Modem ..... 979.
WSI *(With SCSI Interface)* ..... 269.

Peripheral Land, Inc.
Infinity Turbo 40 Meg ..... 1299.
PL 30 Meg Turbo Drive ..... 819.
PL 50 Meg Turbo Drive ..... 919.

MODEMS

Abaton
InterFax 12/48 ..... Call.
Best Data Products
SmartOne 2400/1200 ..... 169.
Everex
EMAC 2400 ..... 225.
Hayes
Smartmodem 1200 ..... 299.
Smartmodem 2400 ..... 449.
Smartmodem 9600 *(V series)* ..... 985.
Migent
Pocket Modem *(ext. 300/1200 baud)* 115.
Prometheus
Promodem 2400 ..... 309.
Shiva
NetModem 1200 ..... 359.
Supra
Supra Modem 2400 ..... 149.
US Robotics
Courier 1200 Modem ..... 199.
Courier 2400 Modem ..... 349.

BLANK MEDIA

B.A.S.F.
DS/DD (box of 10) ..... 16.
Goldstar
DS/DD *(box of 10)* ..... 15.
Sony
DS/DD *(box of 10)* ..... 18.
SS/DD *(box of 10)* ..... 13.

INPUT/OUTPUT

Abaton
ProPoint ..... 89.
Asher Engineering
Turbo Trackball *(512/Plus or SE/II)* .. 69.
Cutting Edge
CE-105 ADB Keyboard ..... 135.
DataDesk
Mac 101 Keyboard ..... 139.
Kensington
New Turbo Mouse ..... 119.
Koala
MacVision *(digitizer)* ..... Call.
Mouse Systems
A+ Mouse *(512, Plus)* ..... 65.
A+ Mouse ADB *(SE, II)* ..... 85.
New Image

DeskPaint 2.0 and DeskDraw (Zedcor)
The Mac's most powerful paint DA now bundled with the Mac's most powerful draw DA - includes Auto-Trace, Browse and on-line help. MacPaint, TIFF and PICT compatible. *(graphics)* **$69.**
ZBasic 5.0 (Zedcor)
New and improved version - 256 colors, all toolbox routines and MS basic conversion program now bundled with The Program Generator, a draw-like editor that takes the grunt work out of writing REAL Macintosh applications. *(language)* **$99.**

MacScan *(feed-thru)* ..... 1189.
MacScan *(flatbed)* ..... 1749.

Seikosha America
Seikosha Printer *(dot-matrix)* ..... 238.
Summagraphics
Bit Pad Plus ..... 329.
ThunderWare
ThunderScan 4.0 *(incl. Powerport)* . 199.

ACCESSORIES

Computer Friends, Inc.
MacInker/Black Ink ..... 3.
MacInker *(IW & IW II)* ..... 41.
Ergotron

MAC-101 Keyboard (DataDesk)— Features 101 keys including a numeric keypad, a separate T-shaped cursor keypad, Cancel Key, Option and Command keys at both ends, definable function keys, plus scrolling, page control, and zooming keys. Comes with free macro software and manufacturer's two year warranty. *(input/output)* **$139.**

MacTilt or MacTilt SE ..... 68.
Mouse Cleaner 360 ..... 15.
The Muzzle *(for the SE)* ..... 62.

I/O Designs
ImageWare II Carrying Case ..... 49.
ImageWriter LQ Ribbon ..... Call.
IW II Ribbons-Black or Color ..... 5.
Macinware Plus Carrying Case ..... 69.
Macinware SE Carrying Case ..... 79.
Ribbon for Seikosha – Black ..... 6.

Kalmar
Rolltop Cabinets
(45, 90, or 135 disks) ..... Call.

Kensington
Anti-Glare Filter ..... 33.
Apple Security Kit ..... 34.
Disk Drive Cleaning Kit ..... 20.
Mac II Monitor Cable Extension Kit ... 37.
Mac II Stand ..... 20.
MasterPiece Mac II ..... 105.
Modem/FAX Protector 20 ..... 25.
PowerTree SurgeProtectors ..... Call.
Printer Stand ..... 16.
System Saver ..... 64.
Super Base ..... 34.

Mobius Products
Fanny Mac QT ..... 60.

Omnium Corporation
Mac Desktop Workstation ..... 75.

Orange Micro
Grappler L/Q ..... 98.

Polaroid
Circular Polarizing Filter ..... 35.

Targus, Ltd.
Deluxe Plus/SE-XKB Case *(black)* ... 69.
ImageWriter II Case *(black)* ..... 49.
Mac Plus/SE Case *(black)* ..... 59.

I'm Kerry, call me at:

MacWAREHOUSE™

1-800-255-6227

OVERNIGHT DELIVERY: ONLY $3.

If you're already a MacWarehouse customer you know that nobody beats our service. Our helpful telephone staff is standing by, seven days a week. Place your order by 5:00 pm Eastern time (weekdays) and it's processed immediately for overnight delivery. Call us toll free right now.

Introducing Cricket Paint.

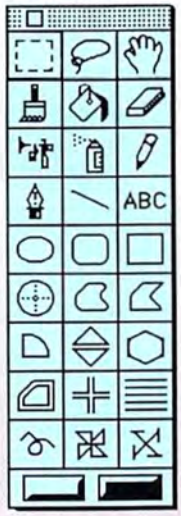
We've been asked why Cricket Software would introduce a black and white paint program when the whole world is making so much noise about color. Frankly, we feel it's obvious: There are more than 1.5 million* monochrome Macintosh® users — Apple® hasn't abandoned them and neither have we. Plus, we felt there was still a lot of room for improvement over the current best selling paint program.

So, we revved up our monochrome Macintoshes in the best Cricket Software tradition and developed the new standard: Cricket Paint.

Feature-rich power

Cricket Paint is loaded with features. Powerful features with more capabilities than you thought possible.

Our FreshPaint™ feature treats your newly painted artwork as an object, completely flexible until you deselect it to create "dry paint" bitmap images. Create, edit and output documents at resolutions from 72 dpi to 300 dpi.



Create your own textures and tools. Then save them for future use.

In addition to the standard Cricket Paint format, you can import or save your files in TIFF, MacPaint™, and PICT formats.

Another member of the First Family of Graphics

Cricket Paint is the latest in the Cricket family of graphics productivity software, Cricket Graph, Cricket Draw, Cricket Pict-O-Graph, Cricket Presents, Cricket Expression Device Drivers. Cricket Software. The leader in graphics productivity software.

*Based on market studies.

cricket software

Great Valley Corporate Center
40 Valley Stream Parkway, Malvern, PA 19355
(215) 251-9890

Apple, Macintosh, Macintosh Plus, Macintosh SE, and Macintosh II are registered trademarks of Apple Computer Inc. MacPaint is a trademark of CLARIS Corp.

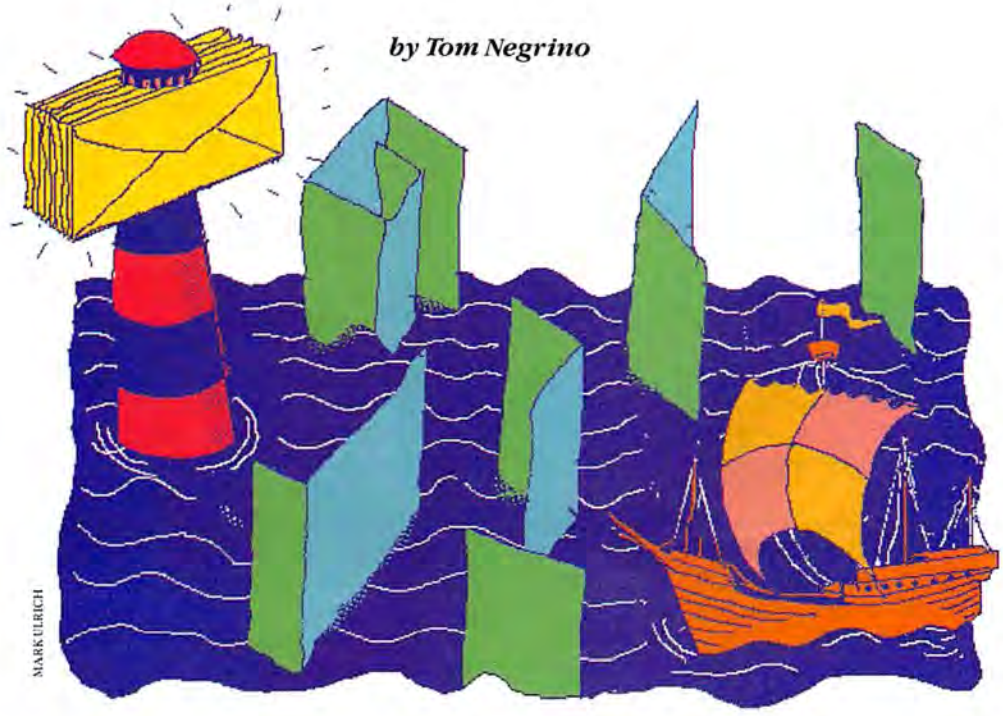
© Copyright 1988 Cricket Software, Inc.

Circle 538 on reader service card

Insights on CompuServe

A nearly painless guide to navigating the online maze

by Tom Negrino



MARK ULRICH

The first rule of online services is that every minute you spend connected, you're being billed for the service, whether you're actively doing something or just sitting there trying to figure out how to find the information you want. So the idea is to connect, accomplish what you want as quickly as possible, and log off.

Learning to access the wealth of information offered by CompuServe can be a confusing and frustrating experience, thanks to its command-driven interface. But these shortcuts and suggestions should help you become a satisfied user of the largest online service.

Tom Negrino is a partner in Third Wave, an Apple value-added reseller. He also runs a Macintosh consulting business, and is a member of the board of directors of the Los Angeles Macintosh Group.

Shaving Off Seconds

You can enter your user ID and password on the same line by separating them with a semicolon; for example, 70000,1212;password. This saves a few seconds in the log-on process. And you can configure your user profile (GO PROFILE) to jump directly into the EasyPlex electronic mail section if you have mail waiting when you log on.

Getting Around

CompuServe is built in a hierarchical fashion; that is, there are many different layers to the service. At the top is, not surprisingly, the TOP Menu, which lets you get to the many interest areas within the service, called *forums*. Inside each forum are *message sections* and *data libraries*. There can be up to 17 different message sections and data libraries within a forum. In message sections people post discussions to each other; data libraries store files available for downloading.

To delve directly into a particular forum, type **GO (forum name)** at any of the ! or : prompts. For example, type **GO ALDUS** to go to the Aldus Forum. Once you're in a forum, you can quickly enter a data library by typing **LIB** and the number of the library. For example, typing **LIB5** in MACPRO, the Macintosh Personal Productivity Forum, brings you to the library that has desk accessories in it.

One of the busiest areas on CompuServe is MAUG, the Micronetworked Apple User's Group. MAUG is where Apple II and Mac enthusiasts meet, and it consists of eight forums (see "MAUG's Forums").

The most active of the MAUG forums is MACPRO, where the general Mac discussions and programs are. Programmers hang out in APPDEV, and several software vendors (including Acius, Claris, CE Software, and TOPS) furnish online product support in APPVEND. HyperCard stacks have a forum of their own in APPHYPER, and you can find games and graphics in MACFUN.

Reading the Message Base

Any message left on a forum has a message header that looks something like this:

```
#:   80824 S8/Telecommunications
     31-Aug-88 05:06:18
Sb:  CompuServe
Fm:  Bill Cook (Sysop) 76703,1030
To:  Tom Negrino 73277,2325
```

The header's first two lines show the message's number, section, and when the message was posted. Then there is the subject line, and finally the sender's and recipient's names and user ID numbers. A message left in a forum is usually a part of an ongoing series of messages, called a *thread*. To get a listing of the current threads in the message base, type **SE**. This gives you the Section menu. Choose the

(continues)

Mathematics Made Easy!

Milo is the first math processor that combines mathematical calculations with graphing and word-processing capabilities. Milo effortlessly describes a problem, solves it, and graphs your solution. Our WYSIWYG interface allows you to easily manipulate expressions with a click of the mouse. No programming language required! Easily move your results to any word processor or desktop publishing application. Milo is the essential tool for all users of mathematics.

Introductory Retail Price $249.

Milo™

The Math Processor for the Macintosh®

PARACOMP

123 Townsend Street, Suite 310
San Francisco, CA 94107 (415) 543-3848

Works on all Macintoshes with at least 512K RAM.

©1988 Paracomp, Inc. Milo is a trademark of Paracomp, Inc. Macintosh is a registered trademark of Apple Computer, Inc.

Circle 229 on reader service card

MAUG's Forums

Forum	GO Code
Apple II and III Forum	GO APPTWO
Apple Developers Forum	GO APPDEV
Apple Users Group Forum	GO APPUG
Apple Vendor Forum	GO APPVEND
HyperCard Forum	GO APPHYPER or GO STACKWARE
Macintosh Arts & Entertainment Forum	GO MACFUN
Macintosh Business Forum	GO MACBIZ
Macintosh Personal Productivity Forum	GO MACPRO

sections you want to scan, then the thread numbers of the messages that interest you. A faster way is to type **READ NEW**. This displays all the messages you haven't read, in thread order.

Conversations on MAUG can be freewheeling, and the messages in a thread can quickly mutate away from the subject listed in the header. Since you want to spend as little time online as possible, it's a good idea to turn on the Capture Text function of your terminal-emulation software, let the messages scroll as fast as possible using the **SC** command, log off, and read the messages at your leisure.

To leave a message of your own, type **COM** to compose a new message, or type **REPLY** to answer a message you've just read. A prompt with a line number appears, followed by a colon. Type your message, pressing Return at the end of each line (no automatic word-wrap here). When your message is done, type **/EXIT** to get out of the Compose mode. Then type **POST** at the Post Action! prompt. You can send any message as private EasyPlex mail, rather than posting it on the public forum, by using the MA command instead of POST.

Scouting the Sections

To get a listing of the different message sections or data libraries, type **NA** at the Forum menu. Then choose the number of the area you want to look at. In APPVEND and MACPRO, there are matching libraries for each message section. Some of the most active message sections (with their section numbers) include Acius (2), CE Software (4), and Claris (14) in APPVEND; and Software (6), Hardware (7), and Telecommunications (8) in MACPRO. The data libraries are full of interesting software. In MACPRO, some of the busiest are LIB4 (Utilities) and LIB5 (DAs/F-keys/INITs). In MACFUN, look for LIB3 (Games), LIB6 (MacPaintings), and LIB16 (R-Rated Paintings). In APPHYPER, check out LIB6 (Reference Stacks) and LIB11 (XCMDs and XFCNs).

The Community Square (2) sections in most of the MAUG forums deserve special mention, for it's there that members gather to talk about things other than computers. Recent Community Square threads have included topics as diverse as the Miss America pageant, the space program, and the 1988 political races.

Options, Options

Setting your user options in a forum (by typing **OP** at the Forum prompt) is a powerful tool for customizing the service to your needs. Here, you can turn off the menus and go into the faster command mode; tell the forum to ignore threads in message sections you're not interested in; tell it not to pause after displaying a message in a thread; and automatically display the text of messages addressed to you. You can change user options for just one session, or permanently.

Putting On the Brakes

If text from CompuServe is coming in faster than you can read, you can tell the service to pause by typing Control-S. To resume, press Control-Q. If you've gotten yourself into a section that you really don't want to continue with and you want CompuServe to slam to a halt, press Control-C. The service stops sending text and displays a prompt for further action. (Check your software manual for Control-key equivalents if you're using a standard keyboard.)

Smaller Is Cheaper

Since connect time is money on an online service, several programs have appeared that can compress files, encoding them in a special format that takes less time to download. The most popular of these compression programs is a utility called StuffIt. The StuffIt program not only compacts files, but also allows you to consolidate two or more files into one compressed archive file, and to extract the files from the archive. StuffIt is shareware; if you use

(continues)

NOW FEED YOUR COMPUTER DELICIOUS COLORS, AT A PRICE THAT'S EASY TO SWALLOW.

Introducing the Sharp JX-300 letter size color scanner.

Our affordable, new JX-300 can scan the most appetizing color originals up to 8½″ x 11″. It also has a small footprint and fixed scanning bed to give you more usable desk space.

This new color scanner joins our larger, widely acclaimed JX-450, which handles originals up to 11″ x 17″. The JX-450 also scans 35mm slides and overhead transparencies with an optional mirror unit.

Both units scan at 300 d.p.i. resolution and 256 shades for each element to give a range of 16.7 million colors. Not to mention 256 gray scales for monochrome systems. Both are compatible with the leading PC systems.

Sharp also offers the JX-730 color inkjet printer to give you plain paper color printouts that are faithful to your originals.

If you're looking into scanners—even black and white scanners—don't overlook the future. The future is mouth watering color. For information, call 1-800-BE-SHARP.

SHARP®
FROM SHARP MINDS COME SHARP PRODUCTS™

Circle 327 on reader service card

© 1988 Sharp Electronics
Simulated Picture on Monitors

Performance without compromise.

Storage for every

MacWorld called the DataFrame "the Porsche of disk drives." Now you can put that performance to work for more users than ever. Because now there's a DataFrame configuration that's right for every kind of user. For example...

1. The Deserving User: DataFrame XP 30 Hard Drive DataFrame XP 60 Hard Drive

Who deserves a Mac™ with DataFrame's productivity-boosting performance? *Everyone.* That's why DataFrame is the best selling hard disk drive next to Apple® Compare, and you'll find that DataFrames are the *fastest* drives for the Macintosh. That they give you 50% more storage for your storage dollar. And that they offer the most reliable, elegant system design to boot.

2. The Practical Utilitarian: Every DataFrame includes utility software worth over $500.

Worth over $500? Yes! Because all these packages purchased separately total over $500. SuperSpool and SuperLaserSpool mean long print jobs don't tie up your Mac. DiskFit makes backup a snap. Sentinel makes encryption easy for sensitive files.

3. The Networker: DataFrame XP-60 + 40 Tape

Networks need fast storage, so users don't have to wait. And they need easy backup, for disaster prevention.

Solution: The DataFrame XP 60 + 40, with 60 Mb of fast storage, and our ultra convenient, industry standard DC-2000 40 Mb tape drive.

For bigger storage needs, consider our 105 Mb or 150 Mb drives (the XP-150 is the fastest Mac drive extant). Then backup with the DataStream 40 Mb tape drive.

4. The Desktop Publisher: DataFrame XP 60 + Bernoulli

Users with big data applications like desktop publishing or databases *love* this combination hard disk and removable Bernoulli® cartridge. 20 Mb removable Bernoulli cartridges make backup and archival storage fast and easy. And what a system: 60 + 20 means 80 Mb on line, with infinite storage on the shelf.

Registered Trademarks: Apple: Apple Computer, Inc. Bernoulli: Iomega Corporation. Trademarks: Macintosh, Plus, SE, II: Apple Computer, Inc. SuperMac: SuperMac Technology, a division of Scientific Micro Systems.

one in the office.

5. The Intensive Mac II User: DataFrame XP 150i Internal Drive.

For people who want all the performance a Mac II™ can deliver: Here is the biggest capacity drive that fits into the Mac II, and the fastest drive, bar none!

6. The Multiple Office Personality: DataFrame XP 60 + Bernoulli

Need to get files back and forth to different offices? Equip each office with a high performance DataFrame 60 + Bernoulli. Then use the convenient 20 Mb cartridges to ship information back and forth. Users at each office have high performance drives with fast cartridges for backup and archiving.

7. The Engineer (Or Scientist): DataFrame XP 105 Hard Drive DataFrame XP 150 Hard Drive

Those needing big storage and fast response will appreciate these two DataFrame systems—the biggest storage that you can attach to any Plus,™ SE™, or II. And, unlike the ungainly boxes that house most large drives, DataFrames offer amazingly small, convenient packages.

8. The Protector: DataStream 40 Tape Drive

Our handy 40 Mb DC-2000 tape system plugs into the Mac SCSI port, and lets the office protector backup data with ease.

9. The One Who Makes It All Work: SuperMac's™ No Compromise Support.

Relief for the office problem solver: Our designed-in reliability and quality. Superb documentation. And our responsive hotline that delivers answers fast.

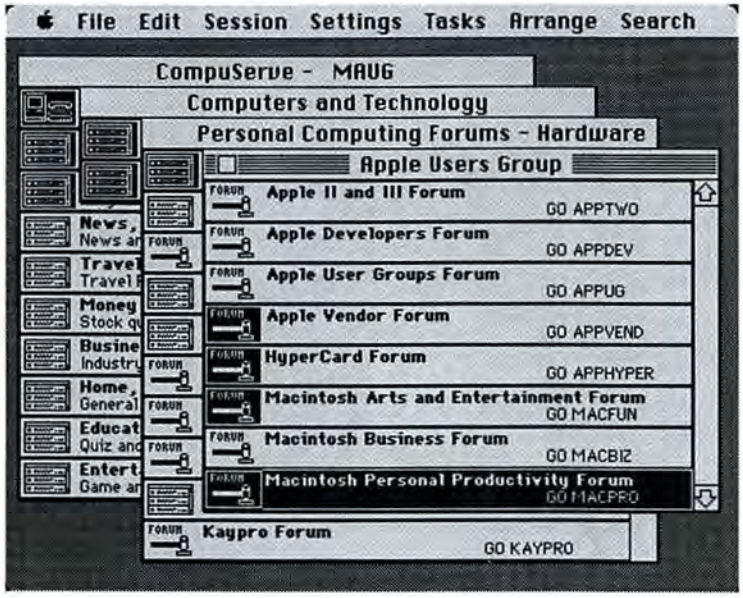
Call for the name of your nearest SuperMac dealer.

You'll want to see the entire line of SuperMac expansion products for the Mac. Storage. Big screens. Graphics software. Utility software. Accelerators. Memory expansion. Upgrades. And more on the way. ***From the leader in Macintosh performance peripherals.***

(415) 964-8884

SUPERMAC

SuperMac Technology, 295 N. Bernardo, Mountain View, CA 94043



Navigator Tiles
CompuServe Navigator represents each Forum area as a tile, which you can open to specify which information Navigator should retrieve. Navigator adds the Macintosh user interface to CompuServe's command-driven system, making the service faster, cheaper, and easier to use.

it after a 15-day trial, you're honor bound to send Raymond Lau, the author, $20.

For those who just want to download and use files uploaded by others in StuffIt format, Lau has created UnStuffIt—a freeware desk accessory that only decompresses archive files. StuffIt is available in Data Library 8 of the MACPRO Forum, under the name STUFFI.BIN; UnStuffIt is available in the same data library under the name UNSTUF.DA.

Finding and Downloading Files

Here's the way to find files in the data libraries. Let's say you want to get StuffIt. First type **LIB8** to move you to Data Library 8, the Telecommunications library. Then type **BRO KEY:STUFFIT** at the library prompt. This tells CompuServe to browse all files with the keyword *StuffIt* in this library. CompuServe displays a description of each file with that keyword, and when the file you want comes up, type **CHOICES**. Pick Download from the resulting menu, then Xmodem from the Library Protocol menu. Then tell your communications program to receive an Xmodem download.

Mail Made Easy

CompuServe's EasyPlex electronic mail section is easy to use if you know a few tricks. For example, make sure you use the Address Book feature. You can store up to 50 names with their user ID numbers; from then on, when you're prompted for the To:, just type the intended recipient's name. EasyPlex scans the Address Book for a match and sends the message. To get all your mail at once, type **SET MODE COMMAND** at the ! prompt, then type **RECEIVE ALL** at the next ! prompt. And to make sure your outgoing mail gets read, tell EasyPlex to send you a delivery receipt by entering **SEND/RECEIPT**. (This does cost you an extra 25 cents, however.)

Navigator to the Rescue

CompuServe has recognized that it's easy to become bogged down in the service, and has responded by selling a program designed to make CompuServe more accessible to Mac users. CompuServe Navigator (reviewed in the December 1988 issue of *Macworld*) is a program that any serious CompuServe user should have.

Navigator saves you money by logging on, quickly performing any tasks that you've set, and logging off. For example, while you're offline, you can tell Navigator to log on, go to the MACPRO Forum, get any messages addressed to you, get a listing of new threads since you last logged on, download some interesting new programs from the data libraries, and send some electronic mail through EasyPlex. Then you tell Navigator to run the session you've just set up. The program connects, does the tasks much faster than you could do them manually, and disconnects. You can then review the session at your leisure, without the clock ticking. You don't have to remember any of CompuServe's commands; Navigator does it for you. The program also takes advantage of CompuServe's Quick B downloading protocol, which is much faster than standard Xmodem. You can order Navigator online; type **GO NAVIGATOR** at any command prompt. The $79.95 program will be shipped to you, and your CompuServe account will be billed.

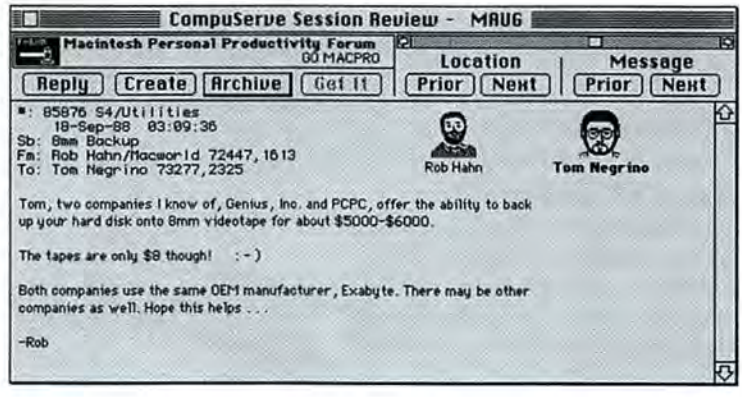
A Navigator Sampler

Navigator lets you change Forum choices in the Preview mode by double-clicking on a forum tile. The Forum dialog box will open for business. Navigator can also be used for uploading files using the Quick B protocol. (By the way, uploading to CompuServe is free.)

To see portraits of your online friends, download their face files from the CIS Navigator Library (LIB9) in MACPRO and store them in a folder called Face Files inside your Navigator folder. Navigator will then show the portraits whenever you review a session, if face files exist for those sending and receiving messages (see "Talking Heads"). An alternative is Face Manager, a freeware program written by Steven C. Kienle that is also available in LIB9. Face Manager lets you consolidate many faces into one large Faces file, instead of having hundreds of individual files in one folder.

Sharing the Wealth

If you've found a shortcut or undocumented trick not mentioned here, spread the word to other *Macworld* readers by sending it to *Quick Tips, Macworld,* 501 Second St., San Francisco, CA 94107. □



Talking Heads
CompuServe users with Navigator can see eye-to-eye if both the sender and recipient have uploaded their face files. Navigator will display the portraits as you review your online session. Some users add faces with letter and punctuation combinations.

"Daddy says he owes his success to who he met in college, who he met in business and to Mommy who told him to save his information on Sony data cartridges."

Yes, it certainly is important. Because a data cartridge is used for critical document storage. So it goes without saying that reliability is its most important asset.

And reliability is unmatched in Sony data cartridges.

After all, reliability in a data cartridge means only one thing: no loss of data. And, when it comes to that, Sony data cartridges have been proven measurably better.

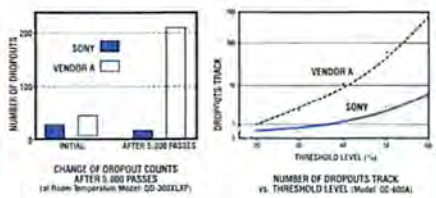
As the two charts on this page show, Sony data cartridges have the lowest dropout rate of any data cartridges made. Even after 5,000 passes.

Perhaps that's because only Sony manufactures every single part of their data cartridges.

Or perhaps it's because Sony has such a long history of painstaking perfection in data storage for every media.

Including the invention of the 3.5" floppy disk format.

The benefit of all our expertise will not only help your firm, it will also help you at your firm when you tell them: To make sure your critical documents are safe, just save them on a Sony.



SONY.
THE ONE AND ONLY.®

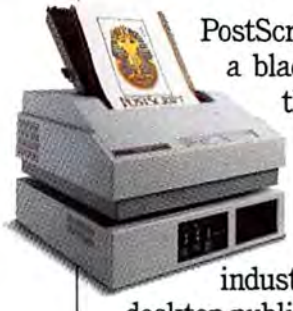
© 1988 Sony Corporation of America. Sony and The One and Only are trademarks of Sony

Circle 208 on reader service card

QMS introduces thousands of improvements to PostScript printing.

The new QMS ColorScript™ 100.

The world's first color PostScript printer.



PostScript printing is no longer simply a black-and-white issue. Thanks to the QMS ColorScript 100.

Now QMS has opened your projects to a range of new graphic possibilities using Adobe PostScript®, the industry-standard language of the desktop publishing revolution.

Now, your proposals, presentation graphics and publications can go from gray to glorious. Graphic design color schemes can change with just a single keystroke, not a hundred marker strokes. Even commercial printing proofs and in-house color separations can be produced and color-matched. All this will help save the two things every business needs. Time and money.

QMS worked closely with Adobe Systems, software developers and users to design the

The following are trademarks of their respective companies. PostScript and Adobe Illustrator 88 of Adobe Systems, Inc.; Macintosh of Apple Computer, Inc.; IBM of International Business Machines Corporation; Compaq of Compaq Computer Corporation; Aldus FreeHand of Aldus Corporation.

ColorScript 100. All agree it's a breakthrough. That's not surprising since QMS offers more PostScript products than anyone else.

The ColorScript 100 uses a revolutionary thermal transfer process that produces true 300x300-dpi resolution. That means you can generate thousands of brilliant colors with pinpoint registration that can match the color swatches scattered on this page.

The printer is built around an intelligent controller, running a 68020 processor, equivalent to the one in the Macintosh II. That makes it a powerful computer in its own right. A 16 MHz processing speed makes it responsive. Especially to things like deadlines. You can print an 8½"x11" page in just a single minute. An 11"x17" page in under two.

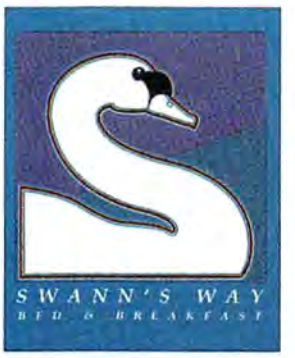
The system's large 8 megabyte memory can handle complex applications. And a 20 megabyte hard disk offers generous space for downloadable typefaces to complement its 35 resident Adobe typefaces.

Compatibility is also built in. The ColorScript 100 connects with Macintosh®, IBM®, Compaq® and other compatible PCs, along with minicomputers, workstations and mainframes.

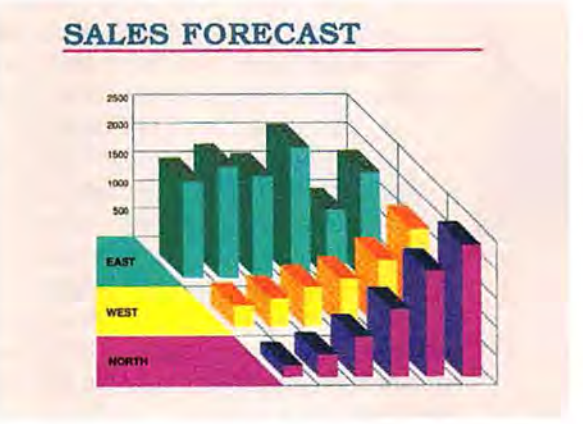
That means you can work with Aldus FreeHand™, Micrografx Designer™, Quark XPress™, Adobe Illustrator 88™, AutoDesk AutoCAD® and most programs written under Microsoft® Windows. Plus all the new programs that are being developed to join dozens of other color-compatible applications.

The ColorScript 100 is yet another useful solution from QMS. Solutions that have made us a leader in print technology. That's one fact we don't mind giving you in black and white.

For information on the QMS ColorScript 100, including print samples, a complete list of compatible software and information on financing, call 1-800-631-2692, ext. 202.



Pictured are just some of the ways designers are using the QMS ColorScript 100. The creative director at one design firm notes: "We're doing comps in minutes that used to take hours. The quality is fantastic." A computer design system manager in the Midwest says: "Our clients are getting more options, in less time, at lower costs."

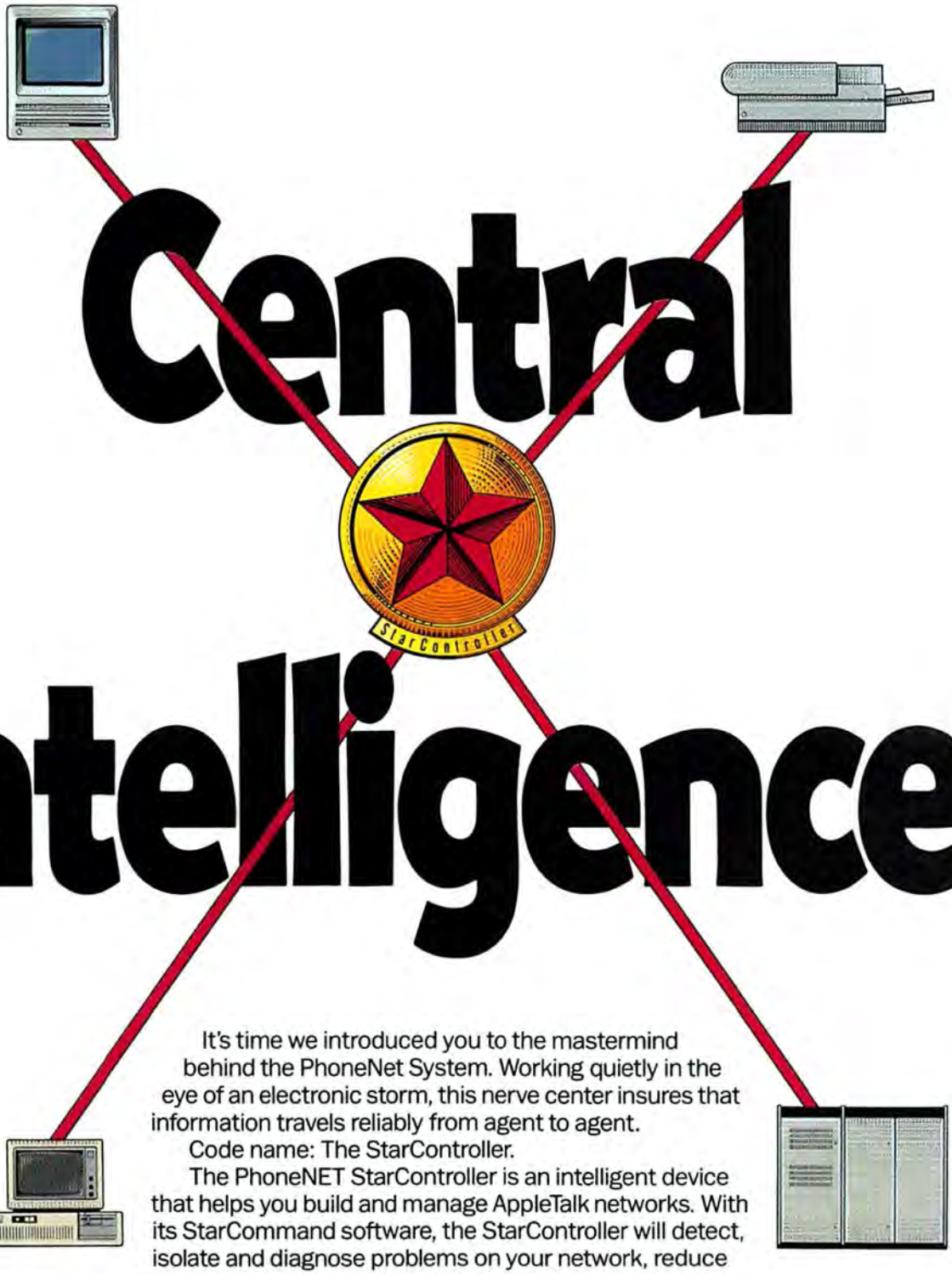


QMS®

More Useful Solutions.

Quark XPress of Quark, Inc; Micrografx Designer of Micrografx, Inc.; AutoCAD of Autodesk, Inc.; Microsoft of Microsoft Corporation; QMS and ColorScript of QMS, Inc. All graphics, except chart, designed on Adobe Illustrator. ©1987 Adobe Systems, Inc. ©1988 QMS, Inc.

Circle 104 on reader service card



Central intelligence.

It's time we introduced you to the mastermind behind the PhoneNet System. Working quietly in the eye of an electronic storm, this nerve center insures that information travels reliably from agent to agent.

Code name: The StarController.

The PhoneNET StarController is an intelligent device that helps you build and manage AppleTalk networks. With its StarCommand software, the StarController will detect, isolate and diagnose problems on your network, reduce error rates, and monitor network activity.

So, should you accept the mission to build a better network, make it a success with the StarController. Your Farallon dealer has a complete dossier. Call (415) 849-2331, for the dealer nearest you.

Farallon™

2150 Kittredge Street, Berkeley, CA 94704

PhoneNET is a registered trademark, and StarController and StarCommand are trademarks of Farallon Computing, Inc. AppleTalk is a registered trademark of Apple Computer, Inc. © 1988 Farallon Computing, Inc.

Circle 150 on reader service card

Macworld News

by Ann Garrison

Molecular Analysis on the Mac II

Sophisticated molecular modeling and analysis is now possible on a Mac II connected via a serial port to a remote Sun or VAX minicomputer host. Nitro software from Tripos Associates transforms the Mac II into a 3-D workstation displaying the molecules created on the host machine. Actual construction of the molecule is done on the remote host running the company's Sybl molecular modeling software.

Three-dimensional animations of complex molecular interactions are created by combining fast minicomputer processing with high-quality graphics on the Mac II. Researchers working at the Mac II can rotate, scale, translate, and manipulate models created on the remote host in real time. They have complete control over the animation functions. Sybl offers them a wide array of analysis functions, including electrostatic interaction, surface-to-volume ratios, and molecular mechanical forces.

Nitro has been shipping since May 1988, and is available for $995 per workstation ($650 per workstation for academic purposes). It requires a Mac II with an 8-bit video card and at least 2MB of RAM. Running Sybl, however, requires at least a $30,000 investment—although there are discounts for academic users—without even counting the cost of the VAX or Sun. For those who can't afford Sybl plus a VAX or Sun, Tripos Associates is currently developing Alchemy, a stand-alone product that will run on the Mac II and cost only $750.

Alchemy, expected to be announced later this year, will support a subset of the molecular modeling and analysis functions offered by Sybl. It will function as an entry point for people new to molecular modeling, enabling them to build, edit, and manipulate 3-D molecular structures. However, its analysis functions will be limited. For more information, call Tripos Associates in St. Louis, at 314/647-1099.–*Liza Weiman*

FRED STIMSON

With Nitro software, researchers working on Mac IIs can rotate, scale, translate, and manipulate molecular models created on remote VAX or Sun hosts.

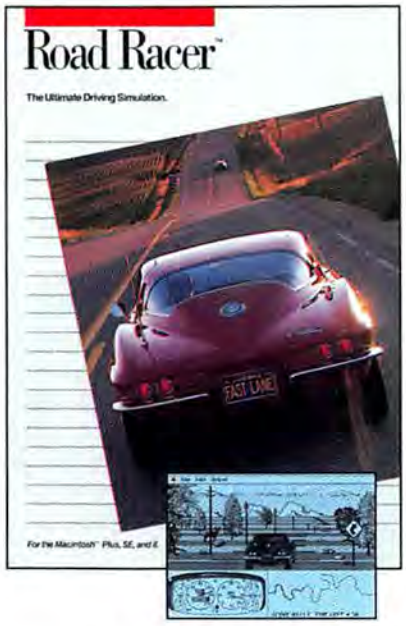
MICHAEL ABRAMSON

Dr. Jim Dunbar, a chemist at St. Louis's Washington University School of Medicine, uses a Mac II running Nitro software to display a molecule modeled with Sybl software on a MicroVAX II.

Attention, Electronic Artists

Yet another Mac II color paint program has arrived on the scene. Studio/8, a $495 package from Electronic Arts, consists of five disks: the program itself, textures, brushes and backgrounds, fonts, and a slide-show utility complete with

(continues)



Speed limit 200. Strap yourself in for the ride of your life.

Road Racer's detailed graphics and digitized sounds simulate driving conditions in 5 environments ranging from high-speed desert flats to twisting mountain roads. So convincing you'll actually find yourself trying to look over the hills and around the turns.

The trees, rocks, telephone poles, and other graphics fly past your 1965 Corvette at breakneck speeds. Hear its thundering 350-horsepower engine and screaming tires as you corner around wicked curves.

Steer and accelerate with the mouse, and use your keyboard for brakes and shifting.

Each level is tougher than the last with unpredictable road hazards and many courses to travel. You score points for fast, skillful driving. Road Racer is high performance you won't forget.

Circle 291 on reader service card

Watch out! ... SMASH! ... A heat-seeking missile has just slammed into your ship.

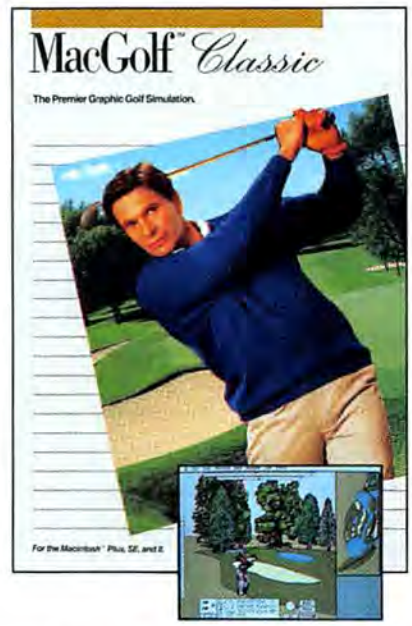
The year is 2059. Raiders have stolen five controlling crystals that maintain the defense and supply network for the moon's 26 cities. With key commodities cut off, the cities are doomed.

Your mission is to recover the fiendishly hidden crystals while transporting vitally needed goods between cities. Traverse dangerous terrain and combat relentless attacks with your arsenal of lasers, cannons, bombs and shields.

Prepare yourself for an odyssey of furious action and strategic high stakes trading.

Lunar Rescue is an addictive adventure that challenges your imagination and sets your adrenaline on fire.

Circle 289 on reader service card



A premium edition of the best selling Macintosh game in the world.

MacGolf Classic puts you into a full perspective 3-D simulation of realistic golf action. You match your skills against fairways, roughs, sand traps, water hazards and trees.

MacGolf's two courses are together with the four MacCourses,™ for a total of 108 holes, all in vivid full screen color on the Macintosh II.

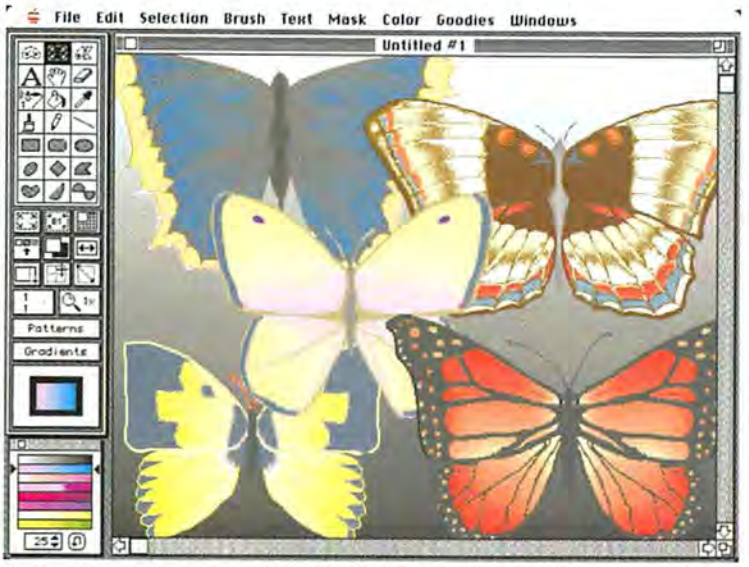
MacGolf Classic gives you a player's eye view and an aerial overview of each hole with close up options. You have complete control of your position, ball placement, ball speed and direction, and selection of all 14 clubs. Spectacular digitized graphics and sounds add to the excitement.

MacGolf Classic is so close to the real thing it will improve your golf game. Every challenge should be this spectacular.

Circle 290 on reader service card

PCAI™

©1988, PCAI/Practical Computer Applications, Incorporated 612/427-4789
MacGolf, MacCourses, Lunar Rescue and Road Racer are trademarks of PCAI.
Macintosh is a trademark of Apple Computer, Inc.



Butterflies painted with Studio/8, a new color paint program from Electronic Arts.

special effects and sample illustrations.

Studio/8 augments the usual array of painting tools—brush, pencil, spray can, and so on—with some unique options. For example, the program has three selection tools—a free-hand selector, a rectangle, and a polygon—which can shrink around a shape's boundary, include the selected background, expand to fill a shape's interior, or even select by colors. If you want to select a solid-colored object that sits on a multi-colored background, for instance, you can exclude the background colors from the selection, picking up just the object. Once you've selected an area, you can drag, rotate, flip, twist, or resize it, change its color, or apply perspective. Any selected shape can be used as a brush and saved for later use.

Additional tools include an arc, a bezier curve tool, a polygon shape tool, an adjustable airbrush, and an eyedropper for picking up and duplicating colors. Tool-modifier buttons allow you to customize tools as you work. The 256-color program offers a range of color options, including custom palettes, gradient fills of up to 32 colors, dithering, on-screen color-mixing (à la fingerpaints), and the ability to save libraries of color ranges.

Other highlights include masking by shape or color, a resizable text-editing box with word wrap, and support for different screen sizes.

Studio/8 reads PICT, TIFF, and MacPaint files and saves images in PICT or TIFF (color or gray-scale) format. Images can be printed on a Tektronix 4693D color thermal printer or sent to a film recorder for color slides. Studio/8 requires a Mac II with at least 1MB of RAM and an 8-bit color card (2MB of RAM is recommended). For further information, contact Electronic Arts at 415/571-7171. *–Erfert Fenton*

The Floating Monitor

The Mac II is a dream machine, so full of power and versatility that even we at *Macworld* have hardly begun to explore its possibilities. But there's an awkward trade-off for all that power: the Mac II is big. It takes up a lot of valuable space on a desk, and it's bulky and difficult to move. Ergotron has developed an elegant solution that promises to give your space back to you for laying out projects, organizing papers or presentation transparencies, or doing whatever it was you used to do on your desk before the arrival of the behemoth II. And considering the value of desk real estate, claimed by Ergotron to be up to $75 per square foot per year, the Mac II Workstation may indeed be a bargain at $530.

The Mac II Workstation is impressive looking—we installed one in the *Macworld* lab, and folks from miles around stop by to marvel at its imposing presence. The central processing unit, or CPU, sits on a sturdy, height-adjustable shelf above the desk, out of the way but not out of reach. The monitor is suspended from a track on the bottom of the shelf, and rides on a gas spring–powered radial arm that pulls forward, pushes back, tilts and swivels, and moves smoothly along the 20-inch horizontal path of the track. The very convenient handle for moving the monitor is a bar across the width of its bottom. The hydraulics are engineered in such a way that the monitor seems almost to float: you can position it with one finger, yet when you stop, it stays put. You move it around as you work, and glide it into "park" position when you're not using the Mac.

Ergotron's Mac II Workstation lifts the II off your desk to save valuable space.

The Mac II Workstation accommodates most Mac II monitors, including 19-inch monitors weighing up to 65 pounds. Ergotron expects to bring out a heavier-duty version for 90-pound machines in late 1988.

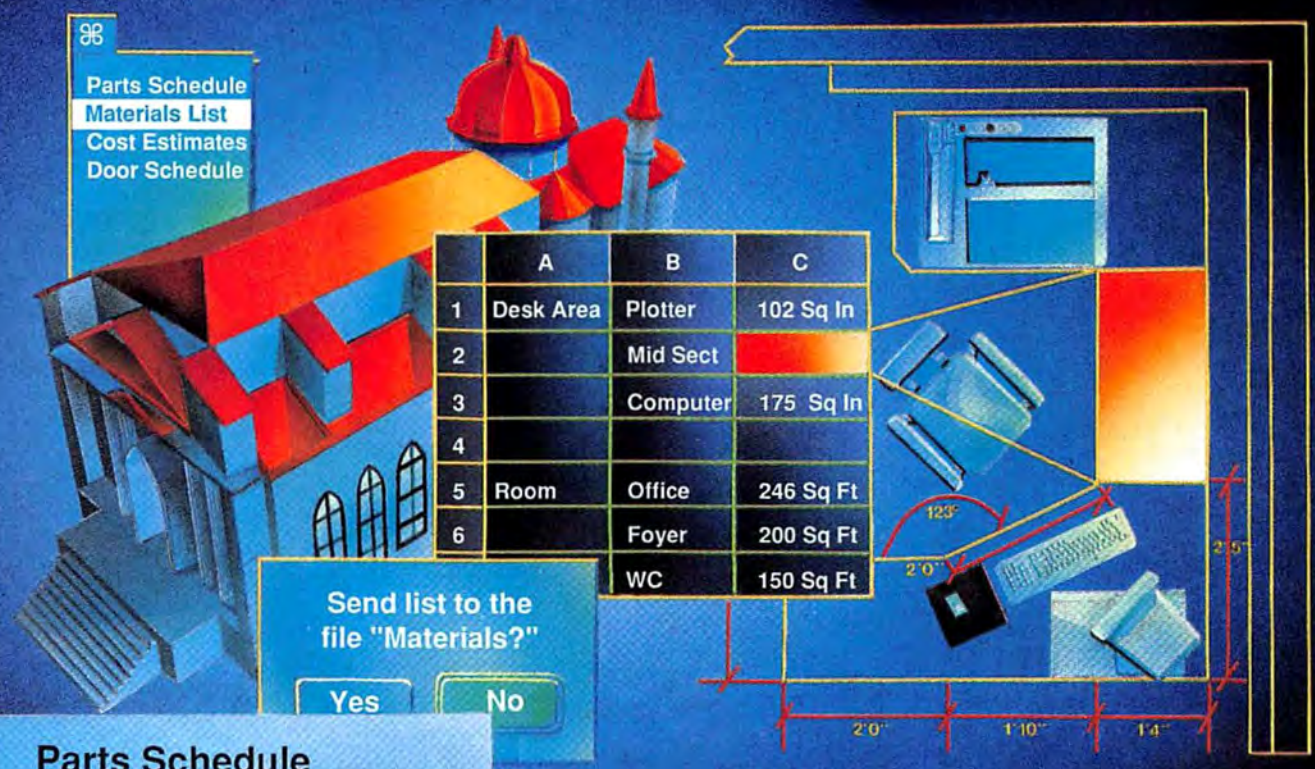
The company's name, Ergotron, is derived from the word *ergonomics,* defined by Webster as the science "concerned with the characteristics of people that need to be considered in designing and arranging things that they use in order that people and things will interact most effectively and safely." Though lots of ergonomics went into the engineering of the Mac II itself, of course, the Mac II Workstation represents a significant enhancement of the human-interactivity of that machine.

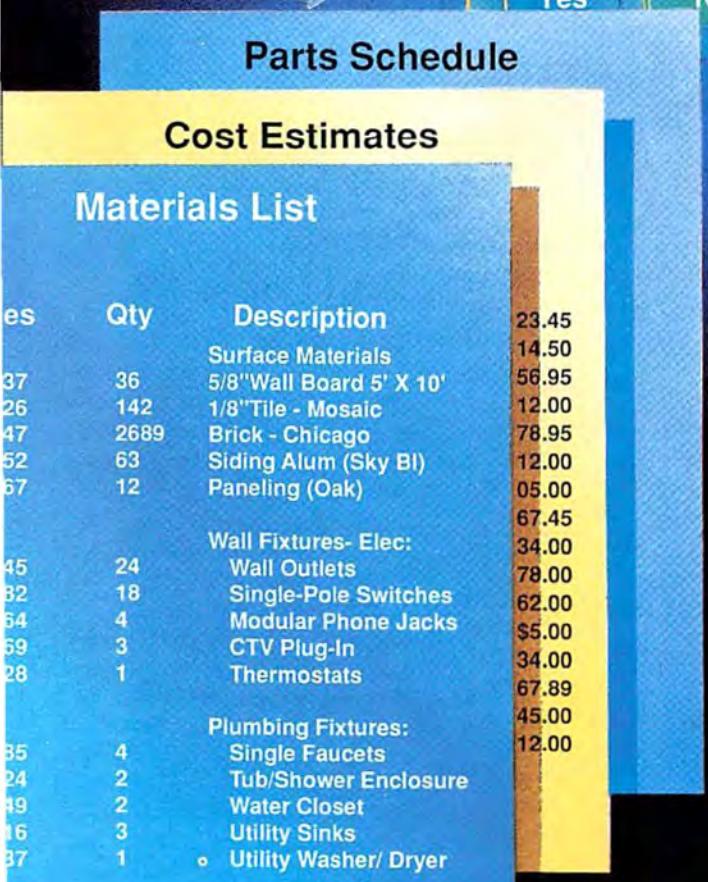
For more information, call Ergotron at 612/452-8135 or write to the company at 3450 Yankee Dr., Eagan, MN 55121. *–Felicity O'Meara*

Oracle Databases for the Mac

Oracle Corporation, one of the biggest guns in the minicomputer and mainframe database market, has moved onto Macintosh turf by announcing implementation of a full Oracle relational database for the Mac, based on the SQL standard. The product is identical to its counterparts for IBM mainframes and DEC VAX minicomputers (except for some operating-system-specific routines), and it can act both as a stand-alone database and as a networked, distributed database with other Oracle versions. The company will sell a developer

(continues)





MiniCad+™

Computer-Aided Design and Analysis comes of Age

MiniCad+ rises on the foundations of a groundbreaking Macintosh CAD program, MiniCad 2D/3D. Universal in aim, MiniCad Plus is a total design and analysis solution, the answer to time-consuming transfers between applications. This professional CAD system offers the following easy-to-use components:

- High precision 2D drafting environment which includes complex duplication with arrays, hierarchical symbol editing with both external and internal libraries, fillets, bezier & cubic splines, auto-join, auto-dimensioning, continuously variable zoom up to 1000x, double-line tools with auto-clean up, 256 user-definable attributes, 8 line types, unlimited layers, full use of Mac II, and more...
- Active spreadsheet inside drafting area which can be hot linked with objects to perform area calculations, parts schedules, cost estimation and more. As easy-to-use as the spreadsheet you're using now.
- All new integrated 3D that is so powerful and user-friendly we may change your mind about micro 3D.
- MiniPascal, a programmable macro language, will allow advanced users and 3rd party vendors to create reports, macros, and powerful extensions to MiniCad Plus's capabilities.

Graphsoft • 8370 Court Ave. Suite 101 • Ellicott City, MD • 21043

MiniCad+ $695 • Demo Available for only $19.00
MiniCad Plotter Drivers: Prof. $300 Stand. $150
U.S.: 1 (301) 461-9488 • Canada: 1 (604) 384-2131 • Australia: 61-7-369-1204
Visa & MasterCard Welcome

Graphsoft

Circle 77 on reader service card

version for $199 and a networking version for $999.

A built-in version of the CL/1 language, created by Apple subsidiary Network Innovations, will enable users of CL/1-compatible Macintosh applications to gather data from Oracle databases for use in Mac applications.

What sets Oracle's product apart from other efforts to port mainframe databases to the Mac, however, is its front end, which transforms HyperCard into a full-function SQL database.

The front end, dubbed Hyper SQL, puts every SQL command from three definitions—ANSI, IBM's DB2, and Oracle's superset—into the HyperTalk programming language. A stack using Hyper SQL lets users log on to one of several remote Oracle databases and construct visual reports, including digitized photos and maps.

Oracle also has in the works an electronic mail package based on its databases. The company is even thinking of building a front end to HyperCard for the Knowledge Navigator—Apple's videotape vision of a talking, book-size Mac. For more information, contact Oracle in Belmont, California, at 415/598-8000.–*Rory J. O'Connor*

Editing Critters

Just when you thought the world was safe from Trimpets and Huskets, Tentawarbles, Dumples, and Banes, new nasties—created by you and your fellow Crystal Quest warriors—emerge to try your tenacity and test your tendons. Patrick Buckland has been at it again.

Programming-wizard Buckland, creator of Crystal Quest, has produced CritterEditor, a sophisticated but easy-to-use resource-editing module bundled with the new version of Crystal Quest (released in August) to enable you to build a totally new game in the shell of the old. You can change the attributes of all the game's elements—shape, color, behavior, sound, scoring, and so on. CritterEditor includes a graphics editor with basic drawing tools, so you can start from scratch if you want, and the program also accepts images pasted in from other graphics programs or from clip-art collections.

You can create (or import) fantastic monsters, and have them screech like gryphons or spout Monty Python–type aphorisms. You can use tiny scanned images of your friends' faces, and make them dash about talking in their own (digitized) voices. All in all, you can change more than 1000 things in the game.

When a set of customizations is complete, you save it as a *parameter file,* a shorter version of the changes alone, which you can install into Crystal Quest when you want to play. The beauty of this scheme is that parameter files can be exchanged freely and posted on bulletin boards—Casady & Greene Inc., the publisher, invites this traffic and hopes that custom versions of Crystal Quest will become a popular commodity. And a possible side benefit, not mentioned in the manual, is that CritterEditor serves as a frivolous but valuable introduction to some of the basics of Macintosh resource-editing.

Crystal Quest version 2.2, including CritterEditor and a sample parameter file called Totally Silly, retails for $79.95. For more information, write to Casady & Greene Inc. at P.O. Box 223779, Carmel, CA 93922, or phone 408/624-8716. –*Felicity O'Meara*

You can edit these nasties with Crystal Quest's CritterEditor, or you can scan in tiny images of your personal friends (or enemies).

JOHN HARDING

Denise Barton, 3Com product manager, shows off a Mac II and a PC-compatible 3Station using 3Com's 3+Open.

3+Open and Mac Support

With the Mac's popularity increasing in the corporate world, no networking company can afford not to support it. Novell's recent development of NetWare for the Macintosh, which maintains the favored AppleShare interface for Mac users, no doubt prompted 3Com to counter with similar features in its next round of Mac support. 3Com plans on including support for Apple's AppleTalk Filing Protocol and Printer Access Protocol in the 3+Open network operating system, which implements Microsoft's OS/2 LAN Manager. Users switching from 3Com's older 3+ operating system to 3+Open will notice that the familiar AppleShare client interface now provides access to 3+Open file servers.

3Com hopes that these improvements in 3+Open will be sufficient to forestall users of mixed Mac-PC networks from switching to NetWare, even

(continues)

Roll The Presses

You've got to see it to believe it. Fast, efficient, and crystal clear. DirectPrint™ page printer uses Liquid Crystal Shutter technology giving you deep velvet blacks on graphic images as well as the sharpest readable text…fine lines like you've never seen before.

To stay ahead in this world you've got to run faster. And we do. Our 4 MIP processor averages speeds 5 times faster than the competition; depending on the document. All without sacrificing precision quality. DirectPrint is PostScript™-compatible, giving you unlimited versatility in creating and manipulating text and graphics.

They do it with mirrors. Electro-photography with a liquid crystal shutter array enables the DirectPrint to produce exceptional 300-dots-per-inch resolution. We don't use rotating mirrors and lenses so we don't suffer from scanning distortion. You can expect consistent quality from the middle of the page to the edges.
And with fewer mechanical parts than the conventional laser printer, the DirectPrint offers greater reliability.

We won't weigh you down. We wouldn't exactly call it a portable, but at 35 pounds it's no dumpling. And with a price of under $4000, you owe it to yourself to see the DirectPrint.

Jasmine
1-800-347-3228

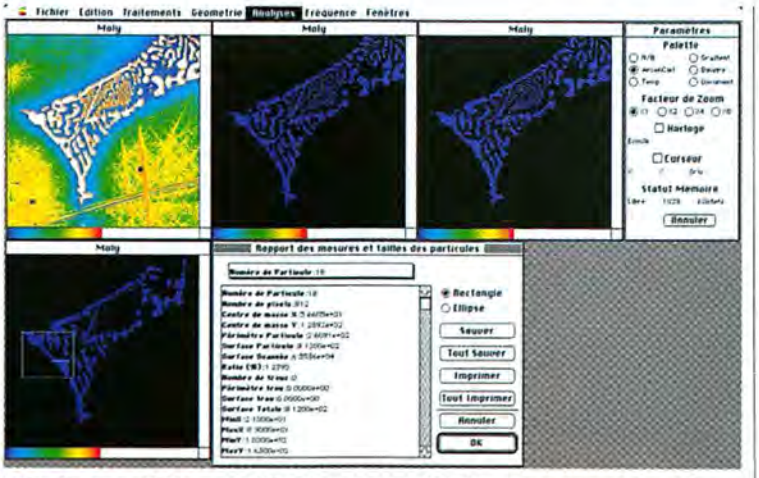
Jasmine Technologies Inc., 1740 Army Street, San Francisco 94124
FAX 415-648-1625 415-282-1111

Circle 100 on reader service card

© 1988 Jasmine Technologies DirectPrint is a trademark of Jasmine Technologies. PostScript is a registered trademark of Adobe Systems, Inc.

Prices subject to change.

though they'll have to wait until the fourth quarter of 1989 to see the changes in 3+Open (the first version does not directly support the Mac). For the moment, you have to keep a 3+ server around for Mac support and link that 3+ server to other 3+Open servers through the Advanced Version of 3+Open. For further information, call 3Com at 408/562-6400.–*Dave Kosiur*



This image of the metallic element molybdenum was produced with Ultimage, a sophisticated image processing and analysis tool developed in France.

It's All in the Image

Computer graphics has always been the Mac's strong suit. But more and more, people are using the Mac to enhance images digitized by scanners and video cameras—real-world pictures, not just those generated by computers. This technique, called image processing, can also help people analyze images—for example, those from satellites, x-ray machines, and manufacturing and process-control systems.

GTFS and Perceptics have introduced sophisticated image processing and analysis programs developed in Europe for the Mac II. Both GTFS's Ultimage and Perceptics's TCL-Image are aimed at research, scientific, industrial, and medical markets (unlike Silicon Beach's Digital Darkroom and Letraset's ImageStudio, which are aimed at publishing).

Priced at $2990, Ultimage requires a Mac II with at least 2MB of RAM; an 8-, 24-, or 32-bit graphic card; a color monitor; and a hard disk. It can handle images in resolutions from 128 by 128 pixels to 1280 by 1024 pixels. In addition to supporting PICT1, PICT2, and TIFF, Ultimage lets you define your own image format. You can even save and execute image processing scripts with the program.

Ultimage features several standard image-analysis functions: histogram equalization, user-configurable linear filters (for edge detection or smoothing), nonlinear filters (for noise reduction and contour detection), and its own scripting. Using the program's frequency processing capabilities—direct and inverse Fourier transforms, for example—you can analyze and enhance images with low overall contrasts, such as x-rays or CAT scans.

A binary processing feature allows representation of gray-scale information in binary form, thus reducing the amount of data in a single image and, in many cases, decreasing processing time. A morphological measurement feature determines an object's perimeter, surface area, diameter, and mass center.

TCL-Image provides the same general image processing functions that Ultimage does, and also allows users to link their own C language procedures to the program to expand its image processing capabilities. The primary difference between the two programs is that TCL-Image is command-line driven, instead of icon driven.

For more information, contact GTFS in Santa Rosa, California, at 707/579-1733, and Perceptics in Knoxville, Tennessee, at 615/966-9200.–*Brita Meng*

A Faster Way to Share

Sometimes local-area networks (LANs) just aren't fast enough for two computers to share simulation, process control, and scientific computation applications data. All these tasks require *real-time* access to data, and the computers can't wait for data to travel back and forth over even a speedy Ethernet cable.

Flavors Technology thinks it has the answer: Bus-Link, a high-speed connection that links two computers' internal *buses*. (A bus—like the Mac II's NuBus—is responsible for transferring the electronic signals between a computer's processor, memory, and other controllers.) Equipped with an FT-60 Bus-Link subsystem, a Mac II can tap into the bus of another computer and directly access that computer's physical memory.

This ability, called memory sharing, eliminates the processing overhead associated with networking protocol and data conversions, especially between dissimilar computers. It also allows two computers to manipulate the same data simultaneously for a distributed, multiprocessing, or parallel processing computer system.

A Bus-Link includes two system-dependent bus interface boards—one for each computer—connected by two shielded cables. The Mac II, of course, needs a NuBus board. A variety of other bus interfaces

(continues)

LISA CORNELL

Flavors Technology engineer Peter Fandel demonstrates Bus-Link, a high-speed connection that allows a Mac II to directly access another computer's physical memory.

▪ ADVANCED TECHNOLOGY FROM GRAVIS ▪

HERE'S GRIPPING NEWS FOR MOUSE USERS

Introducing The Gravis MouseStick!™

A BETTER HANDLE ON DESIGN

THE PLAN: Create *the* input device that is the ultimate in controller precision and versatility.

THE STRATEGY: Combine design ergonomics with state-of-the-art controller technology.

THE RESULT: *The Gravis Mouse-Stick™*. The breakthrough joystick controller technology ergonomically based on the hand's ability to perform precise movements with speed and accuracy.

A BETTER HANDLE ON TECHNOLOGY

Design makes the MouseStick™ responsive.

Technology makes the MouseStick™ today's most versatile input device. For desktop use. For large-screen monitor CAD and DTP applications. And, of course, for computer games.

Plug it in and get ready! Everything opens up with an amazing 1200 point resolution that can be set to any screen size.

And the big picture resolves into fractional sensitivity modes for precise pixel by pixel control.

The secret? The MouseStick's™ true *optomechanical* digital output signal. Here's a comparison: available analog joysticks perform like an old hi-fi. The MouseStick's™ digital optomechanics perform like a compact disk player.

And there's more — the Gravis MouseStick™ Processing Unit (GMPU). This little brain really frees you to select from hundreds of modes such as direct tracking with or without autocentering and fully variable pulse output. Three programmable microswitch buttons let you emulate keyboard commands, and the GMPU's 16-character display and menu system updates you on mode and function.

Thanks to the GMPU's 16K of ROM, programming options are virtually limitless and it can be user upgraded to include new features. The MouseStick™ is compatible with all MacIntosh®, Apple IIe, IIc and IIGS computers, has all the unique features of the Gravis Joystick *and* comes with a one year no-nonsense warranty!

SO TEST-DRIVE THE MOUSESTICK™ TODAY!

Get a grip on the new MouseStick™ and you'll quickly discover it's light years ahead of the mouse, trackball or traditional joystick.

The MouseStick™ doesn't clutter your desk or require constant cleaning. And unlike a trackball, you don't need the dexterity of a cardshark to drag an item.

The Gravis MouseStick™ is one of the most technologically advanced and durable digital input devices available .

But don't worry. You can handle it.

Advanced **GRAVIS**

Computer Technology Ltd.
7033 Antrim Ave. Burnaby B.C.
Canada V5J 4M5 **US OFFICE:**
1602 Carolina St. #D12,
Bellingham WA 98226
Tel. 604-434-7274

Circle 401 on reader service card

are available from Flavors: VMEbus, Multibus I, UniBus, Q-Bus, SelBus, and Lbus. These buses are found on eight different families of computers from vendors including Digital Equipment Corporation, Masscomp, Gould, Symbolics, and Texas Instruments. Mac IIs equipped with Bus-Link boards can also be linked together. Up to four different computers can be connected to one Mac II by adding boards.

Flavors provides a programmer's toolkit with two function libraries that enable programmers to integrate the Bus-Link into their applications on each computer. These libraries support Common Lisp, C, and Fortran-77 programming languages. For more information, contact Flavors Technology, in Amherst, New Hampshire, at 603/882-8404. *–Brita Meng*

Black and White and Mac All Over

Macintosh graphic artists love color, but the classic black-and-white Mac hasn't been abandoned yet: both Cricket Software and Aba Software have released new monochrome paint programs. Cricket Paint builds upon the standard Macintosh user interface, while GraphistPaint B&W, developed by France's Adone Systems and distributed in the United States by Aba, introduces some new tools and techniques.

Cricket Paint offers a multitude of special effects, including gradations, smooth polygons, multiple resolutions up to 300 dpi, custom brushes, reshapable curves, lighten and darken image controls, a Spirograph-like drawing mode, a texture tool, overlay effects, and a feature called FreshPaint that lets

Ben Franklin's portrait was drawn with Aba Software's GraphistPaint B&W.

you treat a bitmapped element as a separate object until you're ready to drop it into the background bitmap layer. The program can import most file formats, including black-and-white TIFF files, which can be edited at their original resolution.

Aba's GraphistPaint features masking/stencil capabilities, a "neon" line tool, antialiased resizing, free rotate and distort, gradated object borders, overlay modes, customizable grids, variable smoothing and contour filters, and an innovative method for making a selected area into a brush.

Both programs are scheduled for release by December. For further information, contact Aba Software in Frazer, Pennsylvania, at 215/644-3580, and Cricket Software in Malvern, Pennsylvania, at 215/251-9890. *–David Biedny*

Apple-DEC Developers Conference

The courtship between Apple and Digital Equipment Corporation (DEC) has passed into a new phase. Developers now know the key building blocks of Mac-VAX connectivity and the tools they'll use to assemble them.

AppleTalk for VMS has become a kingpin in this connectivity framework. Both companies will collaborate on refining it to include faster response and network management support. Developers writing applications that use AppleTalk for VMS can now expect a smooth path to compatibility with future Apple and DEC products designed for VAXes.

This Native American warrior was drawn with Cricket Paint, one of two new monochrome paint programs that prove that classic black-and-white for the Mac is not dead yet.

Two toolkits to promote Mac-VAX connections were announced at the Apple-DEC Developers conference. The Communications Toolbox contains four managers, following usual Macintosh conventions.

Applications can take advantage of the Connection Manager, the Terminal Manager, and the File Transfer Manager to establish and maintain links between a Mac and a VAX and to control data transfers. The fourth manager, the Communication Resource Manager, can be used to obtain information about what network services are actually available to the program.

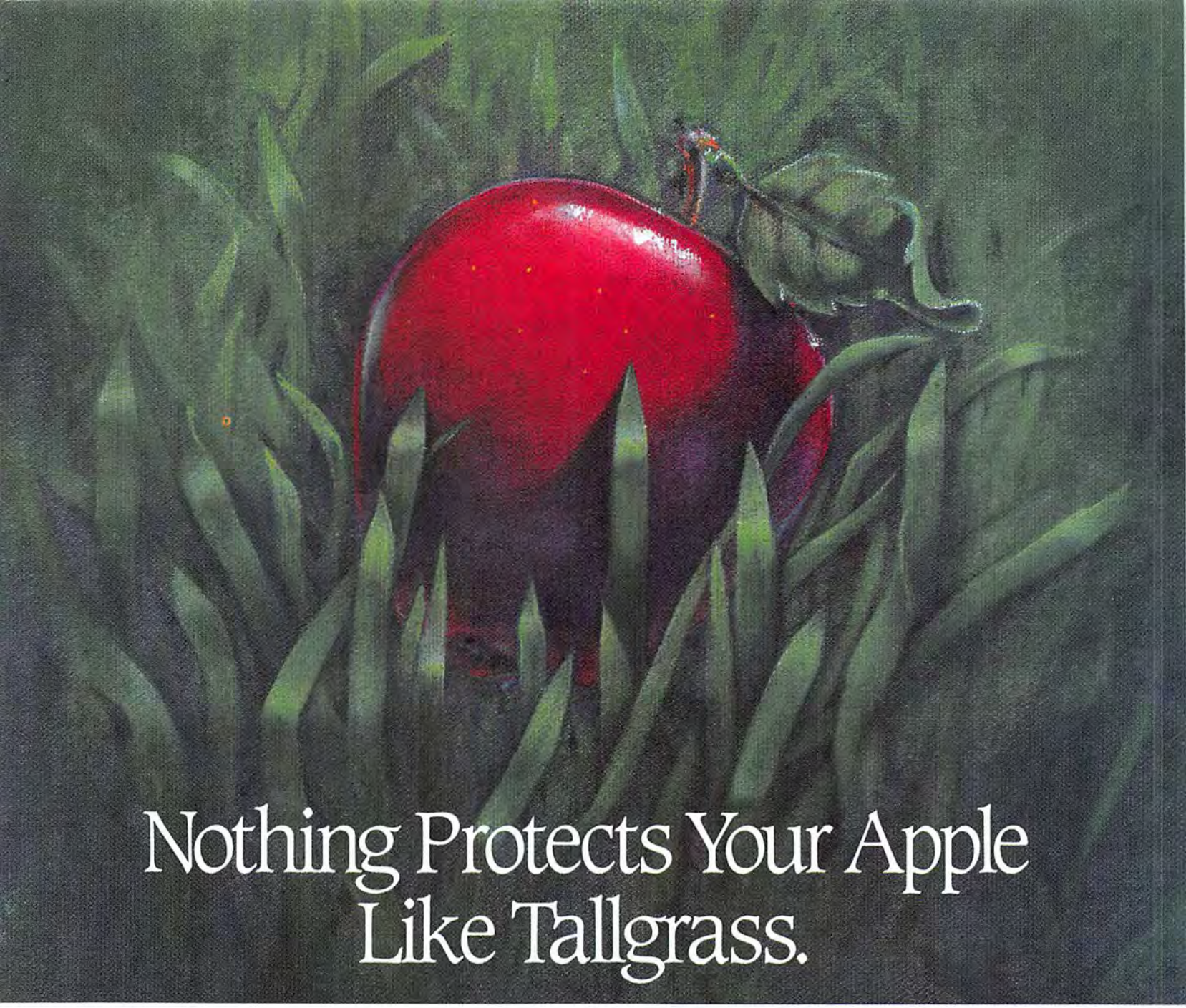
ROBERT HOLMGREN

Apple section manager Rich Cates with an SE, a VAX, and a Mac-to-VAX connector.

In order to link Mac-based documents with DEC's Digital Document Interchange Format (DDIF) compound document format on the VAX, Apple has developed a translator for Apple File Exchange (AFE) that converts DDIF files to and from MacWrite, MacPaint, and PICT formats. Apple also offers a DDIF I/O Toolkit for Mac developers who wish to support DDIF directly within their applications.

Other Mac-VAX interfaces should be available in the first half of 1989 as Apple delivers its server for X-Windows version 11 (X11) and DEC couples X11 support with its DECWindows products. For further information, call Apple Computer, in

(continues)



Nothing Protects Your Apple Like Tallgrass.

Sooner or later your Macintosh is going to crash. And unless your Mac's been backed up, it'll probably take your data with it. That's why you need the TG-4000 high performance tape backup system from Tallgrass. It features the tape format that Apple endorses, QIC-100. We invented it, and now it's the industry standard.

The Fastest Backup in the Business.

The TG-4000 backs up your data twice as fast as our closest competitor, with over 40 Mb of fully-formatted space. So you won't waste time rotating diskettes in and out of drives.

Backup's Never Been So Easy.

You won't ever have to use the manual. The TG-4000 is icon-interfaced, so you can get the system up and running in no time. From novice to power user, the TG-4000 offers the total flexibility you need and expect from a backup system. Plus, it's compatible with Apple's 40 SC,™ AppleShare™ and A/UX.™ And since its backup operations are automatic and unattended, you can just set it and forget it.

Nobody Backs Their Backup System Like Tallgrass. Our Exclusive 3-Year Warranty Proves It.

Whether you need a tape only system, tape plus disk, or you want to add an extra 40-100 Megabytes of disk storage at a later date, the TG-4000 fully backs up your Mac Plus, SE, or II.

Check for yourself. Only Tallgrass has enough confidence to offer a three-year exclusive warranty on their backup system.

Tallgrass Protects Your Company's Bottom Line, Too.

The TG-4000 protects your valuable data at a price much lower than you'd expect, and lower than any of our competitors.

Protect Your Apple Before It Falls.

Call 1-800-TAL-GRAS or write to:
11100 West 82nd Street, Overland Park, KS 66214

Dealers circle 320 on reader service card
End Users circle 6 on reader service card

TALLGRASS TECHNOLOGIES

When it's worth saving, it's worth Tallgrass

©1988 Tallgrass Technologies, Inc. "Apple" is a registered trademark of Apple Computer, Inc. "Mac," "Macintosh," are trademarks of Apple Computer, Inc.

Cupertino, California, at 408/996-1010, or Digital Equipment Corporation, in Littleton, Massachusetts, at 508/486-2769. *–Dave Kosiur*

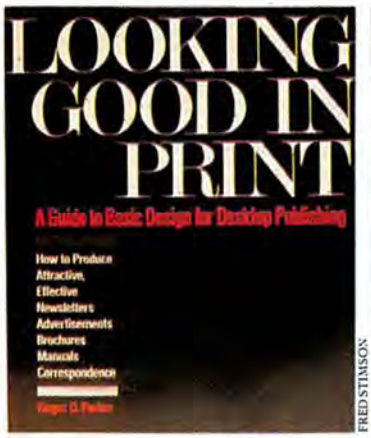
Good-looking Print

One reason Roger C. Parker's new guide to basic design for desktop publishing, *Looking Good in Print,* appears to be headed for success is, well, frankly, because it looks so good in print. When Parker talks about effective use of white space, you can readily see that it works for him. He says there are times when it's best to mix type styles, and you notice that that's just what he's done throughout the text. Early on you realize that the book is its own best example. Its airy design—lots of white space punctuated by bold subheadings, pull quotes, and an abundance of illustrations—makes it a welcome read for the most terminal-weary eyes.

Logically divided into three sections, and utterly generic, the book is designed for both beginning and intermediate users. The first section, Parker's nuts-and-bolts approach to the key elements of graphic design, can be skipped by most experienced users but should prove invaluable to the beginner. The final two sections zero in on how to put together many different types of publications.

The design reference section is filled with large, clear illustrations of sample makeovers, while the final section concentrates on detail, with plentiful and often-insightful examples. Checklists are included so you can see how your publication stacks up.

The book is well indexed, with a complete bibliography and a somewhat smaller directory of associations, user groups, and seminars and workshops.



FRED STIMSON

Looking Good in Print ***looks so good in print that it serves as its own best example.***

While Parker's scrupulous devotion to brevity adds to the book's charm, there are times when greater depth would be welcome. The scant three lines devoted to the delicate art of photo cropping just don't seem enough, and practical information on handling artwork is minimal.

Shortcomings like these, however, are easy to forgive. This glossy black softcover is readable, easy to handle, and immensely useful as a desktop publisher's reference guide. Published by Ventana Press, it sells for $23.95.–*Mary Margaret Lewis*

Digital Signal Processing

Your Mac II can now act as a digital signal processing workstation, with help from Spectral Innovations' MacDSP board. The board is based on AT&T's DSP 32 floating-point signal processing chip, and is offered in three speeds: 8 million floating-point operations ($2249), 12.5 MFLOP ($2745), and 25 MFLOP ($3241). The software you need to use the board costs an additional $496.

Spectral Innovations expects to find a market in universities, engineering labs, medical labs, and wherever else digital signals are processed and analyzed. The Mac II has already been used to display static monochrome graphs of digital signals, such as human voiceprints. Now, with the MacDSP, it can display digital signals in real time, color, and three dimensions.

The MacDSP's easy-to-use Macintosh interface enables the beginner to install both the hardware and the software and have it working in as little as 15 minutes, and gives the expert a graphical signal-processing development environment in which to build, compile, and execute algorithms without writing source code. A 125-kHz programmable analog-to-digital and digital-to-analog converter board costs $486.

For further information, contact Spectral Innovations, 292 Gibraltar Drive, Ste. A-4, Sunnyvale, CA 94089; 408/734-1314.–*Scott Beamer*

ROBERT HOLMGREN

Stanford doctoral candidate Rob Howe uses a Mac II with the MacDSP board to monitor a robot sensor's spectral response.

The Mac Tickles the Ivory

Symbolics, in the process of announcing the signing of a VAR agreement with Apple, has taken the wraps off MacIvory, the company's Mac II–based symbolic processing system. Touted as a low-end delivery vehicle for AI applications, MacIvory is the first system based on Symbolics's proprietary LISP chip technology.

Like Texas Instruments' microExplorer system, MacIvory consists of specialized AI hardware and software. An add-in NuBus board includes Ivory, a complete LISP computer on a chip. Ivory and the Mac II's 68020 processor can com-

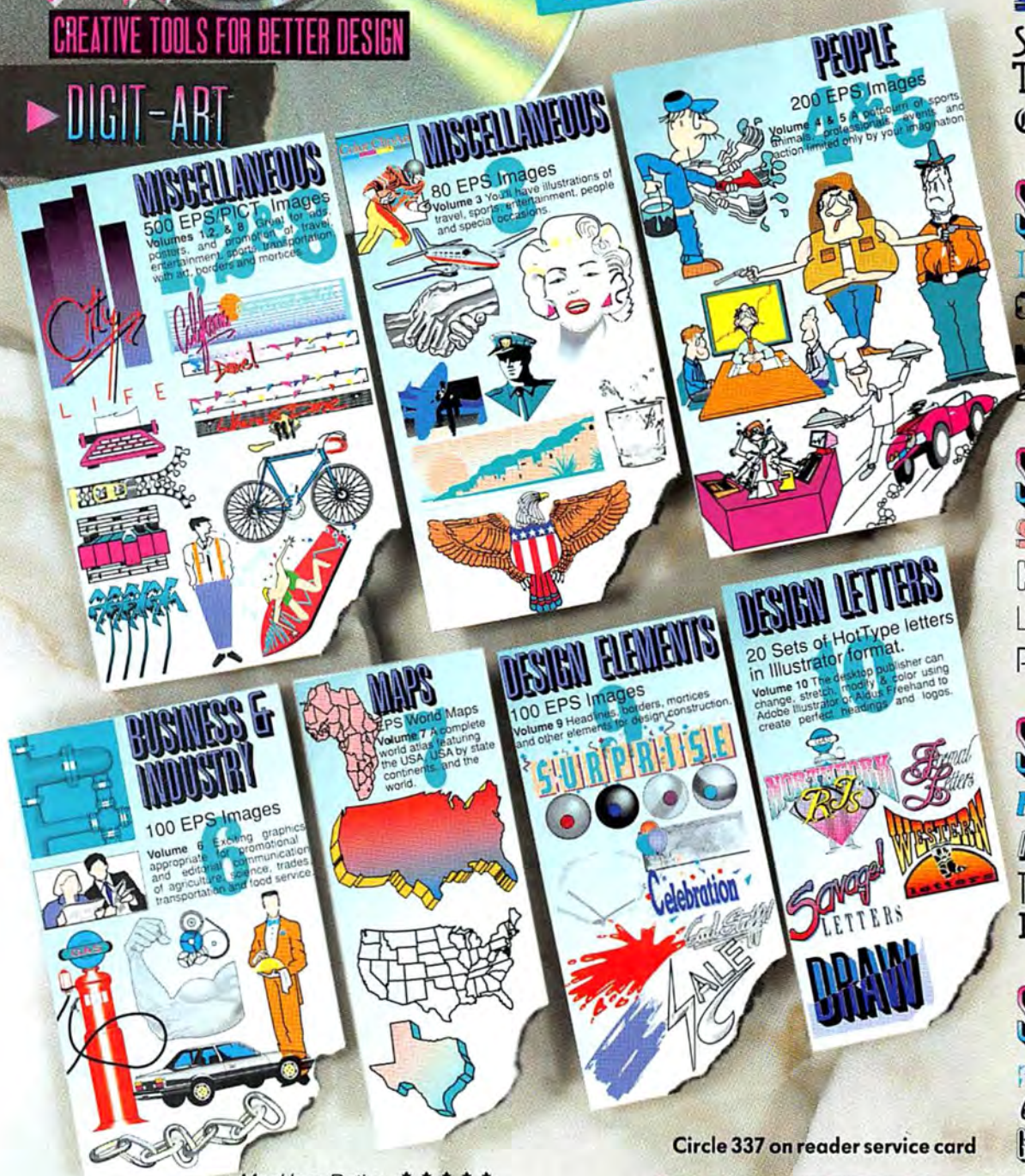
(continues)

DRAW Attention

CREATIVE TOOLS FOR BETTER DESIGN

IMAGE CLUB

▶ DIGIT-ART



▶ HOT TYPE

SET 1

- SCANING
- Paint Brush
- Sofa
- Lynz
- Tipe
- Aria
- Castle
- Fina Font

SET 2

- Liberty
- Rubber Stamp
- CHROME
- DRAGG
- MECHANICAL
- Macntosh
- Surf Style
- PAID

SET 3

- SCORE
- COMIC BOOK
- Compacto Copy
- Compacto Heads
- Lunar
- Coble Font
- Pipe
- Dyno

SET 4

- Fast Lane
- Calgary
- IMAGE CLUB
- Drop Caps
- THEATER
- Signature
- Italian
- HEADLINER

SET 5

- Rock-A-Bill
- Pacasso
- Casino
- Sterling
- GRAPHIK
- AD SERIF
- Tribune
- CLEARANCE
- SALE

SET 6

- GEE GYPP
- Savage
- New Yorker
- MICR FONT
- Quill Font
- Coxtin
- Chrome
- NEON

MacUser Rating 5 mice!

Digit-Art™ by Image Club is vector based PostScript clip art that can be used with any popular Macintosh applications such as PageMaker, ReadySetGo, X-Press, Cricket Draw, FreeHand, and Illustrator. You can maximize printing detail with a PostScript laser printer including a Linotronic for typesetting sharpness. Image Club Digit-Art is easy to customize or add color for separations when used with Adobe Illustrator or Aldus FreeHand. Unlike 300 dpi scanned, jaggy edged bit-map clip art (edited only with programs like MacPaint), Digit-Art is PostScript (EPS). You will experience scaling and editing flexibility without any loss of image quality. Your Image Club art is expertly rendered by our staff of in-house artists and is equivalent to the very best in line art when reproduced on a PostScript printer. Digit-Art is available on the ArtRoom CD ROM or in diskette packages.
HotType™ by Image Club are PostScript fonts for any PostScript printer such as the LaserWriter or Linotronic. HotType is available on the ArtRoom or in diskette packages.
The ArtRoom CD ROM™ is a CD ROM disc which contains over 100 MB (125 disks) of Digit-Art EPS clip art, HotType fonts and templates - our entire library on one convenient compact disc. Quarterly subscriptions to the ArtRoom CD ROM are also available.
For further information on any Image Club product, please call (403) 250-1969.

An innovative mixture of off the shelf software produced this ad - color and all. We used a Mac 11, a LaserWriter, PageMaker, Illustrator, and FreeHand software with Image Clubs' EPS color clip art and laser fonts from the ArtRoom CD ROM. The negatives were output on a Linotronic.

Circle 337 on reader service card

Digit-Art	Disks	Format		$	Demos and CDs	HotType
Volume	#800K	EPS	Pict	Price		Laser Fonts
1	3	●	●	$99	State of the Art Demo $59	1 Set $149
2	3	●	●	$99		2 Sets $259
1&2	6	●	●	$168	State of the Art Dealer Demo $59	3 Sets $379
3	5	●		$149		4 Sets $499
4	3	●		$99		5 Sets $639
5	3	●		$99	ArtRoom CD ROM $999	6 Sets $759
4&5	6	●		$168		1 Font $34
6	3	●		$99		UPS $9
7	5	●		$99	ArtRoom Subscription $249/issue	
8	2		●	$99		
9	5	●		$149	DarkRoom Clip Photography CD ROM $499	
10	2	●		$99		
9&10	7	●		$199		
1,2&8	8		●	$199		

Order Desk 800-661-9410
Outside USA Call (403) 250-1969

Image Club Graphics Inc. 1902 11 St. S.E. Calgary, Alberta T2G 3G2 • Distribution Office - Shelby, MT, USA • Phone: (403) 250-1969 Fax (403) 291-4053

municate either through a specialized shared-memory channel or through a remote procedure call that allows each processor to utilize the resources of the other. For example, an application running on Ivory can communicate with a Mac program running on the 68020.

The MacIvory software environment, Genera, currently runs on Symbolics's 3600 AI workstation. Because the software environment is the same, programmers can develop AI applications on the 3600 and then deliver those applications on the less-expensive MacIvory. MacIvory thus makes symbolic processing more affordable for end users.

Symbolic processing allows programmers to work not only with traditional numbers and

SETH RESNICK

Stephen Hauser of Symbolics' technical staff shows off the Ivory coprocessor board.

characters, but also with symbols, relationships, and graphical objects. This makes it easier to represent and solve complex problems on computers.

MacIvory supports applications written in Symbolics's versions of Common Lisp, C, FORTRAN, and Pascal, and all standard Mac languages. It also supports several Symbolics software products, including Joshua, a tool for building expert systems; Concordia, a hypertext document and delivery system; Statice, an object-oriented database; and S-Dynamics and S-Geometry, 2-D and 3-D animation packages, respectively.

The standard MacIvory configuration includes a Mac II with 1MB of memory, extended keyboard, and monochrome monitor; the NuBus board; the Genera delivery software; and a 300MB SCSI hard disk. Pricing for the system starts at $21,900. An upgrade package is also available with prices starting at $10,900. For more information, contact Symbolics, in Cambridge, Massachusetts, at 617/621-7500. *—Brita Meng*

Visual Information's Presentation Toolkit enables you to convert data from 2-D and 3-D CAD packages into desktop presentations.

Missing Link

Visual Information's Presentation Toolkit provides a means of converting data from 2-D and 3-D CAD packages into desktop presentations.

Presentation Toolkit provides four modules for import and export of images, editing, and even animation for Macintosh-generated graphics, such as those used in desktop presentations and desktop video.

The Reader module facilitates import graphics in PICT, VersaCAD, and DXF file formats, among others, as well as Visual Information's own format.

The Viewer module will allow precise shading of 2-D and 3-D solid objects that have a matte or glossy finish. You can move the viewpoint and light source. The edited image can be saved in black and white or in 8-bit or 24-bit color.

You can create animation effects by "inbetweening" in the FlyBy module; you can produce up to 60-frames-per-second animations for export either into other software such as VideoWorks or directly to external video recording devices through a video board.

The Display module, which is used to preview and export final output, supports the LaserWriter series, some thermal printers, video recorders, and even film recorders.

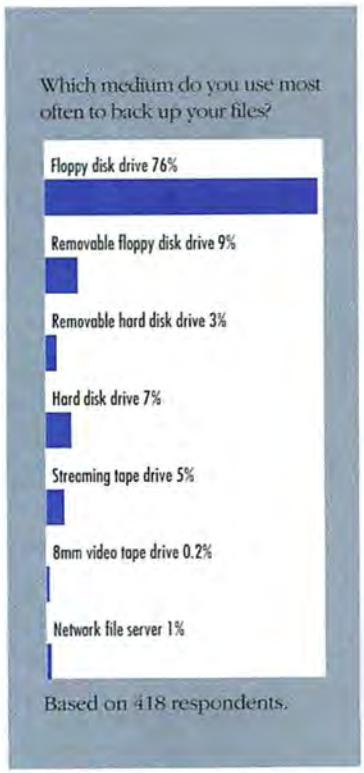
Presentation Toolkit, scheduled for release in October 1988, is priced at $495. For further information, contact Visual Information, 16309 Doublegrove, La Puente, CA 91744; 818/918-8834. *—Scott Beamer*

Readers Survey: Backing Up

This month's readers survey focuses on backing up files. We sent our survey to 1000 randomly selected *Macworld* subscribers and received 449 responses. Of the 449 respondents, 93 percent reported backing up their files. Seventy-two percent of them back up 1 to 5 times per month; 11 percent, 6 to 10 times per month; 6 percent, 10 to 19 times per month; and 11 percent, 20 or more times per month. Twenty-six percent spend 16 to 30 minutes performing a typical backup, and 20 percent spend more than 30 minutes.

Fifty percent of those backing up were happy with their backup medium, but 50 percent weren't satisfied.

(continues)



Respondents to our survey used these media to back up.

OUR SILENTWRITER IS CREATING HEADLINES ON SEVERAL FRONTS.

Our Silentwriter™ LC890 is the first desktop publishing printer that gives you both popular standards for creating graphics and type: true Adobe PostScript® and LaserJet Plus emulation.

That alone would be enough to cause headlines. But we also added many more features to simplify desktop publishing. Like both Apple and IBM compatibility. *PC Week* stated, "the LC890 is actually better than having both an Apple LaserWriter Plus and an HP LaserJet Plus on your desk." Equally impressed, *PC Magazine* awarded it an "Editor's Choice." And cited it in their "Best of 1987" issue.

And because the Silentwriter has a simple, trouble-free printing mechanism, it will be creating headlines for years to come. In fact, it's twice as reliable as ordinary lasers, with an average life of 600,000 pages.

If you don't require the power of our LC890, consider the LC860 Plus for text and less complex graphics.

To start producing your own headlines, call 1-800-343-4418 (in MA 617-264-8635). We'll send you reprints of all the great reviews and the name of the NECIS dealer nearest you.

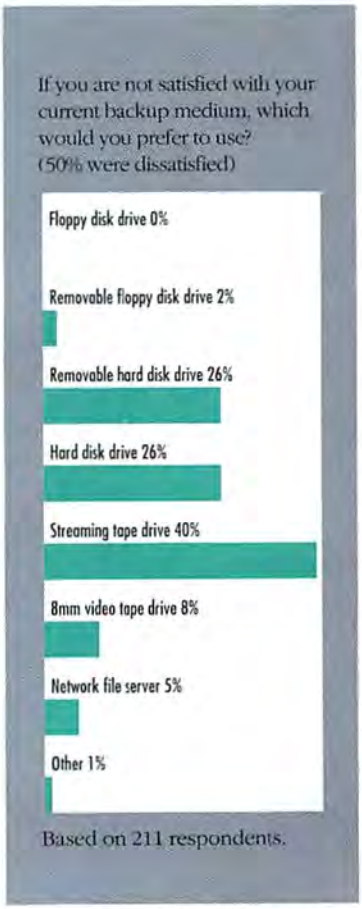
NEC PRINTERS. THEY ONLY STOP WHEN YOU WANT THEM TO.

NEC

C&C Computers and Communications

NEC Information Systems, Dept. 1610, 1414 Massachusetts Ave., Boxborough, MA 01719.

Reprinted from PC Magazine Jan. 12, 1988. © 1987 Ziff Communications Company.



Respondents dissatisfied with their backup medium expressed these preferences.

The most popular backup software products were SuperMac DiskFit (17 percent), Apple Finder (16 percent), and Fastback (11 percent).

Using Plain English

Retrieving information from a large relational database can be a daunting task indeed. You usually have to formulate commands in a difficult language like SQL (Structured Query Language). Now two products from Natural Language Inc. let you ask for information in plain English. Both are Mac II products running under A/UX, Apple's version of the UNIX operating system. Natural Language is a conversational English interface for relational databases. Connector is an interactive, knowledge-based program that helps users customize Natural Language to their particular database application. Connector asks the user questions and interprets the answers so that Natural Language can read vocabulary attributes and attribute relationships.

Natural Language, in turn, acts as the front end to several SQL-based databases by effectively translating users' conversational English sentences into optimized SQL queries. The program then retrieves data and presents it back in plain English. Supported databases include Oracle Corporation's Oracle, Sybase Corporation's Sybase, Relational Technology's Ingres, Digital Equipment Corporation's Rdb, and Informix Software's Informix. The databases can reside on either the Natural Language–equipped Mac, other networked Macs, or networked DEC VAX computers.

Teaching a computer to understand natural human language has been a longtime goal of computer scientists, but it's been a difficult task because, for one thing, computers are very literal, unlike humans. They are easily confused by pronoun references, ellipses, relative clauses, or poorly specified references, and they have no common sense; they can't resolve ambiguity automatically, as humans often can. Finally, computers have trouble with homonyms and misspelled words.

Natural Language, Inc. claims that its technology solves these problems. Natural Language can understand both the syntax and semantics of English, enabling it to comprehend free-form English sentences. It has a built-in knowledge of 10,000 words and 1100 concepts, according to the company. In addition, the Connector transfers database-specific knowledge to Natural Language. The benefits of natural language include reduced training costs, increased productivity, and flexible access to data.

Natural Language and Connector require A/UX version 1.1, 6 megabytes of RAM, and a 60MB hard disk. Natural Language is priced at $5000, and the Connector is priced at $10,000, with volume discounts available. For more information, contact Natural Language Inc., in Berkeley, California, at 415/841-3500. *–Brita Meng*

This image was created with Sculpt-Animate 4D, an animation package with ray-trace rendering and phong shading for simulating the light-refracting properties of real objects.

Sculpt-Animate 4D

Professional animators have clamored for easy-to-use software, and Byte by Byte Corporation has answered with Sculpt-Animate 4D for the Mac, a third-generation animation package that improves upon Sculpt-Animate 3D for the Amiga. The Mac software adds enhanced imaging quality to the intuitive interface and affordability that make the Amiga product popular.

SA-4D offers ray-trace rendering and phong shading, so that images of objects can reflect and refract light at each pixel, simulating the light-refracting properties of real objects. An image of a glass sphere will bend rays as "light" passes through it and distort the way objects appear behind it, just as in real life. Motion blur, another feature of SA-4D, adds a smoothness and natural quality to fast-moving objects that would otherwise appear jumpy or seem to flicker.

The program has optional data conversion modules for transferring files from RenderMan, DXF, and other 2½-D and 3-D systems. It offers real-time wire-frame playback, RAM animation playback, and an easy-to-use animation scripting language for writing your own motion sequences—features usually found in PC-based systems costing around $12,000. Now these and more are available for $500 to $2500, and you can buy only the modules you really need. For more information, contact Byte by Byte Corporation, 512/343-4357. *–Fern Friedman*

It's 7:59 PM EST...

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We only carry the latest versions of products. Version numbers in our ads are current at press time.

CP denotes copy-protected.
NCP denotes not copy-protected.

Aatrix Software ... NCP
3976 Aatrix Payroll 3.01 ..... $99.
4020 Aatrix TimeMinder 1.7 ..... 109.
3958 Aatrix Payroll PLUS 3.02 ..... 159.

Aba Software ... NCP
1305 "Draw it again, Sam" 2.03 ..... 79.
4023 Graphist Paint II 1.0 ..... 289.

Abacus ... NCP
4482 StatView SE + Graphics ..... 229.
4481 StatView II ..... 349.

Microseeds Publishing ... NCP
Screen Gems 1.0—A colorful collection of screen utilities for the Mac II. Includes ColorDesk, Dimmer, Switch-A-Roo, and TN-3. A perfect stocking stuffer! ..... $49.

Access Technology ... NCP
3959 MindWrite 2.0 ..... 95.
4109 MindWrite*Express* 2.0 ..... 149.
1346 Trapeze 2.1 ..... 159.

Acius ... NCP
1010 4th Dimension 1.0.6 ..... 489.
4024 4th Dimension Runtime ..... 239.

Adobe Systems ... NCP
1137 Adobe Illustrator '88 1.6 ..... 319.
1138 The Collector's Edition ..... 79.
1142 Newsletters/Publishing Pack 1 ... 255.
ADOBE TYPE LIBRARY
4025 Palatino 1 ..... 127.
4026 ITC Bookman 2 ..... 127.
4027 ITC Zapf Chancery/Dingbats 3 .... 97.
4028 ITC Avant Garde Gothic 4 ..... 127.
4029 New Century Schoolbook 5 ..... 127.
4030 Optima 6 ..... 127.
4031 ITC Souvenir 7 ..... 127.
4032 ITC Lubalin Graph 8 ..... 127.
4092 ITC Garamond 9 ..... 127.
4033 ITC American Typewriter 10 ..... 97.
4034 ITC Benguiat/Friz 11 ..... 127.
4035 Glypha 12 ..... 127.
4094 Helvetica Light/Black 13 ..... 127.

Broderbund ... NCP
DTP Advisor 1.0—Unravel Desktop Publishing mysteries. HyperCard based program includes a graphic arts tutor with animated sequences, and a project management system with interactive forms ..... $47.

4093 Helvetica Condensed 14 ..... 257.
4036 Trump Mediaeval 15 ..... 127.
4037 Melior 16 ..... 127.
4038 ITC Galliard 17 ..... 127.
4039 ITC New Baskerville 18 ..... 127.
4040 ITC Korinna 19 ..... 127.
4041 Goudy Old Style 20 ..... 127.
4042 Sonata 21 ..... 63.
4043 Century Old Style 22 ..... 97.
4044 ITC Franklin Gothic 23 ..... 187.
4045 ITC Cheltenham 24 ..... 127.
4046 Park Avenue 25 ..... 63.
4047 Bodoni 26 ..... 127.
4048 Letter Gothic 27 ..... 127.
4049 Prestige Elite 28 ..... 127.
4050 Orator 29 ..... 97.
4051 News Gothic 30 ..... 127.
4052 ITC Tiffany 31 ..... 187.
4053 Cooper Black 32 ..... 97.
4054 Stencil/Hobo/Brush Script 33 ..... 97.
4091 Aachen/Roman/Revue 34 ..... 127.
4055 Carta 35 ..... 63.
4197 Lucida 36 ..... 127.
4198 Univers 37 ..... 257.
4199 Univers Condensed 38 ..... 187.
4101 Futura I 39 ..... 187.
4234 Stone Serif 40 ..... 187.
4102 Stone Sans 41 ..... 187.
4200 Stone Informal 42 ..... 187.
4235 Corona 43 ..... 97.
4236 Eurostile 44 ..... 187.
4216 Excelsior 45 ..... 97.
4217 Futura II 46 ..... 187.
4218 Futura Condensed 47 ..... 257.
4219 Lucida Sans 48 ..... 127.
4220 Memphis 49 ..... 257.
4221 Helvetica Compressed 50 ..... 97.
4222 Italia 51 ..... 97.
4223 Belwe 52 ..... 127.
4224 Caslon 53 ..... 127.
4225 Goudy #2 54 ..... 97.
4226 Janson Text 55 ..... 127.
4227 Eras 56 ..... 187.

Aegis Development ... NCP
1133 Doug Clapp's Word Tools 1.2 ..... 42.

Affinity Microsystems ... NCP
1014 Affinifile 1.1 ..... 46.
1016 Tempo II 1.0 ..... 89.

Aldus ... NCP
1330 Freehand 1.0 ..... $349.
1331 PageMaker 3.0 ..... 399.

Altsys ... NCP
1194 FONTastic Plus 2.01 ..... 54.
1195 Fontographer 2.4.1 *(CP)* ..... 239.

Apple Computer ... NCP
1118 HyperCard 1.2.1 ..... 42.

Ars Nova ... NCP
1215 Practica Musica 2.0 ..... 79.

Ashton-Tate ... NCP
1323 FullPaint 1.0SE ..... 69.
4098 Full Impact 1.0 ..... 249.
1324 FullWrite 1.0 ..... 269.
1322 dBASE Mac 1.0 ..... 295.

Berkeley System Design ... NCP
1541 Stepping Out II 2.0 ..... 52.

Beyond, Inc. ... NCP
4203 MenuFonts 2.02 ..... 30.

Blyth ... NCP
1470 Omnis 3 Plus/Express 3.25 ..... 129.
4318 Omnis 3 Plus/Express 3.3 *(3 users)* 399.

Bogas Productions ... NCP
1461 Studio Session 1.2SE ..... 49.
4255 Super Studio Session 1.0 ..... 79.

Borland International ... NCP
1512 Turbo Pascal Tutor 1.0 ..... 46.
1511 Turbo Pascal 1.1 ..... 65.
4294 Turbo Database Toolkit ..... 65.
1507 Numerical Methods Toolbox ..... 65.
1510 Sidekick 2.0 ..... 65.
1506 Eureka: The Solver 1.0 ..... 129.
1508 Reflex Plus 1.01 ..... 165.

BrainPower ... NCP
1532 DataScan 1.0 ..... 118.
1535 DesignScope 1.15 ..... 128.
1534 MathView Professional 1.0 ..... 144.
1537 StatView 512+ 1.2 ..... 175.
3960 ArchiText 1.0 ..... 182.
4066 The Analyzer Bundle ..... 325.

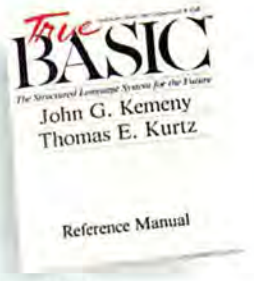
Bravo Technologies ... NCP
1539 MacCalc 1.2D ..... 79.

Bright Star Technology ... NCP
1402 Alphabet Blocks 3.01 ..... 32.
3961 Talking Tiles 1.0 ..... 69.
3962 HyperAnimator 1.0 ..... 79.

Broderbund ... CP
4314 Type! 1.0 ..... 20.

Odesta ... NCP
GeoQuery 1.0—Find specific data by clicking on a point, create reports on any geographic area you choose, & import data via ASCII files. No faster way to get the big picture! ..... $295.

You need an order fast.



True Basic ... NCP

True Basic 2.0–By the creators of BASIC, Drs. John Kemeny & Tom Kurtz. Offers superior graphics, strong mathematics support and a wide range of optional toolkits. Runtime included. . . . . $59.

1423	Jam Session 1.1	30.
1427	Print Shop 1.3 *(NCP)*	36.
4065	PosterMaker Plus 2.5 *(NCP)*	36.
4465	DTP Advisor 1.0	47.
1422	Geometry 1.0	59.
1426	Physics 1.1	59.
4067	Calculus 1.0	59.
4501	Drawing Table 1.0 *(NCP)*	79.
	Caere ... NCP	
4476	OmniPage 1.0	575.
	CAMDE ... NCP	
1635	Nutri-Calc Plus 1.1	169.
	CasadyWare ... NCP	
1575	Fluent Fonts 2.0	27.
	FLUENT LASER FONTS	
1576	Bodoni (V1)	46.
1587	San Serif (V2)	46.
1588	Ritz/Right Bank (V3)	46.
1589	Monterey (V4)	46.
1590	Regency Script/Calligraphy (V5)	46.
1591	Prelude Script (V6)	46.
1592	Coventry Script/Zephyr (V7)	46.
1593	Gregorian/Dorovar (V8)	46.
1594	Cyrillic (V9)	46.
1577	Bodoni Ultra (V10)	46.
1578	Sans Serif Bold (V11)	46.
1579	Sans Serif Extra Bold (V12)	46.
1580	Gatsby Light (V13)	46.
1581	Micro (V14)	46.
1582	Micro Extended (V15)	46.
1583	Galileo Roman (V16)	46.
1584	Campanile-Giotto (V17)	46.
1585	Alexandria (V18)	46.
1586	Jott Casual (V19)	46.
4204	Gazelle & Kells Meath (V20)	46.
4205	Paladin & Abalene (V21)	46.
4206	Collegiate (V22)	46.
	CE Software ... NCP	
1727	Calendar Maker 3.0	27.
1728	Disktop 3.0.3	$27.
1729	QuicKeys 1.1	53.
3963	QuickMail 1.05	165.
	Challenger Software ... NCP	
1610	Mac3D 2.1	119.
	Chang Labs ... NCP	
1613	Rags to Riches Ledger 3.1	120.
1617	Rags to Riches Receivables 3.1	120.
1614	Rags to Riches Payables 3.1	120.
1611	C.A.T. 2.0	229.
1615	Professional Billing 2.9	239.
1612	Inventory Control 2.6	239.
1622	Rags to Riches 3-Pak	289.
1616	Professional 3-Pak	359.
1618	Retail Business 3-Pak	359.
	Claris ... NCP	
1123	MacPaint II 2.0	105.
1129	MacWrite 5.0	105.
4196	FileMaker II 4.0	239.
1117	MacDraw II 2.0	329.
1125	MacProject II 2.0	395.
	Coda Music Systems ... CP	
4367	MacDrums	32.
4483	Perceive *(NCP)*	52.
	Cricket Software ... NCP	
1669	Pict-O-Graph 1.0 special	89.
1668	Cricket Graph 1.2	119.
4346	Cricket Paint	119.
1667	Cricket Draw 1.1	169.
1670	Cricket Presents 1.0	289.
	Dac Software ... NCP	
4502	Dac-Easy Light 1.0	45.
	DataViz ... NCP	
1823	MacLink Plus 2.11	145.
	Davidson ... CP	
1734	Math Blaster! 1.0	27.
	Deneba Software ... NCP	
1770	Merriam-Webster's Thesaurus 2.0	35.
1767	Comment 2.0	54.

Dac Software ... NCP

Dac-Easy Light 1.0–Everything you need for home and small business accounting. Easy set-up of bank accounts, reconciliations. Write checks, enter customers and much more in just minutes . . . . . $45.

1768	Coach Professional 3.0A	$105.
1769	Canvas 2.0	169.
	DreamMaker ... NCP	
4115	MacGallery *(HyperCard format)*	28.
4088	MacGallery *(MacPaint format)*	28.
	Dubl-Click Software ... NCP	
1824	Calculator Construction Set 1.04	36.
3972	World-Class Fonts! Originals (1-2)	45.
3973	World-Class Fonts! The Stylish (3-4)	45.
3974	World-Class Fonts! The Giants (5-6)	45.
3964	WetPaint Classic Clip-Art (1-2)	45.
3965	WetPaint For Publishing (3-4)	45.
3966	WetPaint Animal Kingdom (5-6)	45.
3967	WetPaint Special Occasions (7-8)	45.

True Basic ... NCP

Math Made Easy, with the Kemeny-Kurtz Math Series. Stand-alone, menu-driven applications help you grasp tough math problems. *Algebra, Pre-Calculus (w/Trigonometry), Calculus, Statistics, Probability or Discrete Math* . . . . . $35.

3968	WetPaint Printer's Helper (9-10)	45.
3969	WetPaint Industrial Revolution (11-12)	45.
3970	WetPaint Old Earth Almanac (13-14)	45.
3971	WetPaint Island Life (15-16)	45.
	Electronic Arts ... NCP	
1543	Thunder! 1.1	30.
1843	Disk Tools Plus 1.01	31.
1846	Deluxe Music Construction Set 2.0	61.
4315	Studio/8 1.0	319.
	Enzan-Hoshigumi USA ... NCP	
1879	MacCalligraphy 2.0	105.
1880	Year of the Dragon	21.
1881	Japaneze Clip Art Scroll 1 "Heaven"	52.
1882	Japaneze Clip Art Scroll 2 "Earth"	52.
1878	Japaneze Clip Art "Borders" Scroll	65.
	Farallon Computing ... NCP	
2199	MacRecorder 1.0	139.
4208	Timbuktu 2.01	69.
	Fifth Generation Systems ... NCP	
4287	Pyro! *(screen saver)*	15.
3954	PowerStation 2.5 special	32.
3955	Suitcase II 1.0	40.
3953	FastBack Mac 1.03	54.
	1st Byte ... CP	
3940	First Shapes	32.

900C

MEMBER DIRECT MARKETING ASSOCIATION

MacConnection™ 1-800/622-5472

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/622-5472 603/446-7711 FAX 603/446-7791

How fast? Tomorrow.

CE Software ... NCP

Desktop 3.0.3–A Finder within a desk accessory. Create, delete, rename and move folders and files from within any application. Includes Widgets & Laserstatus ..... $27.

3936 KidTalk ..... 32.
3939 MathTalk ..... 32.
3941 SmoothTalker 2.0 ..... 32.
3935 Speller Bee ..... 32.

Foundation Publishing ... NCP

2385 Comic People ..... 25.
2384 Comic Strip Factory 1.6 ..... 44.

Fox Software ... NCP

4195 FoxBASE+/Mac 1.0 ..... 208.

Freesoft ... NCP

2219 Red Ryder 10.3 ..... 54.

FWB Software ... NCP

2232 Hard Disk Partition 2.0 ..... 45.
2231 Hard Disk Util 2.03 ..... 53.

Generic Software ... NCP

4319 Generic CADD Level 1 ..... 54.
4411 Flow Charts & Schedules ..... 18.
4402 Home Landscaping ..... 18.
4401 Basic Home Design ..... 35.
4410 Commercial/Residential Furnishings. 35.
4400 Heating/Ventilation/Air Conditioning . 35.
4406 Welding ..... 35.
4409 Bathroom Design ..... 49.
4403 Kitchen Design ..... 49.
4404 Landscaping Architecture ..... 49.
4405 Pipe Fittings ..... 49.

Great Wave Software ... NCP

2277 TimeMasters 1.0 ..... 22.
2276 KidsTime 1.2 ..... 26.
4334 NumberMaze ..... 27.
2270 American Discovery 2.1 ..... 27.
2272 Crystal Paint 1.0 ..... 27.
2273 ConcertWare+ 4.0 ..... 39.
2271 ConcertWare+ MIDI 4.0 ..... 79.

Greene, Inc. ... NCP

2269 QuickDEX 1.4A ..... 32.

ICOM Simulations ... NCP

4084 On Cue 1.3 ..... 36.
4085 TMON 2.8.1 ..... 89.

Ideaform ... NCP

2419 DiskQuick 2.10 ..... 27.
2418 HyperBook Maker 1.0 ..... 31.
2420 MacLabeler Plus 3.0 ..... 42.

Imagine ... NCP

2422 Smart Alarms 2.9 ..... 34.
2423 Multi-user Appointment Diary 1.0 ... 84.

Individual Software ... NCP

4209 Typing Instructor Encore ..... 26.
4491 101 Scripts & Buttons for HyperCard $37.
2943 101 Macros for Excel ..... 37.

Infosphere ... CP

2513 LaserServe 2.0 ..... 62.
2514 MacServe 2.4 ..... 155.

Innovative Data Design ... NCP

2417 MacDraft 1.2B ..... 149.

Insignia ... NCP

4089 SoftPC 1.1 ..... 479.

Intuit ... NCP

2425 Quicken 1.0 ..... 33.

Kent Marsh Ltd. ... NCP

2591 The NightWatch 1.02 ..... 89.
2592 MacSafe 1.08C ..... 89.

LaCie ... NCP

4335 Silverserver 1.0 ..... 92.

LaserWare ... NCP

4095 LaserPaint Color II 1.8 ..... 359.

Layered ... NCP

2615 Notes for...Excel 1.0 ..... 40.
2618 Notes for...Word 1.0 ..... 40.
2616 Notes for...PageMaker 1.0 ..... 40.
2608 Front Desk 2.0 *(multi-user)* ..... 59.
2613 Insight OneWrite 1.0 ..... 185.
2610 Insight Expert AR 2.0 ..... 475.

LaCie ... NCP

Silverserver 1.0–Powerful server utility lets local & remote users share hard drives and modems. Plus provides complete hard disk management, fast disk duplication and network electronic mail ..... $92.

2611 Insight Expert GL 2.0 ..... 475.
2609 Insight Expert AP 2.0 ..... 475.
2612 Insight Expert Inventory 2.0 ..... 475.
2614 Insight Expert Time Billing 2.0 ..... 475.

Learning Company ... CP

2670 Reader Rabbit 2.0 ..... 33.

Letraset ... NCP

2619 Image Studio 1.5 ..... 279.
2621 Ready,Set,Go!4 4.0A ..... 279.
4128 Ready,Set,Show 1.0 ..... call

Linguist's Software ... NCP

2649 Tech ..... 59.
2643 LaserTech ..... 79.

FOREIGN LANGUAGE FONTS

2628 SuperFrench/German/Spanish .... 39.
2630 MacGreek ..... 59.
2636 MacKanji 2.0 ..... 59.

FOREIGN LASER FONTS

2639 LaserFrench/German/Spanish ..... 79.
2640 LaserGreek ..... 79.

Lundeen & Associates ... NCP

2684 WorksPlus Spell 1.1 ..... 46.
2683 WorksPlus Command 1.1 ..... 59.

MacroMind ... NCP

4202 Black & White Movies *(17 of them!)* . .$30.
4291 Video Clip Animation ..... 36.
4110 Clip Sounds *(sound effects & music)*. 36.
4201 Clip Charts *(bar, pie & bullet charts)* . 36.
1430 VideoWorks II HyperCard Driver 1.2 60.
1432 VideoWorks II Accelerator 1.1 ..... 118.
1431 VideoWorks II 2.0 ..... 118.

Manx Software ... NCP

4068 Aztec C 3.6B ..... 65.
4316 Aztec C UniTools ..... 65.
4317 Aztec SDB 3.6B ..... 65.
4069 Aztec MPW C 3.6B ..... 99.
4075 Aztec C + SDB 3.6B ..... 99.

MECA ... NCP

2796 Managing Your Money 2.0 ..... 128.

MEDIAGENIC ... NCP

1334 City to City 1.0 ..... 30.
4295 Focal Point/Business Class Bundle . . 48.
1338 Reports! 1.2 ..... 59.
3790 Lookup 1.0C ..... 30.
3788 Findswell 2.0 ..... 36.
3792 Spellswell 2.0F ..... 45.

Microlytics ... NCP

2733 Word Finder 2.0 ..... 33.
2732 GOfer 1.0 ..... 44.

Microseeds Publishing ... NCP

2913 Redux 1.5 ..... 65.
4210 Screen Gems 1.0 ..... 49.

Microsoft ... NCP

4471 QuickBasic 1.0 ..... 65.
2863 Chart 1.02 ..... 79.
2885 Microsoft Write 1.0 ..... 79.
2866 File 1.05 ..... 119.
2884 Works 1.1 ..... 189.
2875 Microsoft Mail (1-4 users) ..... 195.
2872 Microsoft Mail (5-10 users) ..... 325.
2873 Microsoft Mail (11-20 users) ..... 499.
2874 Microsoft Mail (21-32 users) ..... 650.
2865 Excel 1.5 ..... 249.
2882 Word 3.02 ..... 249.
2878 PowerPoint 2.0 ..... 249.

Miles Computing ... NCP

2768 Orchestra of Fonts Vol. 4 .... special 19.
2771 Mac the Ripper Vol. 3 ..... 27.
2769 Peoples, Places & Things Vol. 5 .... 27.

Mindscape ... NCP

2748 The Perfect Score: SAT 1.0 *(CP)* .... 46.

Microlytics ... NCP

GOfer 1.0–Where's that letter? Which memo mentioned coffee breaks? GOfer quickly searches all your text files by words you recall and tells you what's buried where ..... $44.

How much? $3.00.

2746	GraphicWorks 1.1	$84.
	Monogram ... NCP	
2780	Dollars & Sense 4.0	81.
2779	Business Sense 1.0	279.
	Nantucket ... NCP	
2971	McMax 1987.25	189.
	Nolo Press ... NCP	
4228	For the Record 1.0	29.
2981	WillMaker 3.0	34.
	North Edge Software ... NCP	
2986	Timeslips III 1.05	117.
	Odesta ... NCP	
4211	DataDesk Professional 2.0	289.
3014	GeoQuery 1.0	295.
3013	Double Helix II 2.0R40	339.
	Olduvai Software ... NCP	
3029	DA-Switcher	25.
3033	Art Clips	35.
4503	MultiClip 1.0	36.
3031	Icon-It! 1.01	39.
3030	FontShare 1.01	149.

Fifth Generation Systems ... NCP
Suitcase II 1.0–Allows unlimited fonts & DAs without having to install them in your system. You can load them on startup or change on the fly. Now works with beep sounds as well **$40.**

3035	Read-It!TS 1.06H6	79.
3034	Read-It! 1.06H	199.
	OWL International ... NCP	
3082	Guide 2.0	99.
	PCPC ... NCP	
3175	HFS Backup 3.0 *(new & improved)*	54.
	Postcraft International ... NCP	
3157	Laser FX 1.6	114.
4058	Laser FX Pack I	29.
4059	Laser FX Pack II	29.
4060	Laser FX Pack III	29.
4061	Laser FX Pack IV	29.
4062	Laser FX Pack V	29.
4063	Laser FX Pack VI	29.
	Pro Plus ... CP	
4310	Wall Street Investor	349.
	ProVUE Development ... NCP	
3191	OverVUE 2.1F	149.

Manx Software ... NCP
Aztec C+ SDB 3.6B–Includes source level debugger, Aztec shell, C compiler, macro assembler, linker, librarian, libraries, profiler, & toolbox interface ..... **$99.**

	Quark ... NCP	
3230	Quark XPress 2.0	call
	Rubicon Publishing ... CP	
3272	Dinner At Eight-Encore Edition 1.03	45.
	Satori ... NCP	
3320	BulkMailer 3.22	79.
3321	BulkMailer Plus 3.22	195.
3323	Legal Billing II 2.54	539.
3324	Project Billing 1.54	409.
	Sensible Software ... NCP	
3375	Sensible Grammar 1.1D	54.
	Silicon Beach Software ... NCP	
3504	Silicon Press 1.1	41.
3508	World Builder 1.0	41.
3506	SuperPaint 1.1	79.
3507	Super3D 1.0	157.
3980	Digital Darkroom 1.0	157.
	Simon & Schuster ... NCP	
4230	The Fully Powered Mac Book	24.
3305	Typing Tutor IV 1.2	35.
	SmethersBarnes ... NCP	
1478	Prototyper 1.0	72.
	SoftStyle ... NCP	
3282	Printworks (Dot Matrix) 3.23	43.
3281	Printworks (Daisywheel) 3.0	56.
3283	Printworks (HP laser) 3.0	85.
	SoftView ... NCP	
3471	MacInUse 2.0	42.
3473	TaxView Planner 2.0 (1988-1992)	45.
3981	FormSet Business Forms Edition 1.1	55.
3470	MacInTax	65.
	Software Discoveries ... NCP	
3374	Merge Write 1.0	34.
3373	Record Holder Plus 3.0	45.
	Software Ventures ... NCP	
3455	Microphone II 2.0	225.
	Solutions, International ... NCP	
3448	SmartScrap & The Clipper 1.05	35.
3449	SuperGlue 1.05	52.

3446	The Curator 1.05	$79.
4308	BackFAX *(reqs. Apple FAX modem)*	129.
	Spinnaker/Hayden ... CP	
2329	SAT Score Improvement 1.0	58.
	Springboard ... CP	
3528	Art-a-la-Mac Vol. 1	23.
3529	Art-a-la-Mac Vol. 2	23.
3530	Certificate Maker 1.0	24.
3532	Certificate Maker Library Vol. 1	18.
3531	Early Games	28.
4493	Atlas Explorer	28.
4495	Family Matters	28.
4492	Works of Art Assortment Series	28.
4494	Works of Art Education Series	28.
4496	Works of Art Holiday Series	28.
4498	Works of Art Laser Art Business	59.
4499	Works of Art Laser Fonts Vol. 1	59.
4497	Top Honors	59.
4500	Springboard Publisher	109.
	SuperMac Software ... NCP	
3383	SuperSpool 5.0	54.
3382	SuperLaserSpool 2.0	82.
3378	Multi-User SuperLaserSpool 2.0	199.
3377	Diskfit 1.4	54.
3379	Network Diskfit 1.4	199.
3381	Sentinel 2.0	155.
3380	PixelPaint 1.1	199.
4086	Acknowledge 1.0	349.
	Survivor Software ... NCP	
3289	MacMoney 3.01	62.
	Symantec ... NCP	
3982	MacSQZ! 1.05	49.
3983	SUM 1.0	59.
3422	More 1.1C	175.
3423	HFS Navigator 1.0	34.
3419	Laserspeed 1.6	55.
3421	Lightspeed Pascal 1.11A	65.
3420	Lightspeed C 3.01	95.
3415	CAPP's for Lightspeed C 1.0	49.

SoftView ... NCP
TaxView Planner 1988-1992–For people who care about their money. Allows 25 different tax scenarios ..... **$45.**

900C

MEMBER DIRECT MARKETING ASSOCIATION

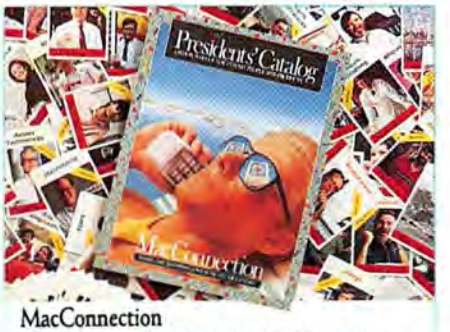
1-800/622-5472

MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/622-5472 603/446-7711 FAX 603/446-7791

From C.A.T.'s to mice

3416	CAPP's for Lightspeed Pascal 1.0	$49.
	Symmetry ... NCP	
3318	HyperDA 1.1	38.
3317	Acta 2.01	46.
4504	Acta Advantage 1.0	69.
4160	PictureBase-WetPaint	99.
	Synergy ... NCP	
3130	VersaTerm 3.20	69.
3129	KaleidaGraph 1.10	125.
3131	VersaTerm-PRO 2.20	195.
	3G Graphics ... NCP	
3942	Images with Impact	59.
	Think Educational ... CP	
3615	MacEdge II 1.0	27.
3616	Mind Over Mac 1.4	27.
	T/Maker ... NCP	
3640	ClickArt Personal Graphics	28.
3642	ClickArt Publications	28.
3632	ClickArt Business Images	28.
3636	ClickArt Holidays	28.
3637	ClickArt Letters Vol. 1	28.
3638	ClickArt Letters Vol. 2	28.
3634	ClickArt Effects	28.
3633	Christian Images	35.
3631	Bombay Laser font	45.
3641	Plymouth Laser font	45.
3643	Seville Laser font	45.
3635	EPS Illustrations	75.
3639	WriteNow 2.0	109.
	TML Systems ... NCP	
3548	Source Code Library II 1.0	42.
3549	TML Pascal II 1.0	79.
	TOPS ... NCP	
4189	TOPS Teleconnector *(DB-9)*	39.
4188	TOPS Teleconnector *(DIN-8)*	39.
3726	TOPS for DOS 2.0	119.
3723	TOPS Mac 2.0 .special	119.
3724	NetPrint 2.0	119.
3725	TOPS Repeater	132.
3720	TOPS Flashcard *(90 days)*	169.
3417	InBox Starter Kit 2.2	199.
3418	InBox Connection Mac 2.2	75.
	Traveling Software ... NCP	
3729	LAP-LINK Mac 1.2	84.
	True BASIC ... NCP	
	LANGUAGE & TOOLKITS	
3587	True BASIC 2.0	59.
3570	Advanced String	49.
3574	Business Graphics	$49.
3579	Mathematicians Toolkit	49.
3583	Scientific Graphics	49.
3584	Sorting & Searching	49.
3588	3D Graphics	49.
4178	Communications	49.
	EDUCATIONAL SOFTWARE	
3571	Algebra	35.
3573	Arithmetic	35.
3575	Calculus	35.
3577	Discrete Math *(multi-variate calculus)*	35.
3580	Pre-Calculus	35.
3581	Probability	35.
3586	Trigonometry	35.
3585	TrueSTAT	49.
	Unicorn ... CP	
3751	Animal Kingdom	27.
3752	Decimal Dungeon	27.
3753	Fraction Action	27.
3755	Mac Robots	27.
3756	Math Wizard	27.
3754	Read-A-Rama	32.
	William & Macias ... NCP	
3779	DiskFinder 1.07	29.



MacConnection

MacConnection Presidents' Catalog—Upon your request, we'll send the premier edition of our catalog direct to your door. And, with orders of $250 or more, you'll also receive a complete set of 96 highly collectible Presidential Cards! *(While supplies last)*

3783	myDiskLabeler w/Color 2.8.1l	31.
3784	myDiskLabeler w/LaserWriter 2.8.1LI	34.
	WordPerfect ... NCP	
3800	WordPerfect Mac 1.0.1	185.
	Zedcor ... NCP	
3986	DeskPaint 2.0	69.
3985	ZBasic 5.0	105.

ENTERTAINMENT

	Addison-Wesley ... NCP	
4407	The Hobbit 1.0	24.
4474	Fellowship of the Ring 1.0	24.
	Accolade ... CP	
1184	Hardball	23.
4484	Mean 18	24.
4485	4th & Inches	24.
	Avalon Hill ... CP	
1011	MacPro Football 2.0	28.
	Blue Chip ... CP	
1441	Millionaire	35.
	Broderbund Software ... CP	
1424	Lode Runner	12.
4099	Shufflepuck Cafe *(air hockey)*	22.
4111	Moebius *(adventure & arcade)*	24.
1429	Ultima III	24.
4229	Where in World Carmen San Diego?	25.
1421	Ancient Art of War	27.
	Bullseye ... CP	
1544	Ferrari Grand Prix	32.
4074	P51 Mustang Flight Simulator	32.
	Discovery Software ... NCP	
4408	Arkanoid	27.
	Electronic Arts ... CP	
1851	Scrabble 1.0	26.
1850	Reach for the Stars	26.
1842	Chessmaster 2000	28.
4064	Chuck Yeager Flight Simulator	32.
	Epyx ... CP	
2037	Sub Battle Simulator *(NCP)*	29.
	Greene, Inc. ... CP	
2268	Crystal Quest 2.2C	26.
4119	Crystal Quest w/Critter Editor 2.2C	42.
	Infinity Software ... CP	
2518	GO	27.
2519	Grand Slam Tennis	27.
	MacroMind ... NCP	
2772	Mazewars+	31.
	MEDIAGENIC ... CP	
1339	Shanghai	24.
4489	Sherlock Holmes: Crown Jewels	24.
4486	Manhole	30.
4475	Quarterstaff	30.
4490	Might and Magic	36.
	Microsoft ... CP	
2868	Flight Simulator	32.
	Micro Sports ... NCP	
2787	MSFL Pro League Football	32.
	Miles Computing ... CP	
2764	Down Hill Racer	24.
2767	Harrier Strike Mission II	27.
2765	Fool's Errand	27.
	Mindscape ... CP	
4083	Balance of Power 1990	30.
3987	Colony	30.
2743	Crossword Magic	30.
2745	Deja Vu	30.
2749	Shadowgate	30.
2750	Trust & Betrayal: Legacy of Siboot	30.
2751	Uninvited	30.
	PBI Software ... CP	
3110	Strategic Conquest Plus 1.3	35.

CE Software ... NCP

QuickMail 1.05—Send mail across wide area networks, to hardware devices, even other mail systems. Conferencing, remote access, & form customizing capabilities as well ..... $165.

Olduvai ... NCP

MultiClip 1.0—Superfast scrapbook/clipboard replacement allows multiple clipboards ("ClipFrames"). ClipFrames are fully editable and provide a constant backup of clipboard activity ..... $36.

"My mouse died."

"Gentlemen,

"My mouse died. I needed a new one. I had recently read your magazine ad about overnight shipping.

"I called you at 3:30 PM on Wednesday to order a new mouse. When your salesman, Robert, said, 'Look for it tomorrow,' I thought, 'Uh huh.' But the next morning at 9 AM I signed for it during my morning coffee. Only 18 hours later. I couldn't believe it.

"Congratulations and thank you."

Foster C. Wilson

Foster C. Wilson
Newark, OH

1-800/622-5472

MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/622-5472 603/446-7711 FAX 603/446-7791

©Copyright 1989 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc.

Just for the record, all the ads in this series feature real live people and the real live letters they wrote us. Really!

Call 800/622-5472.

MSC Technologies ... lifetime

2808 A+ Mouse ..... $65.
2809 A+ Mouse ADB ..... 85.

Nutmeg Systems ... 90 days

2992 15" Monitor for Mac Plus..... 1295.
2994 15" Monitor for Mac SE..... 1295.
2993 15" Monitor for Mac II..... 1395.
4002 19" Monitor for Mac Plus..... 1395.
4003 19" Monitor for Mac SE..... 1395.
4004 19" Monitor for Mac II..... 1495.

Nuvotech ... 1 year

3001 TurboNet ST *(DB-9)*..... 30.
3000 TurboNet ST *(DIN-8)*..... 30.

Orange Micro ... 1 year

4488 Grappler Spooler ..... 39.
3036 Grappler..... 79.
4076 Grappler LQ..... 92.
4487 Grappler LS ..... 92.

PCPC ... 2 years

3177 HD-WSI *(Apple HD-20 to SCSI)*... 269.
3181 MacBottom HD 21 SCSI..... 659.
3180 MacBottom HD 21 w/Modem.... 779.
3185 MacBottom HD 32 SCSI..... 699.
3184 MacBottom HD 32 w/Modem.... 829.
3189 MacBottom HD 45 SCSI..... 859.
3188 MacBottom HD 45 w/Modem.... 979.
3190 MacBottom HD 70 SCSI..... 999.

Practical Peripherals ... 5 years

3100 1200 Baud External Modem..... 79.
3102 2400 Baud External Modem..... 181.
3089 Mac Communications Pack ..... 229.

Sharp ... 90 days

3453 JX-450 Color Scanner ..... 5895.

Shiva ... 1 year

4347 NetBridge..... 279.
3444 NetSerial X232 ..... 289.
3442 NetModem V1200 ..... 359.
3443 NetModem V2400 ..... 479.

Summagraphics ... 90 days

4298 BitPad Plus ADB..... 329.

Thunderware ... 90 days

3648 ThunderScan 4.0 with PowerPort . 199.
3645 Mac II Power Accessory ..... 42.

DISKS

2214 **Fuji** 3½" DS/DD Disks ..... 18.
3297 **Sony** 3½" DS/DD Disks ..... 19.
3772 **Verbatim** 3½" DS/DD Disks..... $19.
2792 **MAXELL** 3½" DS/DD Disks..... 20.

Mobius Products ... 1 year

Fanny Mac QT—Effective, ultra-quiet cooling fan with a sleek, low-profile design. Reduces temperature over 40°F and includes a built-in surge protector..... $65.

INFORMATION SERVICES

CompuServe

1676 CompuServe Information Service .. 24.
1671 Grolier's Online Encyclopedia..... 32.
1673 CompuServe Navigator 2.02 ..... 45.
1674 Standard Service/Navigator Bundle 59.

Dow Jones

1789 Dow Jones Membership Kit ..... 24.
1785 Desktop Express 1.03 ..... 95.
1786 Market Manager Plus 2.0 ..... 189.

ACCESSORIES

Bantam Books

1403 Complete HyperCard Handbook .. 23.

Computer Coverup

1723 ImageWriter II Cover..... 8.
1722 ImageWriter LQ Cover ..... 8.
1720 Mac Plus Cover Set..... 10.
1725 Mac SE Ext. Keyboard Cover Set .. 10.

Ergotron ... 1 year

The Muzzle—Protect your data/software against theft and alteration. Blocks access to floppy drive and power receptacle..... $62.

MacTilt—Eliminate eye, neck, and back strain. Unequaled ease of adjustment ..... $68.

Goldstein & Blair

2267 The Macintosh Bible *(2nd Edition)*.. 21.

I/O Design ... lifetime

2378 MacLuggage HDware ..... 49.
2379 MacLuggage Imageware II..... 49.
2376 MacLuggage Macinware Plus .... 64.
2381 MacLuggage Macinware SE..... 75.

Kalmar Designs

2531 Teakwood Roll-top Case *(45 disks)* . 14.
2532 Teakwood Roll-top Case *(90 disks)* . 21.
2533 Teakwood Roll-top Case *(135 disks)* 31.

Moustrak

2694 Moustrak Pad *(standard 7"x9")* .... 8.
2692 Moustrak Pad *(large 9"x11")* ..... 9.
2693 Moustrak Pad L/F *(9"x11")*..... 10.
Moustrak Designer Series *(Features selected photos from the book, "A Day in the Life of America.")* .....each 12.

Ribbons

Available in black, blue, brown, orange, green, purple, red, yellow, silver & gold.

3255 ImageWriter II Ribbon..... 4.
3261 ImageWriter II 4-color Ribbon..... 9.
3270 ImageWriter II Rainbow Six Pack... 20.

I/O Design ... lifetime

MacLuggage Macinware SE—Features a tear, soil, and water resistant cordura outer shell, and ultra-high density foam. Pockets for mouse cords, extended keyboard and drive ..... $75.

3260 ImageWriter LQ Black Ribbon..... 17.
4011 ImageWriter LQ 4-color Ribbon ... 20.

Sopris Softworks ... lifetime

4163 The Gallery *(folding disk holder)* ... 20.
4017 ImageWriter II Cover ..... 11.
4019 Mac SE & Ext. Keyboard Cover.... 15.
4018 LaserWriter II Cover..... 17.
4012 High Trek ImageWriter II carry case. 49.
4013 High Trek Mac Plus carry case .... 59.
4014 High Trek Mac SE & ext. kybd. case 69.

Targus

3618 ImageWriter II Carry Case..... 49.
3617 Mac Plus/SE Carry Case..... 59.
4015 Mac SE & Ext. Kybd. Carry Case .. 69.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail, charged by weight.
- Allow 1 week for personal and company checks to clear.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 to 9:00 EST, or Saturday 9:00 to 5:30 EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30 EST.

SHIPPING

Continental US: Barring massive computer failures and other natural or unnatural catastrophes, all non-C.O.D. orders phoned into MacConnection by 8 PM EST will ship Airborne the same night for next day delivery, except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now $3. Backorders will also ship Airborne overnight at no additional charge. Some areas require an additional day delivery.

Hawaii, Alaska and Outside Continental US: Call 603/446-7711 for information.

we've got your price.

PCAI ... NCP

4321 Lunar Rescue ..... $29.
4212 MacCourses ..... 32.
3144 MacGolf 2.0 ..... 35.
4320 MacGolf Classic ..... 54.

Primera Software ... NCP

3169 Smash Hit Racquetball II ..... 22.

Psion ... CP

3132 Psion Chess 1.6 ..... 31.

Sierra On-Line ... CP

4161 Mother Goose ..... 19.
3397 Leisure Suit Larry ..... 23.
3394 King's Quest I ..... 29.
3395 King's Quest II ..... 29.
3396 King's Quest III ..... 29.
3399 Space Quest ..... 29.
3400 Space Quest II ..... 29.
3398 Police Quest ..... 29.

Silicon Beach Software ... NCP

3500 Airborne! *(CP)* ..... 20.
3505 Enchanted Scepters *(CP)* ..... 21.
3503 Dark Castle 1.1 ..... 27.
3502 Beyond Dark Castle ..... 27.
3501 Apache Strike ..... 27.

Simon & Schuster ... CP

3303 Star Trek—Kobayashi Alternative 24.
3304 Promethian Prophecy ..... 24.

Sir-Tech ... CP

3347 Mac Wizardry ..... 35.

Softstream, Inc. ... NCP

4071 Mac•Man *(w/adapter)* ..... 24.
4072 The Solitaire DA ..... 24.
4073 Colour Billiards ..... 35.

SPHERE, Inc. ... NCP

4175 Solitaire Royale *(for Mac SE)* ..... 20.
4001 Solitaire Royale *(for Mac II)* ..... 20.
3464 Tetris 1.1 ..... 20.
4472 Tetris *(for Mac II)* ..... 24.
3462 PT-109 1.0 ..... 26.
3460 GATO 1.42 ..... 26.
3461 Orbitor 1.1 ..... 26.
3459 Falcon 2.0 ..... 32.

Spinnaker/Hayden ... CP

2328 Sargon IV ..... 29.

XOR ... NCP

3816 Pro Challenge ..... 29.
3815 NFL Challenge ..... 59.

Dove Computer ... 90 days

MaraThon 030—Improve your Mac II's speed by 30%-50% with a processor replacement. The 68030 is pushed to 33 MHz and uses your existing memory for the best performance available. ..... $1039.

HARDWARE

Manufacturer's standard limited warranty period is listed after each company name. Some products in their line may have other warranty periods.

Abaton ... 5 years

1188 ProPoint ADB ..... $89.

Asher Engineering ... lifetime

1212 Turbo Trackball ADB ..... 69.

AST Research ... 6 months

1229 Mac 286 ..... call

Cutting Edge ... 1 year

3988 CE 105ADB Keyboard w/QuicKeys 149.
3989 800k Disk Drive ..... 175.
3990 The Wedge XL 30+ SCSI Drive .. 629.
3991 The Wedge XL 45+ SCSI Drive .. 829.

Datadesk ... 2 years

1819 MAC-101 Keyboard *(beige)* ..... 139.
1820 MAC-101 Keyboard *(platinum)* ... 139.
1821 MAC-101 Keyboard *(ADB)* ..... 139.
1818 HyperDialer ..... 26.

Symmetry ... NCP

Acta Advantage 1.0—The new outliner, organizer, and planner. It's the perfect starting point for every project, every meeting, every day. Includes both DA and stand-alone application .... $69.

Dove Computer ... 90 days

1801 SCSI Interface/Port ..... 109.
1807 MacSnap 524E ..... 289.
1809 MacSnap 524S ..... 379.
1811 MacSnap 548E ..... 549.
1812 MacSnap 548S ..... 599.
1800 MacSnap 2SE ..... 439.
1797 MacSnap Plus 2 ..... 439.

MAC SE 68020 ACCELERATOR BOARDS

1793 MaraThon 020 MSE1 ..... 585.
1794 MaraThon 020 MSE2 *(1 Meg)* .... 979.
1795 MaraThon 020 MSE3 *(math chip)*.. 779.
1796 MaraThon 020 MSE4 *(1 Meg/chip)* 1159.
4231 MaraThon 020 MSE4x4 ..... 2395.
1803 1024 Option ..... 439.
4505 MaraThon 030 Accelerator ..... 1039.

Ergotron ... 1 year

2004 Mouse Cleaner 360° ..... 15.
3992 The Muzzle *(platinum)* ..... 62.
1998 MacTilt *(platinum)* ..... 68.
2000 MacTilt SE ..... 68.
3993 Workstation A *(up to 40 lb monitor)* 525.
3994 Workstation B *(up to 60 lb monitor)* 535.

Farallon Computing ... 1 year

2202 PhoneNET-AppleTalk 120 ..... 9.

Practical Peripherals ... 5 years

Mac Communications Pack—Includes external 2400SA modem, cable, and top-selling communication software. Hayes compatible, auto-answer. A superior value! ..... $229.

2203 PhoneNET PLUS *(DIN-8)* ..... 35.
2204 PhoneNET PLUS *(DB-9)* ..... 35.
2206 PhoneNET StarController ..... 1289.
2205 PhoneNET Punch Down Block .... 69.
2201 TrafficWatch ..... 149.

FWB Software ... 1 year

4263 PocketHammer40 ..... 1089.
4264 PocketHammer80 ..... 1639.
3998 Hammer91 ..... 2195.
3999 Hammer155 ..... 2995.

Hayes ... 2 years

2300 Smartcom II 3.0B ..... 88.
2307 Smartmodem 2400 ..... 449.

Kensington ... 1 year

2563 Mouse Pocket ADB ..... 8.
2577 Mouseway *(mouse pad)* ..... 8.
2569 Mac Plus or SE Cover ..... 9.
2589 Universal Printer Stand ..... 15.
4126 LaserWriter II Cover ..... 17.
2562 Mouse Cleaning Kit w/Pocket ..... 17.
2550 Disk Drive Cleaning Kit ..... 20.
2580 Mac II Stand ..... 20.
2545 Universal Copy Stand ..... 22.
2573 Maccessories Tilt/Swivel ..... 22.
2578 Extra Long ADB Keyboard Cable .. 25.
2556 Maccessories Anti-glare Filter ..... 33.
2579 Mac II Monitor Cable Extension ... 33.
2559 Apple Security System ..... 34.
2568 Maccessories SuperBase ..... 34.
2585 Printer Muffler 80 ..... 43.
2586 Printer Muffler 80 Stand ..... 24.
2583 Printer Muffler 132 ..... 58.
4070 System Saver SE ..... 52.
2560 MasterPiece 400 ..... 64.
2561 MasterPiece Mac II ..... 105.
2546 Maccessories A-B Box ..... 64.
2566 System Saver Mac *(platinum)* ..... 64.
2547 New Turbo Mouse ADB ..... 109.

Koala Technologies ... 90 days

2593 MacVision 1.4 ..... 169.

Kraft Systems ... 1 year

2600 3-Button QuickStick ..... 39.
4082 3-Button QuickStick ADB ..... 51.

Kurta ... lifetime

2604 IS ADB Tablet ..... 255.
2605 Cordless 4 Button Cursor *(1 year)* .. 95.

Mobius Technologies ... 1 year

4470 Fanny Mac QT ..... 65.

What's Next?

Redefining our expectations of personal computing

by Bruce F. Webster

Five years is a long time in computer development. It was about five years from the Apple II to the IBM PC, and only two more years to the Macintosh. And when you honestly look at it, the Macintosh was the last major advance in the microcomputer industry. The Amiga and the Atari ST were Mac mutants—collateral, specialized descendants, finding and occupying certain niches. The IBM PS/2 and OS/2 projects represent an effort to crossbreed species; they may prove to be evolutionary dead ends. Mac IIs and 386-based systems are the pride of the two major computer phyla, but they represent straight-line extrapolations of systems that existed five years ago. Our industry has been long overdue for a major shift.

The Next computer just might represent that advance, though only time—and the marketplace—will tell. It certainly represents an ambitious leapfrogging over the current flagship systems in the Mac and MS-DOS markets, as well as a definite challenge to workstation manufacturers. Right now, the Next machine is aimed specifically (and solely) at the higher-education market, but the potential exists for it to break out into more general distribution in a year or two. While much of the Next system is a stepwise refinement of what's already out there, several features are truly innovative, and the overall combination at the announced price—$6500—is that evolutionary leap the industry has been waiting for.

I've had a chance to watch some of the development of the Next computer over several months preceding the October product announcement. In this article I've tried to preview the product in its newly announced, not-yet-released state, from the viewpoint of a long-time Macintosh user.

One warning: many of the statements here are based on claims by Next. Some have been verified by direct observation, but since I don't have a Next machine to work on yet, and since it's not due to be generally available until the second quarter of 1989, there's always the possibility of errors and changes.

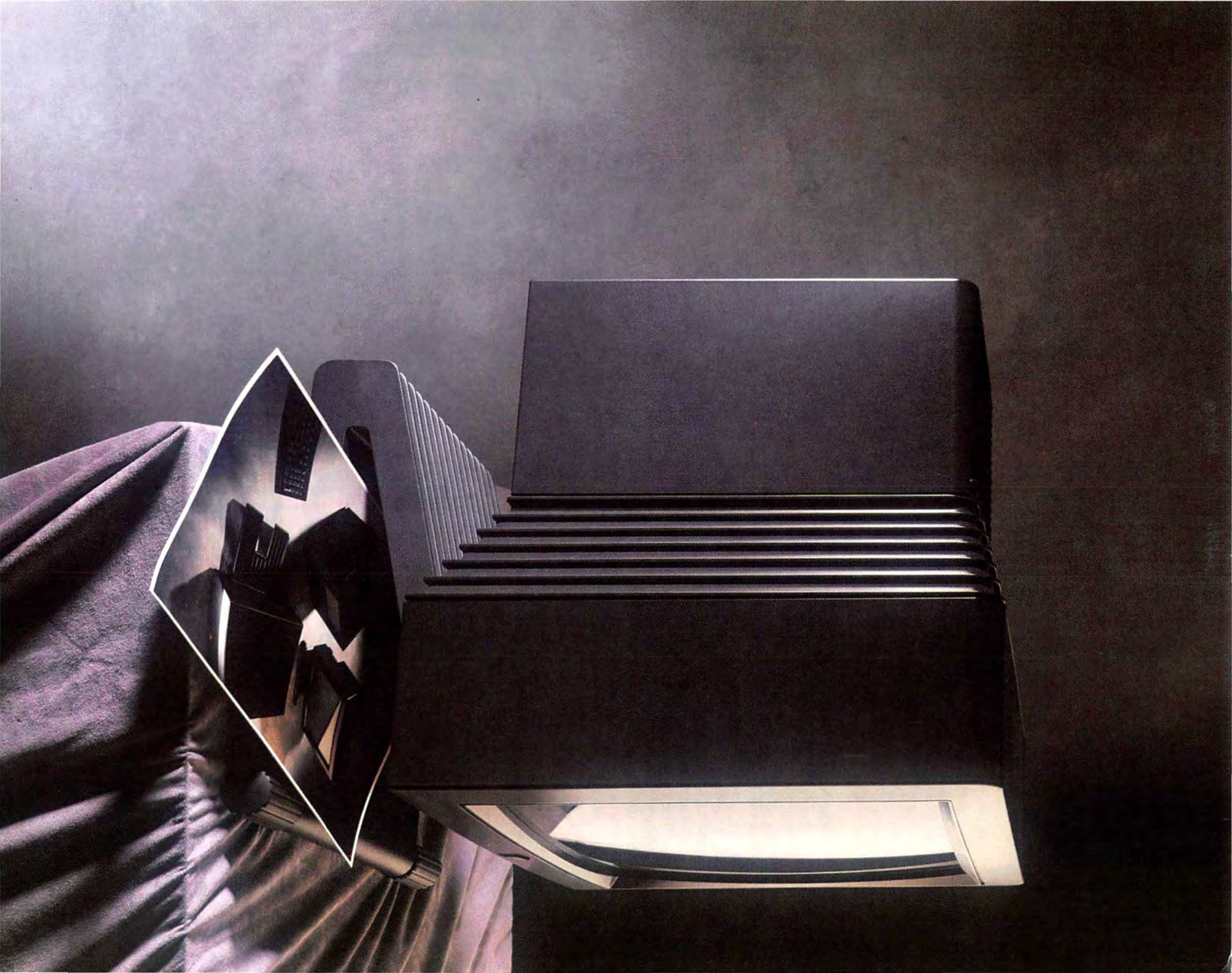
Opening the Cube

As you can see from the photos, the Next computer itself is a black cube, 12 inches on a side, designed to sit under your desk, on a bookshelf, or wherever you want to put it. The cube by itself is mostly empty space: an adaptable power supply, four slots, and space for two 5¼-inch mass storage devices. The case itself is magnesium, which is light and has good radio-frequency shielding properties.

The power supply is a 200-watt, wide-range switching power supply. You can plug it in anywhere in the world, and it automatically adapts to the local current, accepting voltage ranges from 90 v to 270 v and frequencies from 50 Hz to 60 Hz. Each expansion slot gets 25 w of power.

Bruce F. Webster, not surprisingly, is the author of The Next Book, *to be published early in 1989 by Addison-Wesley.*

PHOTOGRAPHS BY PAUL FRANZ-MOORE



The expansion slots are set up to accept 11-by-11-inch circuit boards. The connectors are standard NuBus connectors (like the ones in the Mac II) and use the same pinouts; the major difference is that the bus operates at 25 MHz, as opposed to 10 MHz in the Mac II. In other words, it's not compatible with the Mac II. To make designing for the bus easier, Next has developed a single VLSI (very large scale integration) chip to handle the bus interface and will sell these chips to third-party developers for $25 each.

The standard configuration comes with one board (the system board) and one mass storage device (the optical disk drive) in the cube. In theory, you could put multiple system boards into a single cube, not to support multiple users but to increase the processing power of a single user; however, the current system software doesn't support that yet, so it remains theoretical.

The Next Word in Displays

The Next MegaPixel Display is designed to operate at some distance from the cube. In fact, it comes with a cable 3 meters long (nearly 10 feet) that carries all signals—video, sound, keyboard and mouse input, and power—between the cube and the display. You don't need a separate power cord, and you turn the entire computer system—cube, display, and printer—on and off from the keyboard.

The 17-inch monitor is a high-resolution gray-scale screen: 1120 by 832 pixels at 94 dots per inch (dpi), with four levels of gray (two bits per pixel). The refresh rate is 68 kHz; the result is a fine, crisp, flicker-free display. The video memory itself is on the system board, separate from main memory; the video hardware is also located there. The monitor has a built-in stand that you can adjust for height and tilt angle.

The keyboard plugs into the display. It has 84 keys, including control and cursor keys. There are also (as mentioned) a power on/off key and keys for adjusting display brightness, display contrast, and volume. There are no function keys.

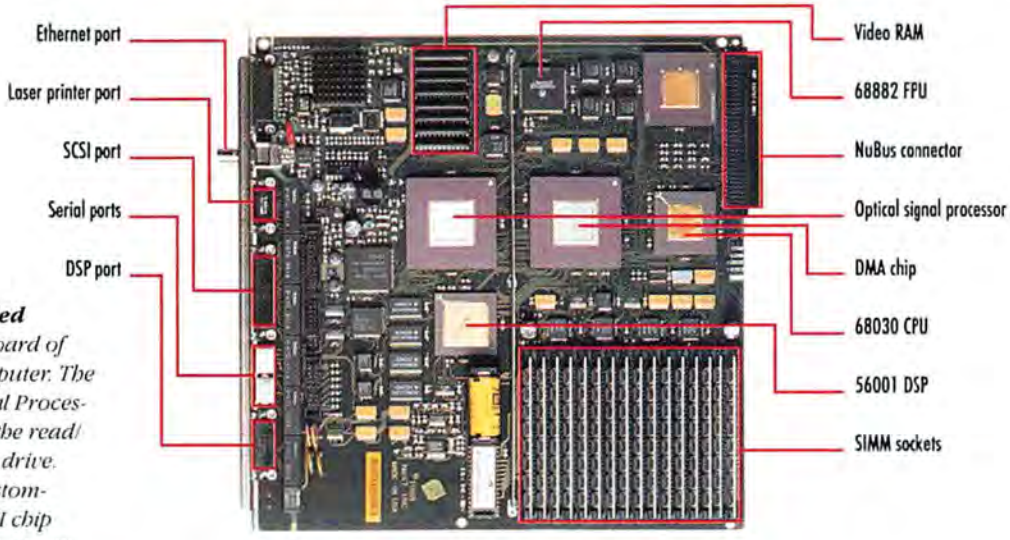
The two-button mouse plugs into the keyboard, much as on the Mac SE and Mac II. Unlike those systems, however, the Next has no desktop bus and there are no plans for other devices. While an application can use the mouse buttons as desired, the user interface works primarily with the left button and reserves the right one for a specific "move the menu here" function.

Since the video RAM and hardware are on the Next system board, you don't have the option (as you do on the Mac II) of buying a display from a third-party company. However, Next says that products will be coming out in the future that will support color and other video options. Since Steve Jobs owns a large chunk of Pixar, the computer graphics firm founded by Lucasfilm, those products could be very interesting.

A Look at the Main Board

As "Next Revealed" shows, the entire electronics of the Next computer fits on a single 11-by-11-inch circuit board. It uses a total of about 45 chips, most of which were designed at Next, and several of which use VLSI technology.

The standard system board comes with three processors: a central processing unit (CPU), a floating-point unit (FPU), and a digital signal processor (DSP). The CPU is a Motorola 68030 processor, and the FPU is a Motorola 68882 chip. These are the same two chips that are found in the Macintosh IIx; however, in the



Next Revealed
The system board of the Next computer. The Optical Signal Processor controls the read/write optical drive. The other custom-designed VLSI chip provides direct memory access to and from the communications ports, video memory, and any external devices.

Behind the Cube
The back of the Next computer, showing the power input and four slots (three of which are empty). The ports on the system board are (from top to bottom): video port (to MegaPixel Display); Ethernet connector; printer port (to 400-dpi laser printer); SCSI port; two Mac-compatible serial ports; DSP port.

Next computer they run at a clock speed of 25 MHz, as opposed to a clock speed of 16 MHz in the Mac IIx.

The DSP is a Motorola 56001, a chip designed for the math operations specific to signal processing, speech and music synthesis, array processing, and other related operations. Average execution speed is about 12.5 million instructions per second (MIPS); the DSP can perform a fast Fourier transform (FFT), an operation common to engineering and scientific applications, on 1024 points of data in 3.2 milliseconds. The DSP has within it 256 bytes of instruction memory and 1024 bytes of data memory; in addition, it has 8K of fast (zero wait state) static RAM for holding both instructions and data.

As for main memory, the system board holds up to 16 megabytes, using 1MB Single Inline Memory Modules (SIMMs). Next says that once 4MB SIMMs are available, you should be able to expand the system to 64MB. A separate section of 256K is used for video RAM.

The system board has a number of ports along the back (see "Behind the Cube"), including the following:

- the video port (to the MegaPixel Display)
- the printer port (to the laser printer)
- the SCSI port, with a Mac-compatible pinout
- two RS-422 serial ports, with Mac-compatible pinouts
- an Ethernet connector
- a special port for communicating directly with the DSP

The SCSI port, while Mac-compatible, is capable of transfer rates two and one-half times that of the Mac. The serial ports are, according to Next, identical to those found on the Mac SE. Also, the Next system board has full 32-bit Ethernet hardware built in, with complete system support for it. All you need to network two (or more) Next cubes is the appropriate cabling.

One of the drawbacks of Macintosh architecture is that the CPU has to do just about everything, especially when it comes to moving data from one location to another. The Next system alleviates that problem in large part by using 12 I/O processors, implemented in one of the two large VLSI chips on the board. These processors handle transferring data between main memory and the other system components: video RAM, DSP RAM, serial ports, the SCSI port, the printer port, the optical disk drive, and so on (see "Next Hardware Architecture"). This is known as direct memory access (DMA) and lets the CPU go on to other tasks once the transfer has been started. The result, according to Next, is that devices can be transferring data into or out of memory at full speed, and the CPU will still have some 50 percent of its processing power left over for applications.

Mass Storage Goes Optical

Perhaps the most innovative—and certainly the most controversial—feature of the Next computer is its optical disk drive. It uses magneto-optical technology and has full read/write/erase functionality. The drive stores 256MB per disk, which means a single disk holds the same amount as about 328 Macintosh floppies, at 800K each (see "256MB to Go"). And since the disks are removable, you can have as many as you want, at $50 per blank disk. Seek time is about 92 milliseconds, meaning that it takes about ⅒ second for the drive to set up to read from a given sector on the

disk. This isn't great speed; by comparison, the Mac II's internal hard disks have a seek time of 30 milliseconds. However, transfer rate between the disk and main memory is about 1MB per second, the same as in the Mac II. One of the custom I/O processors handles the disk transfer, using DMA to free up the CPU.

The second VLSI chip on the system board is the Optical Storage Processor (OSP), which acts as disk controller for the optical disk drive and also performs Reed-Solomon error correction on the fly as data is coming in from the optical drive. Again, the CPU isn't involved, which increases the overall system performance.

256MB to Go

A magneto-optical disk, capable of holding 256 MB of read-write storage. The disk itself is the same size as a compact disk and is enclosed in a self-opening plastic case, much like 3½-inch floppies.

The question that repeatedly comes up is: Why didn't Next include some sort of floppy drive?

Two reasons, mainly. First, Next is pushing a number of concepts—sound, high-resolution graphics, digital books—that require large amounts of storage. Floppy technology is advancing, but not fast enough. Winchester (hard disk) technology is also advancing, but is usually fixed in the system; if it does come out, it's rather fragile. In fact, both types of storage are susceptible to head crashes and other types of damage, while the optical disk is never touched by anything but a beam of light.

Second, Next wants students to be able to carry their "world" in a backpack. A student can be working on one Next computer, pop out the disk, go across campus, and start working again—with his or her complete set of applications, files, and system configurations—on another Next computer. Likewise, several people can share the same Next computer (albeit at different times) with complete security, since each person has his or her own disk.

The question, mostly from software developers, is: How are software publishers going to distribute their products, especially if blank optical disks cost $50 each? Whether the use of the optical drive turns out to be a brilliant move or a dumb one won't be known for some time, though a lot of people on both sides think they know the answer already. In the meantime, Next is offering internal Winchester hard disks for anyone who wants one, or for use in file servers. Two sizes are available: 330MB for $2000, and 660MB for $4000. But no floppies. Not yet, anyway.

A New Look in Laser Printers

The Next 400-dpi Laser Printer is quite a bit smaller than most laser printers, and has a short, straight paper path from the tray on the right to the tray on the left. The printer uses standard toner cartridges, can handle a wide variety of paper sizes and types, and prints at either 300 or 400 dpi. The former is Next's equivalent of draft mode; 400 dpi offers almost twice the resolution of 300 dpi (160,000 dots versus 90,000 dots).

The printer is not included in the system's $6500 price; it costs another $2000, which is still very inexpensive, given its quality and features. One reason for the low cost is that all imaging is performed within the Next cube, on the system board, as a separate process within the multitasking environment. Once the image is completed, one of the custom I/O processors blasts the bit image from main memory to the laser printer at some 5 megabits per second.

The printer is completely controlled by the Next computer. There are no lights or switches on the printer, just a power cord and a 3-meter cable connecting it with the cube. All signals, error messages, and so on, are handled through the user interface on the screen of the MegaPixel Display.

CD-Quality Sound

Sound has always been an afterthought on most computers, with only occasional exceptions like the Amiga. Even when the basic hardware is included, as with the Mac II, the software support is usually minimal, and it takes a system wizard to get anything impressive out of the machine.

Next's approach was to make high-quality sound an integral, accessible part of the machine. The hardware is certainly in place: the 56001 DSP allows the Next to perform many advanced functions, including true real-time music synthesis, and a software-assisted implementation of FAX and modem functions, reducing the hardware required for the latter two.

The sound software is there, as well. Special libraries in the Application Kit make it easier to use

sound and music in programs, alleviating the need for the program to make direct calls to the DSP. More important, sound input is supported as well as output.

The sound output from the Next computer is, literally, CD quality: 44.1 kHz sampling rate, 16-bit resolution, and stereo. Since stored digitized sound files can get very large very quickly, you can step the sampling rate down to 22.1 kHz, cutting the size of a file in half while losing only the uppermost octave (which is pretty much out of hearing range anyway).

Sound input is telephone-quality and uses an 8-bit CODEC digitizing chip, with an 8 kHz sampling rate. This means that each second of digitized sound takes up about 8K of memory or disk space. A few of the applications bundled with Next take advantage of this hardware; for example, the Mail application has an option for sending voice mail. Remember, though, that a 10-second message takes up 80K of storage.

The MegaPixel Display handles all sound input and output. A speaker is built into the display; there are also left and right gold-plated RCA line-out sockets, as well as a Walkman-type stereo headphone socket. A monaural microphone socket provides input for the CODEC chip.

The Mach Operating System

The foundation of the Next system software is Mach, an operating system developed at Carnegie-Mellon University to help UNIX make it into the '90s. Current versions of UNIX tend to be a good idea grown to disastrous proportions and somewhat out of control. Mach was, in essence, a ground-up rewrite of UNIX, aimed at current and future hardware.

The heart of Mach is its kernel, which performs only three major functions. The first is virtual memory management. This is a technique, common to mainframes, that lets each application think that it has a very large memory space in which to work. Only a portion of memory is used; the rest of the application's "memory" is on the optical disk, being swapped in and out of true memory as needed.

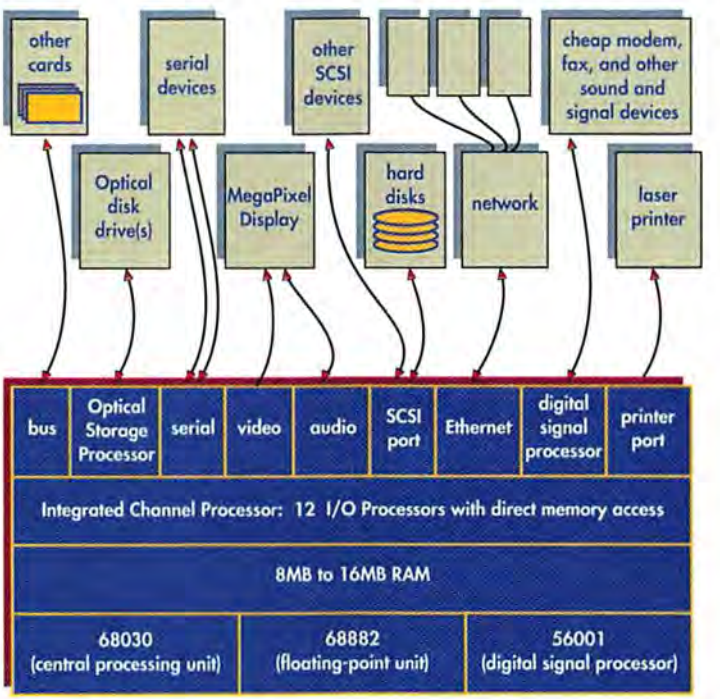
The second function is scheduling, determining which application or task is actually being executed at any given moment. Since this is a true multitasking system, Mach needs to give each task some amount of time to work, in order to maintain several applications running simultaneously.

The third function is intertask communication, which provides a clean, fast, flexible means for tasks (applications and processes within applications) to send messages to one another. This is a key feature of the entire system, and its power shows up in many places, some of which we'll see later.

Built on top of the kernel is an operating system that is completely compatible with the 4.3 BSD (Berkeley) version of UNIX and that includes a fast filing system, TCP/IP networking capabilities, and the Network File Standard (NFS) protocols licensed from Sun.

Taking the Next Step

Mindful of the struggles of Mac developers who find themselves rendering images twice—once for the screen and once for the printer—Next decided to go with a single imaging model for its system: Display



Next Hardware Architecture
The hardware architecture of the Next computer system uses 12 input/output, or channel processors, a concept used in mainframes like the venerable IBM 360. All external data from an Ethernet network, as well as the optical disk drive, SCSI hard disks, and other devices pass through the Integrated Channel Processor chip. Each channel processor has its own direct memory access path to the main memory.

PostScript. This special version of PostScript, developed jointly by Adobe Systems and Next, has been extended to support image modification (such as on a screen), compositing (merging or covering of overlapping images), and working in a multitasking environment. The breakthrough with Display PostScript is that you can use the exact same imaging commands for displaying and for printing. More important, what you see on the screen is truly what you get on the laser printer.

Wrapped around Display PostScript is a process called the Window Server. This is, in effect, the main event loop for every application in the system. The Window Server gets events from the mouse and keyboard, handles any events that it can directly, and passes the rest on to the appropriate application. The Window Server also accepts messages from applications telling it to modify the screen display, and performs any screen update handling that it can.

On top of all this is the Next user interface, called the Workspace Manager. I can't give you a lot of detail about it, since many features were not yet finalized when this article was written. However, it is a mouse/window/icon–type interface. Here are some of the highlights:

- pop-up, hierarchical, and tear-off menus, instead of a menu bar
- window controls that perform the same functions as those on a Mac, but that avoid the Mac's look and feel (too much so, in my opinion)
- an "icon dock" along the right edge of the screen for displaying the standard applications tools
- a black hole instead of a Trash Can for disposing of files
- a disk browser that enables you to quickly navigate the files and folders

Underlying all this is the Application Kit, Next's equivalent of the Mac's Toolbox. The Application Kit

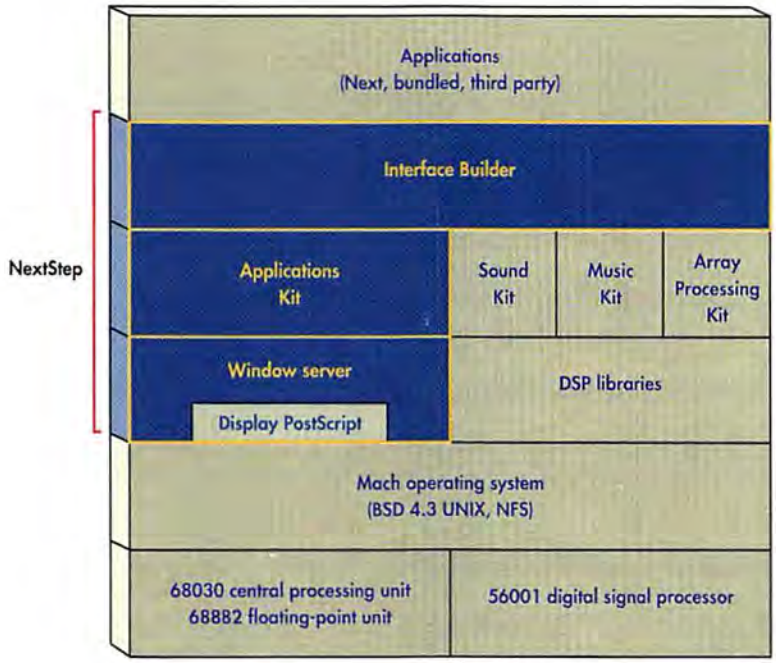
Applications for Free

"But wait—that's not all! If you order now, we'll throw in thousands of dollars' worth of software for free!" Sound familiar? Not since the introduction of the Osborne has a computer manufacturer offered this much software along with the hardware. The products being bundled include:

- Mathematica, from Wolfram Research. This product not only handles sophisticated and complex computations, it also comes (in the Next version only) with an "interactive textbook" user interface for development of mathematical courseware.
- Sybase SQL Server database management system, from Sybase. This is a complete relational database with full network support for up to five simultaneous users.
- WriteNow, the Next version of the popular entry-level word processor that runs on the Mac.
- Allegro Common LISP, from Franz, Inc. This version will provide full access to the Application Kit.
- Digital Library. This is a utility for indexing, searching, and retrieving text and graphics from online documents. Included on the Next master disk for use with Digital Library are: *Webster's Ninth New Collegiate Dictionary*, complete with pronunciation, etymology, definitions, and (in some cases) illustrations; *Webster's Collegiate Thesaurus; The Oxford Dictionary of Quotations; William Shakespeare: The Complete Works* (Oxford University Press edition); and all user manuals and technical documentation.
- Mail, a complete UNIX mail application, supporting both text and voice mail.

All those applications are not only there for each user, they can also be called by other applications, thanks to the generalized event/message handling of Mach and the Window Server. For example, WriteNow can ask Digital Library to look up and display the definition of a highlighted word. Likewise, you can have your own programs call Mathematica to perform computations (such as solutions of simultaneous equations) and then return the answer.

Several other firms, including Lotus, Frame, Cricket Software, Adobe, and Mark of the Unicorn, have announced plans for, or interest in, developing for the Next computer. The developers' introduction, held the day after the rollout, attracted a paying crowd of over 700 people; how many of those end up developing for the Next computer remains to be seen.



Next System Software

The system software resides on top of the hardware: central processing unit, floating-point processing unit, and digital signal processor. NextStep, which resides above the Mach operating system, is the portion of the Next software that IBM has licensed for its AIX systems (AIX/PS, AIX/RT, AIX/370). The DSP libraries—Sound Kit, Music Kit, and Array Processing Kit—are proprietary to the Next machine.

not only implements all the standard user interface features, such as windows, menus, buttons, and so on, but it does so in a way that greatly aids programmers, which I'll discuss shortly.

The Window Server, Interface Builder, Workspace Manager, and Application Kit together are collectively known as NextStep (see "Next System Software").

Workspace Manager

The Workspace Manager user interface. Note the icon dock along the right side, the black hole at the bottom right (for file disposal), the Directory Browser, the Digital Library application showing a definition from Webster's Ninth New Collegiate Dictionary.

Next has licensed NextStep to IBM "for use on their RISC- and Intel-based platforms," specifically the AIX-PS/2, AIX-RT, and AIX-370 systems. This greatly increases the appeal of NextStep for developers, since the market for applications developed under NextStep is going to be much larger. It also gives IBM a club to hold over Microsoft's head, which may explain why Bill Gates's response to the Next machine has been less than enthusiastic, and why Microsoft isn't developing for it, despite Steve Jobs's statement that "we'd love to have Microsoft products on our system."

Programming the Next Machine

Given the complexity of the Next system, programming it could be a real nightmare, as those who have developed programs on the Macintosh can imagine. However, after programming on the machine, I feel Next has taken an approach that tremendously simplifies and speeds the task of developing applications.

The first solution, already mentioned, is the Application Kit. It's a code library implementing a number of objects—windows, menus, controls, buttons—from which you can build an application. As you might guess, this means that the Next system uses an object-oriented programming approach.

As you develop new objects or extend old ones, you can make these part of your standard library and use them in other programs.

Programming can be done in Objective C, a full ANSI C compiler with some object-oriented extensions done via a preprocessor. This approach lets you mix normal C routines with defined (or predefined) objects, so you can use as little or as much of the Application Kit as you desire. Objective C was developed by the Stepstone Corporation; Next has included with it a source-level debugger and several other program-development utilities.

Mac–Next Price Comparison

	Mac IIx			Next		
		List price	Consortium Price (approximate)		List price	University Price
	Mac IIx A/UX Development System	$9852	$5525	**Next Computer System**	not available retail	$6500
CPU	16-MHz 68030			25-MHz 68030		
FPU	16-MHz 68882			25-MHz 68882		
DSP/sound	Apple Sound Chip			25-MHz 56001 digital signal processor		
I/O processors	none			Integrated Channel Processor (12 direct memory access I/O processors)		
Disk controller	Integrated Woz Machine disk controller			Optical Storage Processor (optical disk controller with error-correction code)		
RAM	8MB (4MB+ 4MB expansion kit)	$2399	$1675	8MB		
ROM	256K (Toolbox, Mac OS routines)			64K (diagnostics and boot code)		
Removable storage	1.44MB 3½" floppy drive			256MB 5¼" optical disk drive		
Fixed storage	three 80MB hard disks (2 external)	$4398	$2640	optional		
Serial ports	RS-422 with Mini-8 connector (2)			RS-422 with Mini-8 connector (2)		
SCSI ports	DB-25; internal			DB-25; internal		
Other ports	Apple Desktop Bus (2)			DSP, video, printer		
Sound output ports	speaker, headphone			speaker, headphone, dual line-outs		
Sound input ports	none			microphone port, 8-bit 8kHz CODEC chip		
Slots	6 slots; 4.0" × 12.9" cards			4 slots (3 available); 11" × 11" cards		
Bus	10-MHz NuBus (bipolar)			25-MHz modified NuBus (CMOS)		
Display	640 × 480 pixels, 72 dpi, 16 gray levels	$898	$625	1132 × 820 pixels, 92 dpi, 4 gray levels		
Keyboard	81 keys	$129	$90	84 keys		
Mouse	1 button			2 buttons		
Networking	Network File System; Mac II EtherTalk board	$699	$490	NFS; built-in 32-bit Ethernet with port		
Operating system	A/UX (AT&T System V compatible)			Mach (BSD 4.3 compatible)		
Imaging models	QuickDraw (screen, dot matrix printer) PostScript (laser printer)			Display PostScript (all devices)		
Libraries	Mac Toolbox			Application Kit, Music Kit, Sound Kit, and Array Processing Kit		
User interface	UNIX shell			Workspace Manager, UNIX shell		
Bundled software	HyperCard, UNIX utilities and tools			Mathematica, SYBASE SQL database, Mail, Objective C, Interface Builder, WriteNow, UNIX utilities and tools, the Digital Library		
Total price		$18,375	$11,045			$6500

To compare apples to apples, you must compare the price of the Next computer to Apple's University Consortium prices. Because the Next machine will be sold only to universities, no retail price for that machine is given. Items shown without prices are included in the system.

The back of the Mega-Pixel Display, showing (left to right): the stereo headphone output; standard RCA stereo line-out ports; connector for cable from Next computer; standard microphone input.

There's an even easier way to program, though. Interface Builder, a remarkable utility written by Jean-Marie Hullot at Next, lets you build the user interface for a program by arranging objects (such as windows, buttons, menus, and so forth) together in graphical form. It even lets you connect objects (such as sliders and buttons to fields) to one another. And once you're done, it will (at your request) generate full Objective C source code, as well as a makefile to compile it. You can then add in the main routines of the program, filling it out as needed. And as you create your own objects, you can use them within Interface Builder, too.

The combination of these three tools—the Application Kit, Objective C, and Interface Builder—significantly increases programmer productivity and reduces programming time. This isn't just according to Next. I've actually programmed using an early prototype of the development software, porting a simple version of my Go board program from the Mac to the Next, and I was amazed at how quickly and easily I brought it up. Given the current state of these tools, I know I could accomplish it in even shorter time.

Survival of the Fittest

When Apple announced the Macintosh IIx, with its 16-MHz 68030 and its $10,000 price for a system with no monitor or printer, common wisdom in the industry was that this was to preempt the impact of the Next computer. If anything, the IIx served to heighten the impact. In fact, the entire Apple price increase was a generous gift to Next; with higher DRAM prices, the base price of the Next computer had undoubtedly been pushed up from where Next wanted it.

"Mac–Next Price Comparison" shows an attempt to equip a Mac IIx to the level of a Next system, using only Apple equipment. Both list and consortium prices are given for the IIx. There are some obvious gaps—no DSP, no optical disk, no large-screen display, and most of all, no software bundled with the machine—so you can adjust the price upwards to include these items on your own. As you can see, even at consortium prices, the Mac IIx can't compete with the Next system.

As far as features go, the Next computer has it over the Mac IIx (not to mention the rest of the Mac product line) in almost every area. The one area where the Next machine falls short is in the availability of third-party software, but then the Macintosh also started with a similar handicap. On paper, the Next computer has more raw power; whether or not Mach and Display PostScript slow that down to something closer to Mac performance remains to be seen.

Steve Jobs has a good industry track record: two successes out of three attempts, with the one failure (the Lisa) spawning the greater success (the Mac). The ultimate test of the Next computer's fitness is not its personal survival, but its impact and influence on the rest of the industry—its genetic heritage, so to speak. In that regard, Jobs and the other folks at Next have already succeeded; moments after its introduction, the Next computer became the new standard against which competing systems will be compared, and it or its progeny may replace the Mac II (or its progeny) as the power user's system of choice. Whatever the outcome, the true winners will be you, the users, who will have more choices and better solutions.

As a friend once said, think of it as evolution in action. □

A Folder of File Servers

Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.
—Samuel Johnson

by Dave Kosiur

A Macintosh network is a wonderful thing for sharing peripherals, trading data, and exchanging electronic mail. One of the fundamental building blocks of the Mac network is the file server. The file server controls access to files on a network—how you exchange data files, share multiuser databases, or even share applications.

Since the introduction of AppleTalk in 1985, the number of major players offering file servers has grown to four: Apple, TOPS (formerly Centram), 3Com, and Novell. Their respective Mac products—AppleShare, TOPS, 3+Share, and NetWare—support not only Macs, but IBM PCs and PC clones too. 3Com is working on a new server system, 3+Open, that will also support PCs and the Mac. But Mac-compatible file servers aren't limited to running on just Macs and PCs. As you'll see, they're also making their mark on departmental minicomputers and corporate mainframe computers.

The Way You Work

Every network depends on the cabling that links the workstations, servers, printers, and other devices to form the physical net. Yet, from a user's point of view, it shouldn't matter whether LocalTalk twisted-pair wire, Ethernet coaxial cable, or fiber-optic cable tie those pieces together. What should matter is the logical structure of the network. Your net's logical structure should reflect the way you and your coworkers work together (see "Before You Choose").

Workers interact in different ways depending on how a company is organized, or on how various workgroups within one company are organized. This fact underlies one of the most important differences in the design philosophy of Mac file servers. On the one hand, there's the machine-centered viewpoint, adhered to by *centralized* servers from Apple, Novell, and 3Com. On the other hand, there's the user-centered view, espoused by TOPS in its *distributed* server software.

Centralized servers store all of a workgroup's files on one machine. You could consider a centralized server as an extension of the typical organization of a company where one person (machine) is responsible for collecting and storing information for others, and for passing information to others. It's a natural extension of most companies' management structure—natural, at least, to the managers—with roots dating back to MIS departments and the mainframe computer. You'll probably find that workgroups with an active coordinator, project leader, lead secretary, or department head fit well into this structure, which is reinforced by a centralized server.

Distributed server systems spread the wealth around. Users of such systems keep their files on individual machines, rather than on one single computer. You may have worked in a group where everyone works as an equal toward a common goal, without supervision from one particular individual. The distributed server attempts to conform to the type of interactions found within such a workgroup. TOPS claims that, in such cases, "information flows between individuals in a free, spontaneous, unfettered manner without the intercession of a hierarchical structure."

Dave Kosiur, a Macworld *contributing editor, is the publisher of* Connections, *an international newsletter concerned with Macintosh networking.*

MAX SEABAUGH

Meet the Players

Every server uses some type of operating system to handle file access for its disks and to communicate with the outside world—the network via network protocols (see "Layer Cake"). In the case of AppleShare, it's the Macintosh operating system. TOPS uses either the Mac operating system or MS-DOS, depending on the machine.

Novell has developed its own proprietary operating system that, when coupled with its NetWare services (file services, print spooling, and E-mail), forms a network operating system. 3Com added its own family of network services, called 3+, to standard MS-DOS to create the 3Com network operating system; the company is using Microsoft's OS/2 LAN Manager and OS/2 as the basis of its new network operating system, 3+Open.

AppleShare

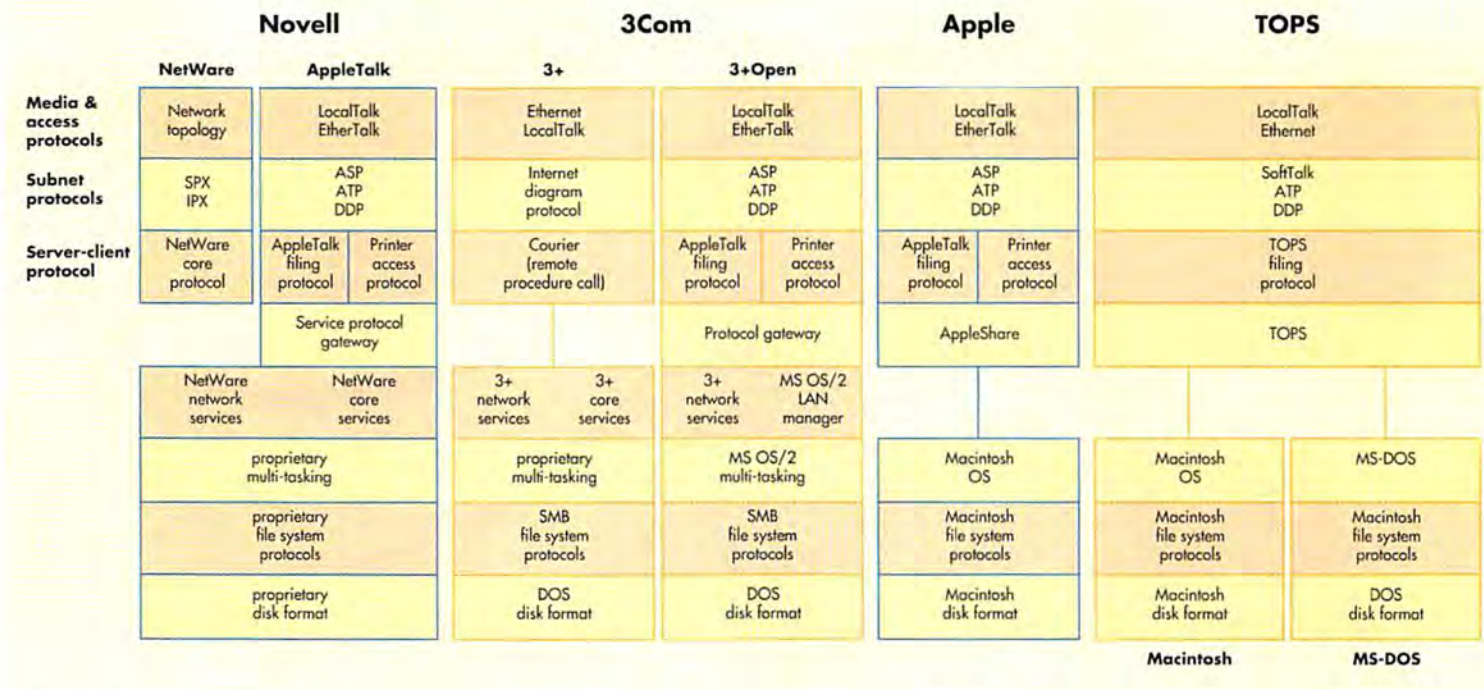
AppleShare is Apple's entry in the file server market. With it, you can turn a Macintosh with up to seven SCSI hard disks

Before You Choose

Before you select your server, analyze the way in which your workgroup or company operates. It's worth the effort. Compare your working habits—real or desired—with the features of each of the servers. In his book *Corporate Networking* (Free Press, 1986), Robert K. Mueller, the former chairman of Arthur D. Little, offers some steps for designing a network.

- Clarify the network's purposes.
- Take an inventory of your own resources, such as knowledge, contacts, and so on.
- Identify needed resources unavailable locally.
- Select a suitable network structure.
- Assess what kind of networker each person in the network will be.
- Decide which networking process will be most effective.

Mueller was writing about people in his book, not computers, but these steps are just as pertinent to setting up a computer network. After all, it's the people, not the computers, who are going to use the network.



Layer Cake

Novell, 3Com, Apple, and TOPS all use an operating system to control the computer that acts as the server. For example, Apple uses the Mac operating system; because of its distributed nature, TOPS can use either MS-DOS or the Mac operating system. Network protocols like AFP are layered on top of the operating system to handle network access to files on the file server.

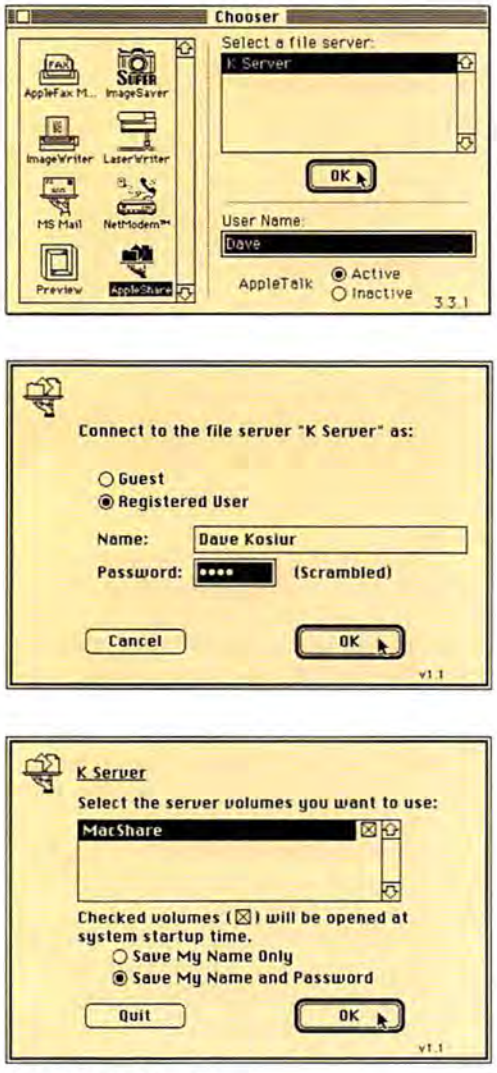
into a centralized file server—enough storage space to keep almost anyone happy. It was the first server to use Apple's AppleTalk Filing Protocol (AFP), the protocol Apple now advocates as the standard for supporting Macs on networks (see "AFP ABCs").

An outstanding feature of AppleShare is its method of controlling file access. Access is granted by folder, not by individual file. As users join the network, they are assigned to groups; file access privileges for a given folder can then be assigned as read-only or read-write for an individual, a group, or everyone. This form of access control, however, can cause some problems in the smooth operation of AppleShare. You need to remember which groups you and fellow workers belong to in order to access files. AppleShare offers no online facilities to help you get such information.

It's also worth noting that the same AppleShare folder-security information can cause problems with some backup programs. If you back up files from an AppleShare server to a disk on your own Mac, you may have to reassign the access privileges to folders after you've restored them to the server. This is obviously a nuisance. SuperMac's Network DiskFit is one of the few backup programs I know of that retains an AppleShare folder's access privileges.

Until recently, AppleShare didn't allow you to make administrative changes (adding users or groups, for example) to the server unless you disconnected it from the rest of the network. The release of AppleShare version 2.0 last September solved most of these problems. You can now add and subtract users and groups while the server is operating, and users can change their own passwords, rather than relying on the AppleShare administrator to do it.

With Apple's AppleShare PC software, PCs can access AppleShare files too. AppleShare PC runs over all the AppleTalk add-in boards for the PC, available currently from Apple, Daystar, and TOPS. Files on the server have multiple file names, one for each compatible operating system (Mac, MS-DOS, ProDOS). As the end user, you only see the file name appropriate for your computer.



AppleShare Server

The appropriate AppleShare server is selected via the Chooser DA (top). When you select the server, you're presented with a log-on screen. If you're a guest user (with limited access privileges), a password is not necessary. Regular users must enter their name and password (center) before they can select which volumes they wish to access (bottom).

TOPS

TOPS was actually the first file server software for Macs and PCs, released even before AppleShare. Since then, it's been extended to other computer systems such as Digital Equipment Corporation's VAX, and UNIX workstations from Sun Microsystems. TOPS is also the only distributed file server available for the Mac.

Because TOPS is a distributed server, there's no need to dedicate one machine as the file server to users on the network. Instead, every computer running TOPS becomes a server. You decide which files you will make available (*publish*) to the rest of the network. Anyone else using TOPS can then access (*mount*) those files. In the meantime, you can mount files from Macs or PCs so long as those files have been published to the network by their owners. It's definitely a situation of "share and share alike."

TOPS uses its own TOPS Filing Protocol (TFP) to access the filing system and the network. TFP is a completely different protocol from Apple's AFP, and TFP runs at the Mac's system software level to provide the TOPS interface and file information to users. Because TOPS doesn't use AFP, its display is different from AppleShare's display. For example, you must use TOPS's own DA, not the Chooser, to navigate through your network and display servers. That being said though, publishing and mounting files in TOPS is just as easy as using any of the other servers.

Equipped with an AppleTalk interface board, PCs can also use TOPS to share files with other systems. If you want to access TOPS servers on Ethernet, however, you'll have to keep the PCs on a LocalTalk network and use an Ethernet bridge, like the Kinetics FastPath, to connect to Ethernet.

STEVEN PUMPHREY

Motorola's 68000/88000 Microprocessor Group in Austin, Texas, uses AppleShare to exchange information among designers, application engineers, and technical marketers.

AFP ABCs

Apple's creation of the AppleTalk Filing Protocol (AFP) is a crucial step toward simplifying access to file servers. AFP attempts to extend the file-handling features (icons, folders, and so on) from the local Mac desktop to networked file servers. Recognizing that other systems will coexist with Macs on networks, Apple also designed AFP to make files available to other operating systems. AFP now supports Macs running the Hierarchical Filing System (HFS), PCs running MS-DOS, and Apple IIs using ProDOS.

When a program requests a file, it issues *native* file system commands; that is, commands understood by the operating system of the computer it's running on. If the file resides on the computer's local disk, the native file system handles the request commands. If, however, the request commands refer to a file located on a server, commands are routed to a translator within the computer. The translator then deals with the network and the server to deliver the desired file to the computer.

Apple makes a distinction between these two types of request activities in AFP. The local file system and its services are called the Native File Interface; the interface between the translator and the network is called the AppleTalk Filing Interface (AFI). Because of the way the translator issues AFP requests to a file server, AFI is completely transparent to a user. Once an AFP server is identified by your program, requests for files from that server can be handled without your intervention. You ask for the file, and you get it—whether it's on your computer or on the network server.

TOPS's flexible, distributed approach does present a problem, however: you are at the mercy of the person who owns the volume you've mounted. There's nothing to stop someone from crashing a Mac; with say, beta software, while you're using that person's published files. You could lose whatever changes you had made to your file since the last time you saved it. Worse yet, a file may be corrupted by the owner's crash and it, in turn, will cause your Mac to crash the next time you open that file. Conversely, should you attempt to shut down your computer while someone's accessing your files, you can still turn off your Mac without warning other users—despite a warning from TOPS that others are using your files.

3+Share and 3+Open

Founded by some of Ethernet's original architects, 3Com offers stand-alone, centralized servers for PC local area networks (LANs), as well as interface boards that physically connect PCs to network cabling. The company's current server software, 3+Share, supports Macs on both LocalTalk and Ethernet, and PCs on Ethernet.

3+Share can only use 3Com's own 3Server systems—based on IBM PCs and clones—as the centralized server. So even if you have a Mac-only network, you must have a PC to install and configure the 3+ software and to back up the server. The 3Server does come with a serial port so that you can connect a LaserWriter or other PostScript printer to it; you can use the server to spool print jobs destined for the printer. The 3Server cannot spool jobs for LaserWriters that are part of a LocalTalk network.

The 3+ system allows you to group users and network resources (called *domains*) by name, within a hierarchical structure. For instance, you can assign resources to workgroups based on the workgroup's organizational function or location—Finance or Sales, Los Angeles or Boston. You don't need to know anything about the net's physical connections, just the name of the resource you want to access.

Although domains can be used on both single-server and multiserver networks, the names of the domains are stored in one centralized network database called the Name Server. What do you do when the computer containing that name server crashes? 3Com doesn't have an answer. You can have multiple name servers on a network; however, those servers don't automatically update each other. Instead, the network administrator must ensure that each name server has the correct entries.

3Com's new network system, 3+Open, is based on Microsoft's OS/2 LAN Manager. There is a reason for the *Open* in 3+Open's name. With the proliferation of different desktop computers and operating systems, many vendors are developing net-

work software that allows them to *layer* various network protocols over their own base software, or *kernel*. This enables a vendor to network with several other computers while maintaining a kernel specific to its own server hardware, in 3Com's case, the PC. 3+Open utilizes this layer concept.

Initially, 3Com installations will have to maintain 3+ and 3+Open servers side by side to support both Macs and PCs. Macs are stuck with 3+ software for the time being; the company doesn't plan to release any 3+Open software for Macs until the end of 1989. When 3+Open for the Mac does become available, it will support AFP in addition to Apple's Printer Access Protocol (PAP) for communications with LaserWriters and similar PostScript devices. A word of advice: If you plan to use 3+Open to connect Macs and PCs in the immediate future, be sure to get the Advanced Level version of the software. Advanced Level 3+Open can support Macs because it can communicate with 3+ servers. 3Com's Entry Level 3+Open system is designed to support only PCs.

NetWare

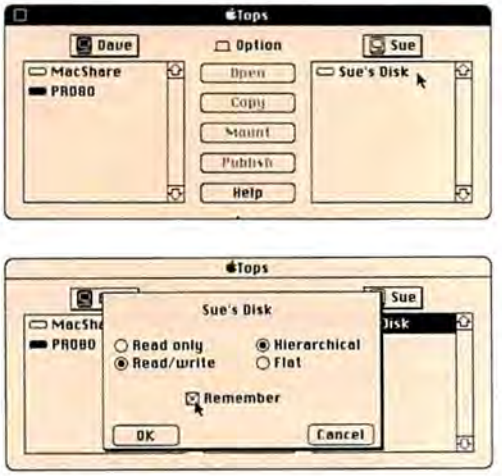
Novell and 3Com have been fighting it out as major rivals in the PC networking market for quite some time. Now that Novell supports Macs with NetWare operating system software, expect the competition to spill over into the Macintosh market as well.

Like 3Com, Novell designed its network operating system in a layered fashion, calling it Open Protocol Technology. The NetWare server can support other computers—PCs running MS-DOS, PS/2s running OS/2, and Macs running AppleTalk—by layering those protocols over the core NetWare protocols. You can also use NetWare to link different kinds of networks together, for example, IBM's Token-Ring LAN.

Novell's support of AppleTalk protocols, especially AFP, means that you can access a NetWare server with Apple's standard AppleShare client software (distributed with System 6.0). Since Novell offers more security and accounting options on its NetWare servers than AppleShare does, NetWare for the Mac also includes its own desk accessory to allow Mac users to view and modify the added features of a NetWare server. Some of these features include restricting log-ons to certain days and times, specifying an account expiration date, and restricting the amount of disk space per user.

A NetWare server appears as an AppleShare server within the Chooser. If the server has a LocalTalk interface board, it can also act as a print spooler for the LaserWriter, enabling Mac and PC users to share the printer. Programs you run can determine which type of printer they will print to; you can intermingle both PostScript and nonPostScript (Diablo 630) print jobs in the print queue. Macs can print either to NetWare's spooler or directly to a LaserWriter on the network.

With the current version, you need at least two PCs to create a NetWare system that supports Macs. One PC acts as the server machine; you attach the server hard drives to it, install the appropriate interface board (Ethernet or LocalTalk, for example), and load the NetWare software onto it. You need the second PC to perform administrative functions, such as configuring user accounts and controlling backups. NetWare 2.15, the first version of NetWare to support Macs, won't extend these administrative functions to Macs. If you want to use a Mac as a network administration machine, you'll have to wait for a later version of NetWare.



TOPS Server

On the left side the TOPS DA displays the volume a TOPS user has published to the network, with the other users' available (mounted) volumes on the right side (top). After selecting another user's volume, you can review and select certain options for later use of that volume (bottom).

Follow the Leader

Apple strongly promotes the AppleShare interface and underlying AFP as the standard way to support Macs on networks. Should your network consist of several servers from different vendors, you can access them all with your Mac's AppleShare client software, so long as those servers conform to AFP specifications. For example, you can access both an AppleShare server and a NetWare server with AppleShare client software.

This standardization of AFP as the Mac file-service protocol has definitely influenced companies' network-development plans. Novell, a latecomer in announcing Mac support for its network, decided to wholeheartedly support AFP, thereby leapfrogging 3Com's 3+ operating system.

3Com initially merged support for Macs within 3+ on its own terms, opting to concentrate on the Xerox Network Service (XNS) protocols that are the basis of 3Com's network. Although a Mac client's interface to a 3+ server uses the Chooser, it looks different from the AppleShare client interface. However, 3Com's decision to support AFP in its 3+Open software later this year will make its servers accessible by AppleShare client software.

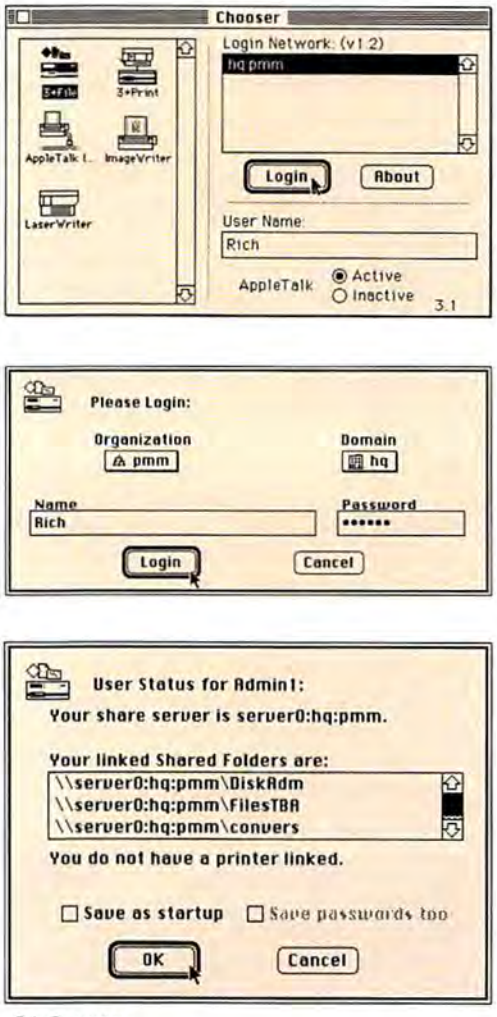
Support for AFP and AppleShare extends even beyond PC-based servers to DEC VAX minicomputers. Alisa Systems' AlisaShare and Pacer Software's PacerShare, which offer varying degrees of AFP compatibility, enable Macs to access the

DRAKE SORBY

Scientists like Kirk McLean at Codom, a pharmaceuticals company in South San Francisco, California, use their TOPS network to share data collected with lab instruments.

VAX as a file server using AppleShare client software.

TOPS, of course, is the notable exception to this AFP trend. It is not AFP-compatible, but it can coexist with AFP-compatible servers on a network. But once TOPS and Sun (TOPS's parent company) merge the TFP with Sun's widely accepted Network Filing System (NFS) protocols, AFP could have some major competition. NFS already provides transparent file sharing in networks of computers and operating systems from a variety of vendors, including IBM, Sun, DEC, Apollo Computer, Hewlett-Packard, and even Apple (for its A/UX operating system).



3+ Server

Much like AppleShare, the 3+ Server is selected via the Chooser DA (top). The Login screen also includes a name and password (center). Each shared folder on the server must be selected in the same manner. You can use 3+ to review various parameters about your shared folders (bottom).

Choices, Choices

Unless you already have a file server system in place, the field is wide open for selecting a server (see "Services Galore"). Apple and TOPS started out from a Macintosh point of view. Now the PC-based players, 3Com and Novell, have embraced the Mac too. You can see representative networks for each file server system in "Configuration Options."

But it's important to remember that if you're looking for a single file-server package (and you're considering future networking needs such as E-mail), your choices are still greatly affected by the corporate philosophy of the vendor.

Apple relies on AppleShare as its file server software. A separate package, the AppleShare Print Server (formerly LaserShare) provides LaserWriter print spooling for networked users, but only if a Mac is the server. Macs come with built-in AppleTalk support. However, you'll have to shop for a LocalTalk adapter board for any PCs that are part of your network. You must look to third-party vendors for services more complex than file servers and print spooling—for example E-mail or remote access. Similarly, using another machine (such as a VAX or PC) as an AppleShare server also depends on third-party products.

If network speed is important, for example, Apple offers an Ethernet controller board for the Mac II—but not for any other type of Mac (see "The Ethernet Solution," *Macworld,* January 1988). Dove Computer, 3Com, and Kinetics offer Ethernet controller devices for the entire Mac line. Bear in mind that AppleShare PC currently cannot be used directly over Ethernet, so an AppleShare server running on Ethernet can only be used by other Macs. PC users running AppleShare have to content themselves with a bridge between their LocalTalk network and Ethernet.

TOPS also provides a limited selection of network services, offering file server and print spooler software for both Macs and PCs, as well as hardware for PCs. As you might expect, the print spooler software (shipped standard with TOPS) also follows a decentralized approach. If you want to use a UNIX or VAX computer as the TOPS server, you can purchase the appropriate product from either TOPS or a third party. TOPS can link Macs, UNIX workstations, or VAX computers over Ethernet; to use Ethernet, PCs must run on a LocalTalk network and be connected to an Ethernet bridge like Kinetics' FastPath.

Perhaps the most comprehensive systems for networking are those from 3Com and Novell. Each offers services other than file servers and printing, in addition to features such as fault-tolerance (see "Crash Recoveries"). In both cases, it makes more sense to consider 3+Share and NetWare as a way to link Macs into existing company networks of PCs than as systems for networking only Macintoshes. Apple's support of 3Com and Novell is more a part of Apple's goal to connect to many other types of computers than it is an attempt to provide networking alternatives that compete with Apple's own AppleShare software.

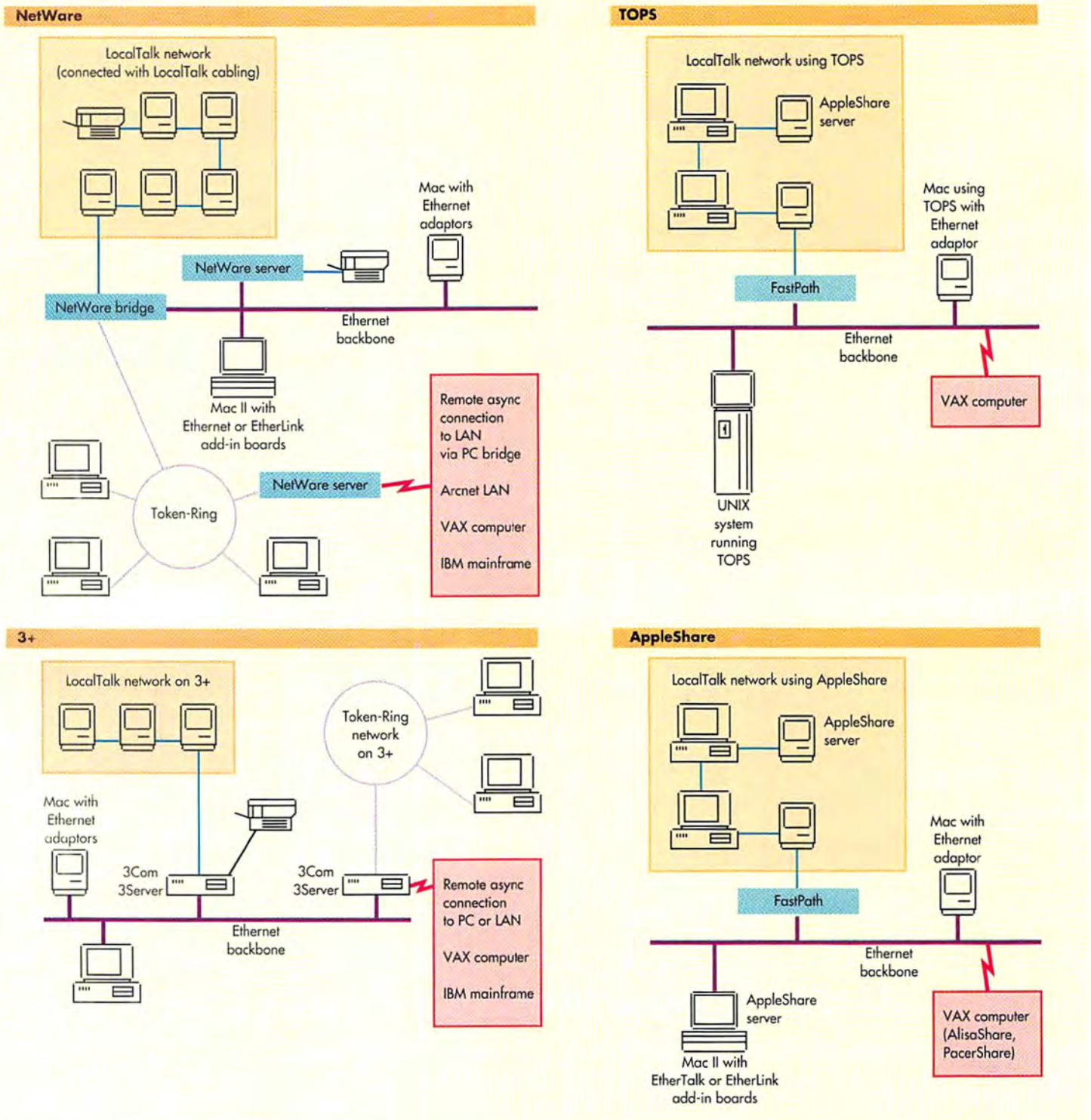
Novell NetWare DA

The Novell NetWare DA includes some refinements of the standard AppleShare access privileges. These refinements stem from the added security features built into protected folders and allow owners of files to turn off multiuser access to them. (Write to open files. Read from open files.)

Services Galore

Product and version	3+ for Macintosh 1.31	AppleShare 2.0	TOPS/Macintosh 2.0	NetWare
Company	3Com	Apple Computer	TOPS	Novell
Price	$495 per server	$799 per server	$189 per user	$200 per site
Additional components required:				
Server hardware	3S/200, 3S/400 server	Mac Plus, SE, or II; hard disks	none	PC and hard disk
Administrative hardware	PC	Mac	n/a	PC
Server implementation:	Dedicated hardware server	Dedicated Mac server	Distributed server	Dedicated hardware server
Mac required	n/a	Plus or higher	512 or higher	N
AFP compatible	Y	Y	N	Y
AFP compliant	N	Y	Y	Y
Network capacity:				
Number of workstations	31 per LocalTalk Network	50	32	32
Client Macs supported:				
512KE	N	Y	Y	N
Plus	Y	Y	Y	Y
SE	Y	Y	Y	Y
Mac II	Y	Y	Y	Y
Other clients supported:				
IBM PC	Y	with PC AppleShare	with TOPS/DOS 2.0	Y
Sun	N	N	with TOPS/Sun software	N
DEC VAX	Y	[1]	UNIX 4.2 or 4.3 BSD	Y
Security:				
Log-on passwords	Y	Y	N	Y
User-alterable password	Y	Y	[2]	Y
Folder-level passwords	Y	N	Y	Y
Folder access privilege	Y	Y	N	Y
Server features:				
Online management	Y	Y	Y	Y
Node-independent manager	[3]	Y	n/a	N
Shut-down message to users	N	Y	[4]	Y
Back-up software	[5]	with hard disk backup provided by Apple	N	N
Pre-scheduled backup	[5]	N	N	N
Print spooling:				
Spooler included	Y	[6]	Y	Y
Centralized spooler supported	Y	Y	N	Y
Local supported	N	Y	Y	n/a
Maximum no. of printers	2[7]	[8]	[9]	n/a

[1] With AlisaShare or PacerShare. [2] Only person posting folder can change password. [3] With administrator floppy. [4] User warning that file is being accessed on network. [5] Only with Tape Option; $1895. [6] LaserShare is available as an added program from Apple for $299. [7] Additional port expansion board can be purchased for $525 adding 1 parallel and 4 servers. [8] LaserShare allows spooling for one LaserWriter per server. [9] Practical limit set by administrator.



Configuration Options

Shown here are examples of networks that can be configured with each of the four file servers. Novell, 3Com, Apple, and TOPS all support Macs connected with either LocalTalk or Ethernet. Other computers, such as PCs, VAXes, or UNIX systems, can also be supported by some of the file servers. 3Com and Novell also offer direct support for other LANs, such as Token-Ring.

Key to cables used

- LocalTalk
- Ethernet
- Token-Ring
- RS-232

Crash Recoveries

Fault tolerance is a feature that has been offered only recently in network systems. A 1985 study by Tandem Computers found that while 45 percent of all network faults were caused by administrative (human) errors, disk failures accounted for 7 percent of all network faults; power failures caused another 9 percent.

Network fault tolerance is a method for ensuring data integrity, should there be a power failure or a disk crash. There are three types of fault tolerance: *track mirroring,* when files are copied to more than one disk cylinder; *disk mirroring,* when files are copied to more than one disk drive; and *server mirroring,* when parallel servers receive all files, monitor each other, and transfer services automatically should a failure occur.

Both 3Com and Novell offer fault tolerance in different forms for their high-end server systems. 3Com currently provides methods for both disk and server mirroring, and recently made arrangements for third-party support of uninterruptible power supplies (UPS) for their servers. Novell's System Fault Tolerant NetWare includes track mirroring, drive mirroring, and server mirroring, in addition to a Transaction Tracking System. This tracking system allows you to recreate database entries and preserve database integrity in the event of a crash.

You should consider the importance of fault tolerance for your file server, taking into consideration your own experiences and your work environment. In the long run, the value of your data could easily make the added expense of a fault-tolerant system pay for itself.

3Com includes file and print services as basic components of its server, in addition to offering an E-mail package with links to larger international electronic mail systems, such as MCI Mail. Called 3+Mail, the software can also be linked to standard corporate mail systems, such as IBM's PROFS. 3Com's 3+Remote allows network access from remote PCs; 3+Net Connect links Ethernet and Token-Ring LANs to the network. Novell also offers a mail system, and there are gateways available to link NetWare to other LANs.

If you plan to go beyond just file and print services, the products from Novell and 3Com deserve a look. NetWare and 3+ can be especially appealing if you're working in a heterogeneous environment of Macs and PCs, and you require connectivity to other, larger machines within the company. Just don't expect each system to have nice implementations of the Macintosh interface for every part of the package.

Building Blocks

File servers like AppleShare, TOPS, 3+Share, and NetWare are only the first step in the evolution of productive networks. That's because they provide the means for controlling access across a network. Multiuser databases such as Omnis 3Plus, FileMaker II, and 4th Dimension already use AFP to control access to a file's data at its byte and record levels.

A new type of Mac application just becoming available will also depend heavily on file servers. Whether you call it computer-supported cooperative work, groupware, or distributed network computing, this type of program will run over networks and permit users to work together on a series of files. And like multiuser databases, network applications will take advantage of the file access controls, not to mention storage space, already provided by file servers.

Currently, you have to actually generate a request for a file to be opened on a server in order to use it. Most servers operate on a client-host system. There's little doubt which machine has control of the file, and you have to find that file yourself.

In the future, however, software will take greater advantage of network operating systems. Working in a completely transparent network, you won't know (or care) where your files are.

One step toward this goal of network transparency is the standardization of server access protocols, which makes it easier for applications to interact with the file server. With the acceptance of Apple's AFP by server developers such as Novell, 3Com, and DEC, applications such as E-mail and groupware will run over a network connecting a variety of computer systems, not just Macs. Similarly, as TOPS and NFS merge into one system, NFS-compatible applications will offer competition to AFP-compatible applications. As the user, you stand only to gain. □

See *Where to Buy* for contact information.

Apple profits
jump 71% —
Mac gets credit
By Ron Wolf
Apple Computer
and profits for
NeXT

Scrapbook '88

Some reached milestones, some threw stones, and some wished they'd stayed at home—the year revisited.

by Charles Seiter

In 1988 Apple chairman and CEO John Sculley made between two and three million dollars. Asked by an interviewer if he thought he'd be at Apple five years from now, he earned a World-Class Award in the Understatement category by replying that he had "nowhere better to go."

Actually, the whole computing community has nowhere better to go. For business software, graphics, music, scientific applications, and even video, the Macintosh is the most exciting game in town. Even at IBM, the main "news event" of the year was the introduction of its cumbersome Mac-imitation interface, OS/2.

A look at sales sheets shows that Apple executives are worth their lavish salaries. Hardware earnings are now over a billion dollars a quarter. The Mac II is performing according to goals—accounting for 15 to 20 percent of Macs being sold. And 1988 was the year when the more upscale SE finally overtook the Plus as the Mac line's best-seller.

Worms in the Apple

Although business boomed at Apple, not everything the company did during the year went according to plan. One of the year's big announcements, for example, may or may not yield a significant income. Apple's January proclamation of a long-term strategic alliance with Digital Equipment Corporation cheered all of us who believe the world should have an alternative to IBM. But by midyear DEC executives had begun to perceive just how capable the Mac II is of competing in the engineering-workstation market DEC had marked out for its MicroVAX "desktop solution."

This strategic infelicity apparently persuaded DEC to rethink its enthusiasm for cooperating with Apple, and by autumn DEC-watchers noticed that the flow of happy press releases about the alliance had slowed to a trickle.

Another questionable venture is Apple's entry into the UNIX market. A/UX didn't do much for the UNIX universe or for the Mac world last year, in spite of sometimes frantic press activity. As it stands, you can't use most Mac applications under A/UX, and the icon interface that's supposed to give users easier access to the power of UNIX isn't quite there yet. On the other hand, no other scheme is likely to make UNIX palatable to the masses, so there's a market there if the right Mac products can be developed.

And then there's the story of Apple's curious lawsuit over the Mac's user interface. As Bill Gates observed, "It's like two guys living across the street from a mansion. When they try to break into the place at the same time, one of them complains that he thought of doing it first." Apple apparently believes that it swiped the windows/menus/mouse scheme from Xerox fair and square, and that somehow no one noticed.

The graceful thing would have been to let OS/2 and Presentation Manager sink under their own weight (this Mac-alike operating system takes up most of a

Buyers Run A RAM Race

Pay Or Delay Are The Two Choices

By Gavin Bourne

SAN JOSE, CALIF. — Fast personal computer

can exert some influence. But the supply is limited, and we have to work hard to make sure commitments are met."

Meanwhile, the smaller high-growth companies are coping with the shortage in a number of ways

FRED STIMSON

In five years of Macintosh watching, Charles Seiter has had the unsettling experience of seeing his most exaggerated and facetious predictions all come true.

20MB hard disk all by itself), and to let Hewlett-Packard's New Wave enjoy its own small market share.

The whole affair seems like the sort of corporate legal bungling one associates with IBM, and in some circles it has made Apple appear a less attractive business associate. Surveys show that 85 percent or so of Mac users thought the suit was a bad idea.

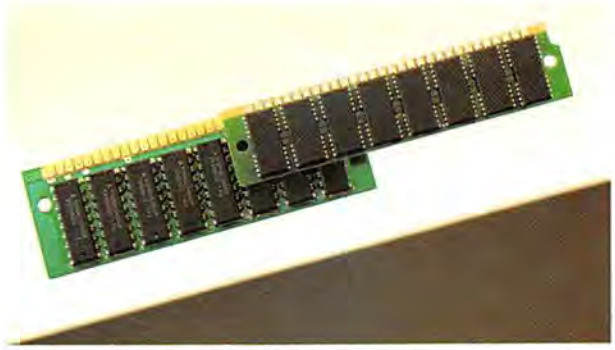
Inside Apple, the roles of the players shuffled considerably in 1988. Apple set up a special government marketing unit, put overseas marketing on a more independent footing, and settled in for a long campaign in corporate offices. Jean-Louis Gassée held no fewer than three titles during '88, finishing the year as president of the Apple products division, in charge of marketing, research and development, and worldwide manufacturing. Asked to describe Apple in the 1990s, Gassée replied, "Apple will be even more fun." It will be for him, anyway.

Jean-Louis Gassée emerged as the man with direct control over the fate of the Mac.

Hype-R-Card

Apple held a splashy first birthday party for its favorite young prodigy, HyperCard, featuring proud parents reminiscing about the act of creation. If everyone upgrades to 4MB, HyperCard could become the all-powerful, low-cost dream-DA-plus-interface of the future. But in 1988, despite furious development of nifty stacks, HyperCard was still most often used as sort of a bulky database with limited internal searching and reporting features.

Even developers with a longstanding interest in low-priced software don't have many uses for HyperCard. Asked in a French magazine interview if Borland would someday be developing stackware, Philippe Kahn gave a characteristically frank answer that translates as something between "No way, José" and "You've got to be kidding."



If you ordered a RAM upgrade in June, you probably don't have it yet.

Memory Madness

As the result of some Reagan administration trade policy efforts that may be charitably described as mistaken, the price of memory rose 150 percent. This was outstandingly bad news for software developers who, having seen prices drop for several years, figured that 1-megabyte SIMMs would soon drop below $100, opening the door for large, feature-rich programs. Although it is widely assumed that prices will start to edge down in 1989, the high-priced-RAM era may be starving out the prospects of some of these programs.

Furthermore, there is no law of physics that dictates ever-declining chip prices; these emerge from a type of cutthroat competition that the big RAM makers may, like the cooperative gentlemen they are, decide is undignified and unnecessary.

The Spread

Spreadsheets remain, with word processors and page-layout programs, among the most popular Mac applications. And Microsoft remains master of the spreadsheet market. Microsoft Excel has been one of the top three Macintosh programs for the last three years, with an estimated 85 percent of the spreadsheet market. That's bad for other spreadsheet developers, but what's even worse is that Microsoft Multiplan owns a big chunk of the other 15 percent—and Microsoft Works is a best-selling program as well.

Bill Gates: We know why this man is smiling.

Modern Jazz, Ancient History

Among the year's discouraged developers was Lotus, which finally abandoned Modern Jazz in July. As demonstrated at Macworld Expo last January, Jazz was already a large program. One suspects that it ended up as a monster that demanded gobs of memory and a 68020 for acceptable performance from its spreadsheet.

So Lotus decided to forego the uphill battle of selling Jazz to the corporate Mac II elite and is now pinning its Mac hopes on a version of Lotus 1-2-3.

Battle of the Titans

Undaunted by the fate of others, software giants Ashton-Tate and Informix challenged Microsoft with new feature-packed spreadsheets. Full Impact, Ashton-Tate's spreadsheet bid, offers advanced text-and-layout capabilities reminiscent of Trapeze (not a spectacular market success). It handles huge spreadsheets—up to half a million cells—and includes macro capabilities beyond those in Excel 1.5.

Presumably Informix has been studying the efforts of Microsoft, Lotus, and Ashton-Tate with keen interest. Widely known to Macworld Expo–goers as a leading purveyor of free luggage and cheap thrills, the company was promising, as this article went to press, to finally release its powerful but supposedly easy-to-use spreadsheet, Wingz, by year's end.

Will it fly? For two Expos running, the spectacular Wingz booth featured uniformed attendants, free luggage, and a Leonard Nimoy video—everything but software.

A Plus for Publishers

In the publishing arena, the ability to separate Mac color graphics is one of the most significant Mac-economic trends of the year. It's a simple matter of finding the cheapest way to perform a traditional job. Conventional separations cost $200 to $300, compared to $50 to run out four Linotronic negatives of an Illustrator drawing.

In Other Words

Turning to word processors, 1988 saw the first serious challengers to Microsoft Word and MacWrite. The long-awaited, much-discussed FullWrite was acquired by Ashton-Tate from Ann Arbor Softworks, and finally —a mere two years after it was announced—shipped in August. It has features that go fairly far into page layout. Why people would want to gum up their word processors with DTP features is beyond me; it's yet another example of how integrated programs are a neat way to do more than one thing poorly. In addition, all this "power" means that the program really needs a Mac II, or an SE or a Plus with an accelerator, for acceptable performance.

"It's so quiet in the halls at Apple, it scares me."

—Bill Gates on the changes at Apple

The only word processor really generating much in the way of sales aside from Word, WriteNow, finally made it to version 2.0 late in the year. The new release brings file translation into the program itself and includes a beefier dictionary and a mail merge function.

MacWrite distinguished itself by being the only major word processor still unable, despite several upgrades, to handle multiple windows.

All the Bases

Despite lively interest in 4th Dimension over the year, high-end database programs for the Mac haven't been spectacular sales hits. Somehow, developers and the press perceive a need for all-powerful, fully programmable relational databases, while the majority of users perceive a need for something they can learn easily and use to manage modest mailing lists. Hence the success of the only Mac database that is selling well, FileMaker, which now sports a Claris label.

dBase Mac's sales for 1988 were not a source of great cheer to Ashton-Tate. Blyth Software, developer of the once-dominant Omnis database family, closed its United States offices and retreated to Britain. Acius struggled all year to produce a speed upgrade and applications shell for 4th Dimension. (The long-awaited Skeleton program finally appeared in September.)

The main database news of the year was the appearance of FoxBase+/Mac, a fast program that allows easy port-over of dBase applications from the DOS world. Good initial FoxBase sales suggest that even among developers, convenience—in this case the convenience of using existing applications—has far more allure than bells and whistles.

Screen Dreams

One market distinguished by significant new products in 1988 was desktop video. In particular, VideoWorks II from MacroMind took its place as a serious tool for the development of enhanced, animation-

based presentations. Although a Mac II–based system for video processing isn't cheap, it's a bargain compared to anything of comparable quality.

Several suppliers brought out NTSC video interface cards for the Mac II, allowing images to be transferred directly to ordinary video recorders. The result was the appearance of some amazingly amateurish productions (including the most embarrassing home-educational video of all time—name supplied upon written request). But then many first-year efforts in page layout were also disasters.

Is Dis a System?

Enough developers complained about software crashes with Apple's new System 6.0 that Apple released 6.0.2 to major developers a few months later. This release fixed an assortment of bugs, primarily having to do with color and sound.

But while release 6.0.2 fixes most of 6.0's contributions to compatibility headaches, it doesn't help if the application is at fault. Just as there are many ways to get to work faster that don't involve slavish observance of traffic signals, many developers find that it's possible to speed program performance by ignoring Apple's programming guidelines. Lynnea Johnson, system software product manager at Apple, points out that as we move into increasingly complex operating systems, every update will be a new exercise in guideline enforcement. Paradoxically, this means that in the near future, as Mac hardware gets faster, software will be getting slower.

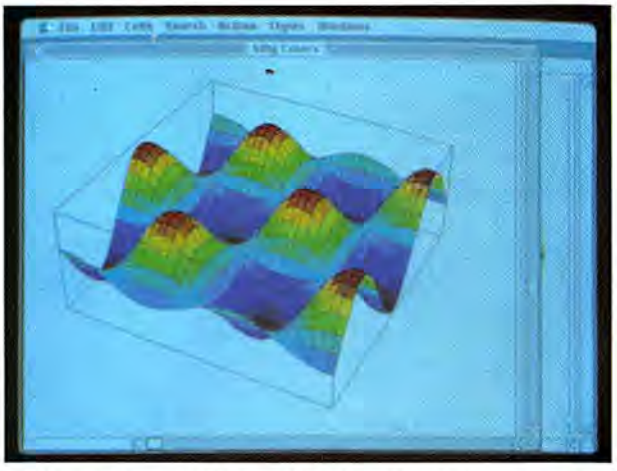
"Can I patent gravity?"

—Steve Jobs on the Apple lawsuit

Now You CDs, Now You Don't

Apple released its CD ROM drive and HyperCard CD extensions, and Toshiba and Panasonic also introduced drives. But the CD market remained stalled in a classic who-moves-first deadlock. (Why should people develop new CDs when there are so few drives out there? Why should I buy a drive when there are so few CDs?) At a Microsoft conference in March announcing the dramatic entry of a major player (Microsoft) into the Mac CD ROM arena, the remarkable fact emerged that no real products were ready to be released to the assembled multitudes.

Apple, however, maintains that the CD is central to John Sculley's visionary Knowledge Navigator concept, and may yet force this market as a matter of corporate commitment. Perhaps in 1989, Microsoft, as part of its own corporate commitment, will fin'sh porting its Bookshelf CD, a reference set for writers, into a tool for use with Word on the Mac.



Mathematica, one of the year's truly exciting releases, generates 3-D color plots automatically.

The Mac in a Non-Mac World

A bit of good news for the Mac, bringing the Mac further validation in a non-Mac world, is the announcement of AutoCAD. AutoCAD's dominance in drafting is so complete that many firms that would prefer to use Macs have been forced back into the blue world of the PC for compatibility. AutoCAD for the Mac promises to help Mac penetration in engineering and technical offices.

Likewise, WordPerfect for the Mac, while unlikely in its current form to set new standards in word processing, is nonetheless a significant bridge product, given WordPerfect's dominance in DOS offices.

For the educational market, the good news is the giant program Mathematica (the title was suggested by a former Apple employee, one S. Jobs). This general-purpose research tool demands a loaded machine (the manual observes that a 4MB to 5MB Mac Plus is "desirable"—anyone out there got a 5MB Plus?), but

Developers think the CD's future is as bright and shiny as the disks themselves, but only a handful of titles were released in '88.

delivers the most comprehensive, easiest-to-use system for bringing the power of mathematics to bear on research problems.

It may become a university standard, replacing most traditional programming methods, and for the next few years the Mac is the cheapest target hardware it can use. This is an example of a new class of Mac program—one developed on workstations and ported to the Mac rather than to the PC because PC hardware can't easily handle the required memory.

Getting the Word Out (and In)

This year saw the introduction of a collection of faxes and advanced scanners, including long-awaited products from Apple. The Mac handles most data in graphic form anyway, so the fax is a natural extension of familiar modem-based communication, and high-speed send/receive faxes are cheaper to implement on the Mac than on most other computers.

Although scanners for the Mac were one of the earliest hardware enhancements (the redoubtable ThunderScan, for example), the real news is HyperScan from Apple: software to transfer images directly into HyperCard with halftoning and all sorts of additional image processing.

Never say NeVR. A group at Apple produced this button, but Steve Jobs introduced his ground-breaking NeXT computer on October 12 nonetheless.

Journal of a Plague Year

In a bizarre twist, 1988 became the year when the hitherto unrelated (for most of us) words *computer* and *virus* came together to form a common (and feared) compound. Three varieties swept through the Mac community. One was spawned by some Canadian jokers who wanted to wish users "Peace" on the Mac II's birthday. Much more serious were the nVIR and Scores viruses, which managed to incapacitate thousands of Macs, causing uncounted hours of down-time.

The only positive side of this epidemic is that it inspired many Mac users to a salutory degree of caution regarding such things as using only copies of application programs and backing up hard disks. It was also

John Sculley with DEC president Kenneth Olsen. Will this romance turn into a meaningful relationship?

gratifying to see the way the Mac community rallied to the threat, uploading a variety of freeware and shareware antiviral products onto bulletin boards for wide distribution. Similar products in the IBM world cost from $80 to $200.

Bigger and Better?

By the last months of 1988 nearly every major program had added color support in some fashion. Despite price and availability problems for RAM, most releases of major applications required 1MB of memory or more. And things are still heating up. Apple recently started shipping its 68030-based Mac II with 1.4MB floppies that can read both DOS and Mac disks. Other hardware developers are working on 030 cards for existing Mac IIs and SEs.

That the hottest Mac systems now compete with scientific minis for hardware power is good for the minority who need and can afford that kind of equipment, but what about the average Macintosh owner? Apple's last round of price increases in September put the Mac II safely beyond the economic reach of the rest of us and raised some disturbing questions about the company's intentions. Would Apple really rather be a high-margin workstation shop like Sun than a mass-market organization? Does John Sculley's vision of a "$25 billion company" mean that there will be five customers left in North America paying $5 billion apiece for their Mac XIVs in 1996? And will those five be willing to pay $4 million each for their subscriptions to *Macworld?*

If it comes to that, I hope they will, but I'd rather see the Macintosh base broadening out rather than shrinking as it mounts into the fiscal stratosphere. □

Printing a Rainbow

Color printers are arriving by the armload. But can they really produce the color output you need?

by Ron Risley

It's taking a long time to reach the end of the Mac II's rainbow. In 1987, when Apple unveiled the Macintosh II with its 16 million dazzling colors, there was very little software that let you do anything with those colors. Today, however, a whole spectrum of software products can bring the Mac's color display to life. What the original Macintosh did for the latent Escher in us, Mac II color is doing for our inner Monet.

But while our Escher is happy printing black-and-white images on a laser printer, our Monet is having a tough time getting colorful screen impressions onto paper without leaving the studio. None of today's color printers produces output that matches the colors on the screen or the colors of an image printed on a commercial offset press. Also, each printer has limited application. An ImageWriter might be great for printing a few copies of a memo with highlighted words, but it can't create camera-ready color art. Likewise, a printer that creates acceptable camera-ready art might not be suitable for low-volume publishing or for creating colorful presentations. And unless you have access to United States currency clip art, and a license from the Treasury Department to use it, cost is a very real consideration when choosing a color printer. If you need fast, high-resolution, continuous-tone color, you might find that the available options are too cumbersome, too expensive, or both.

Today's color printers fall into four categories: impact dot matrix, ink-jet, thermal transfer, and film recorder. Some color printers support QuickDraw and PostScript interfaces; some (most notably film recorders) print QuickDraw documents saved in PICT format; others support the same video interface normally used to connect a color monitor. Which type of color printer is best for you? Let's look at some color printing technologies and see how well they address common color applications.

A Color Primer

Before you can figure out which printer will give you the results you want, you need to understand how color is produced on screen and on paper—and why the two just don't match up. Each pixel on a Macintosh II color display consists of three tiny dots—one red, one green, and one

---

Ron Risley has been a designer of computer and telecommunications hardware, software, and programming languages and is an amateur science fiction writer. He recently left the computer business to pursue a degree in medicine.

PHOTOGRAPHS BY STAN MUSILEK

blue. Combining red, green, and blue light in varying amounts can create any color visible to the human eye. The Apple Video Card for the Mac II can select one of 256 shades for each of these three primary colors, resulting in a palette of 256 by 256 by 256, or 16,777,216 possible colors. All color printers, with the exception of film recorders, work similarly except that they combine yellow, magenta, and cyan pigment to create a rainbow of colors (including red, green, and blue) on the printed page. Since the black that results from combining yellow, magenta, and cyan often appears muddy, these printers usually add a pure black layer as well.

But the difference between the way colors are created on screen and the way they are created on paper is more than just a matter of red/green/blue or cyan/magenta/yellow. You might have noticed that scanned photographic images printed on a LaserWriter at 300 dots per inch (dpi) don't look as good as they do when displayed on a Mac II gray-scale monitor at a modest 72 dpi. That's because monitors continuously vary the brightness or intensity of a color to create different colors. If you adjust the brightness controls on a monitor the colors change—now which ones are the true colors?

With a color printer, however, a dot is either there or it isn't—so, although you can vary the color of a dot somewhat by using more or less ink, you can't really control the ink's density the way you can control the brightness of phosphor on a display tube. It's a take-off on the old joke: You can have any size or density you wish, so long as it's 1/300 inch and solid. Four-color, process lithography (the type of printing used to reproduce the color photographs in this magazine) gets around the problem by varying the size of the dots of ink instead of their density. Thus, each dot is formed from hundreds of minuscule droplets of ink—the dot can be as large as necessary to create a specific color.

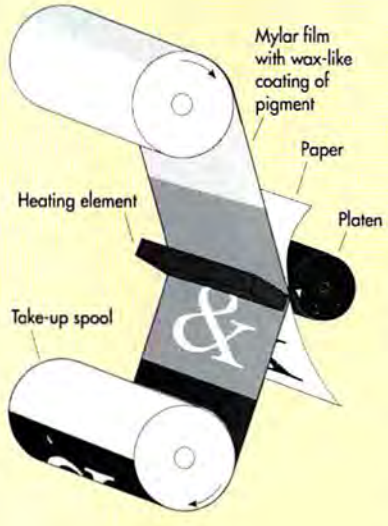
Most color printers, however, rely on a technique called dithering, in which adjacent dots are printed in different colors. The human eye perceives this block of variously colored dots as a single color. Of course, using more than one dot to represent each equivalent video pixel seems to reduce the resolution of the image. The wider the range of colors you need to present, the more dots the printer must use for each color, and the poorer the resolution appears to be. For instance, eight-by-eight-dot clusters can yield thousands of colors, but on a 300-dpi printer the perceived resolution is less than 38 dpi. Eventually, similarly colored dots get too far apart—you begin to see patterns of dots, and the overall image appears grainy and off-color. Except for very expensive printers that print dots of varying size, high-resolution printing with large color palettes is relegated to film recorders, which work not by dithering but by photographing a CRT display. Film recorders can reproduce a wide range of colors for each individual pixel.

Impact Dot Matrix: Color on a Budget

ImageWriter II owners might be surprised to find that they already have a color printer attached to the Mac—one that can be used to produce color output from any Macintosh, not just the Mac II. An ImageWriter II with a four-color ribbon lets you print any of seven colors. If you just want to add some red ink to your financial report (without having it show up on the bottom line), then the 144-dpi ImageWriter II, or another dot matrix printer that supports color, might be just the ticket.

How is this feat possible? Ever since the Macintosh was first released, QuickDraw has supported seven colors: red, green, blue, yellow, magenta, cyan, and black. The original Macintosh display could

How Color Printers Work



How Thermal Transfer Works
A thermal transfer printer uses ribbons made of a thin Mylar film with a wax-like coating of color pigment. The ribbons have alternating page-size blocks of yellow, magenta, cyan, and black. The printer lines up an area of colored ribbon with the sheet of paper, and a thermal head scans the page, selectively melting color onto the paper in small dots. The printer repeats these steps for each color.

Ink-Jet Nozzles
Inside an ink-jet printer, a rotating drum spins a sheet of paper around. As the paper spins, the printer forces ink from four bottles (one for each color: cyan, magenta, yellow, and black) through four tiny nozzles. The nozzles move parallel with the drum, producing lines of color until the image is complete. The nozzles overprint combinations of ink to create red, green, and blue, completing the basic QuickDraw color set.

What's Next

Of all the printer technologies, ink-jet is the most promising because of its versatility and quality. Today, however, only high-end, prohibitively expensive ink-jet printers can produce color output of this quality. These printers don't even come with Mac drivers yet.

show only black and white, so anything that wasn't white appeared as black. A handful of programs, like Silicon Beach Software's SuperPaint, let you assign colors to graphic objects. You couldn't see the colors on the screen, of course, but they were there, hidden behind the monochrome screen. The Mac II's Color QuickDraw supports the old seven-color model, as well as its own multimillion-color model, so when Apple introduced the Mac II, some older applications automatically displayed color on the Mac II. A number of other new or upgraded products now support the seven-color model.

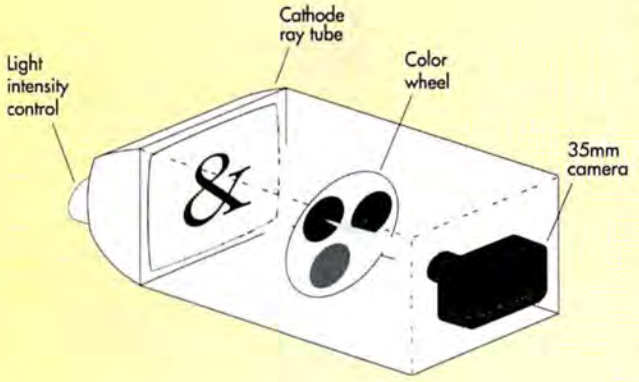
Dot matrix color is remarkably good. Ribbon life is variable, since the yellow ink band tends to get contaminated with darker ink. Conversely, if your output is mostly black text with an occasional color highlight, you might find that you use up the black ink while the colors are still fresh. Dot matrix printers use plain paper and can typically print hundreds of pages from a single ribbon. Output costs are down in the pennies-per-page range. If you already have an ImageWriter II, getting a color upgrade for the price of a $15 ribbon is a deal that's hard to beat. If you don't own an ImageWriter II, its $595 price isn't excessive. ImageWriter LQ owners can also get the same seven-color capability at a somewhat higher resolution: up to 216 dots per inch. An ImageWriter LQ four-color ribbon costs about $30.

With any of the dot matrix printers, you can manually simulate more than the seven colors, while sacrificing resolution, by dithering. Claris Corporation's MacDraw II, for example, lets you create fill patterns that contain combinations of the QuickDraw colors. Still, the low resolution and paucity of colors make the ImageWriter unsuitable for generating color proofs. It doesn't print well on transparent film, so its use in presentations is limited, and its output could be considered camera-ready only for low-quality spot color applications.

Ink-Jet: A Spray of Color

Ink-jet printers span the widest range of capability, from ImageWriter replacements to high-end color proofing systems (currently not available for the Mac). Typical low-end color ink-jet printers, like Hewlett-Packard's HP PaintJet color graphics printer, print at 180 dpi (a slightly higher resolution than the ImageWriter II's). Like dot matrix printers, ink-jet printers can add spot color to charts and graphs but lack the variety of colors and the resolution necessary for prepress proofing, low-volume publishing, or generating camera-ready art. One advantage ink-jets have over dot matrix printers is that ink-jets can print on transparencies, although the output is not as good as a thermal printer's. The drivers for ink-jet printers have not been standardized, so you should check software compatibility carefully before you buy (see "Quicker Quality").

Most ink-jet printers can also print on plain paper, but the jets on some printers tend to clog with paper debris, while others bleed excessively when used with some types of paper such as newsprint. (The



Film Recorders and Filters

Basically a long, light-tight box with a small monochrome video display at one end and a camera at the other, a film recorder uses focusing lenses and a red, green, and blue color wheel to create 35mm slides. Film recorders turn a light beam on and off to expose the film sequentially through red, green, and blue filters.

manufacturer usually recommends a special paper for best results with these printers.) Sharp claims that its JX-730 printer uses a cluster of very small jets that do not clog or cause the ink to bleed.

PaintJet ink comes in two cartridges, one with black and one with yellow, magenta, and cyan. The ink in these cartridges doesn't get contaminated as do the ImageWriter ribbons, and you can replace the black cartridge independently of the color cartridge. The Sharp JX-730 carries this idea one step further; it has separate ink reservoirs for each color. The cost of printing a page with an ink-jet printer is comparable to using an ImageWriter but, as with the ImageWriter, printing a full page with many blocks of color is quite slow.

Leaping toward the high end of the ink-jet spectrum are printers from Iris Graphics. Designed to work with commercial color-processing systems, these printers produce high-quality color, suitable for low-volume publishing, prepress proofing, overhead transparencies, and even camera-ready art for medium-quality jobs. The top-of-the-line Iris 3024 is the only ink-jet printer that can vary its dot size. It can print up to 300 dpi, with each dot consisting of 32 shades of each of four colors, to produce continuous-tone color output. The 3024 prints large images—up to 24 by 24 inches—and prints on almost any media, including plain paper, newsprint, transparencies, cloth, or even sandpaper. Output from the 3024 rivals high-quality four-color-process printing, still for pennies per 8-by-10-inch image.

Sound ideal? Well, while the cost per image might be low, the 3024 printer—which weighs in at a hefty 400 pounds—lists for $75,000, without a controller. And even if money is no object, there is currently no Macintosh-compatible controller available (GCC Technology, however, demonstrated a prototype interface at the Macworld Expo last August).

Thermal Transfer: Crayola Technology Printing

Decades ago my mother kept my brother and me entertained by letting us draw designs with crayons on a sheet of newsprint. She then used an iron to press our designs onto a T-shirt. This pastime has been resurrected in our high-technology world as thermal-transfer printing.

Thermal-transfer printers offer medium resolutions of 200 dpi to 300 dpi, and produce a wide range of colors through dithering. These printers produce acceptable overhead transparencies quickly and work well for proofing output that will be finalized on a film recorder. (Dithering, however, makes the output unsuitable for camera-ready art.) Thermal-transfer printers can be used for low-volume publishing, although the special paper they require may be too slick for some jobs. Thermal printers print more quickly than impact or ink-jet printers, requiring about one minute per page (it takes extra time for the Mac to transfer data over a cable to the printer where it is processed). The operating cost, for ribbons and special paper or transparency film, is typically around 50 cents per page.

Although most thermal-transfer printers work alike, some support QuickDraw and others support PostScript. One high-end printer, QMS's ColorScript 100, supports PostScript and prints at 300 dpi, making it work just like a LaserWriter when printing in black and white. Some people, however, will find that for fine details the LaserWriter produces better results.

PostScript compatibility for color printing, however, is important only to users who generate color separations electronically on a Linotronic or similar PostScript-based phototypsetter. If you must accurately proof PostScript-specific effects such as undercolor removal, screen rota-

Color Output Compared

Impact Dot Matrix
This sample from an ImageWriter II shows how well the old standby performs when printing these colors. It also shows some problems typical of color dot matrix printers: colors other than the primary ones are produced by dithering—dithering patterns that use two or more colors don't reproduce well. Also, dark colors contaminate the yellow ink band of the ribbon, producing streaks.

Thermal Transfer
Thermal-transfer printers provide automatic dithering—you don't have to create the patterns, you just pick the colors shown on your software's palette. These printers provide excellent color density. Note the very wide top and bottom margins; this image had to be printed on legal-size paper to show up completely.

Ink-Jet
A step up from the dot matrix printer, the PaintJet produces a pattern that doesn't streak, and the manually dithered patterns work much better.

Film Recorder
Film recorders produce 35mm slides that show high resolution and a large palette of colors. The colors blend much better than with any of the other printers. This image uses only 256 of the 16 million colors a film recorder can generate.

tion, and font manipulation, then you need a color printer that supports PostScript. Just as using a laser printer gives you a good idea of how your pages will look when typeset, so using the ColorScript gives you a much better idea of how your color separations will look when produced on a Linotronic. Color matching, however, will still be far off the mark, because of the dithering dilemma.

For anything other than proofing, however, using PostScript is a drawback. While nearly all applications that support color displays can print in color through a Color QuickDraw driver, only applications that specifically support color operations in PostScript can print in color on the ColorScript 100. Currently, the ColorScript supports only Illustrator, Illustrator 88, FreeHand, QuarkXpress, PixelPaint, Mathematica, and LaserPaint Color II. QMS is working to support other major PostScript applications. On top of its limited software compatibility, the ColorScript 100 is expensive, listing for around $22,000. (It can, however, be shared through an AppleTalk network.)

QuickDraw-based color thermal printers are compatible with a much wider variety of software than are PostScript printers. In fact, PostScript applications such as Il-

Linotronic
The best images are still produced the traditional way, by sending color separations to a Linotronic for reproduction.

Quicker Quality

Until recently, if you wanted a range of good-quality, high-resolution typefaces you had to use an expensive PostScript printer. That's because in order to get high-quality 300-dpi fonts from a QuickDraw or Color QuickDraw printer (like the Tektronix 4693D), you must install fonts four times as large as the corresponding screen font—and the choice of QuickDraw fonts is limited. Even then, you couldn't rotate QuickDraw fonts or scale them to fractional point sizes without losing quality.

To get around QuickDraw's weak font-handling capabilities, some companies now include their own font technology within their software. For instance, Cricket Software includes the ability to rotate and scale text within its paint, draw, and presentation packages. If you use these features and print the results on a PostScript-based laser printer, you'll get the same image that you see on screen. If you try to print on a QuickDraw printer using a standard QuickDraw driver, however, you won't get these nice text effects.

As a result, Cricket, in conjunction with font-maker URW, has developed drivers that are basically a superset of QuickDraw. These drivers, called Expression, have the versatility and quality of PostScript fonts, but unfortunately they work only with Cricket's software packages. In a bid to make its drivers a standard, so that all software packages support them, Cricket plans to license a generic version of the drivers to printer manufacturers. For color printer users, this URW/QuickDraw hybrid translates into good quality for a much lower price than pure PostScript has.

Yet many questions remain. Cricket isn't the only company that wants to set the standard—Palomar Software also licenses a set of drivers. Palomar may have one advantage over Cricket: software companies may be less willing to modify their software so that a potential competitor such as Cricket can sell drivers (Palomar doesn't market any competing software). Also, while the outline fonts (such as the ones from Bitstream and URW) used by the drivers look fine on paper, they don't quite match the PostScript text on screen. Most users won't notice—and won't care—but a professional graphic designer might discern a difference.

Will enough printer manufacturers adopt the new drivers to ensure a healthy supply of typefaces and application support? If third-party enhanced QuickDraw drivers proliferate, application vendors will be forced to offer compatibility; if printer manufacturers are assured of wide application compatibility, they'll be encouraged to embrace the new drivers. If this chicken-and-egg combo can agree on who will come first, we'll soon see the emergence of a new, lower cost standard for quality output.

Color Printers on Parade

	Thermal Transfer						
Model	**ColorScript 100**	**Model 4693D**	**PlotMaster**	**ColorMaster**	**ColorView 5912**	**ColorView 5612**	**Model G330-70**
Manufacturer	**QMS**	**Tektronix**	**CalComp**	**CalComp**	**CalComp**	**CalComp**	**Mitsubishi Electronics**
Price	$21,995	$8495	$5295	$4795	$10,495	$8395	$5900
Maximum page size (in inches)	11 × 17	8.5 × 14	8.5 × 11	8.5 × 11	11 × 17	11 × 17	8.5 × 11
Maximum resolution (dpi)	300	300	200	200	200	200	150
Colors	7	7	7	7	7	7	7
Auto dither	yes	yes	yes	yes	yes	yes	yes
Hardware interface	AppleTalk/serial/parallel	Mac II board ($495)	serial/parallel	serial/parallel	serial/parallel	video	video
Software support	PostScript	QuickDraw	Expression	Expression	Expression	n/a	n/a
Requires special paper	yes	yes	yes	yes	yes	yes	yes
Accepts plain paper	no	no	no	no	no	no	no
Produces transparencies	yes	yes	yes	yes	yes	yes	yes

[1]MacDriver package, $99.95

[2]Driver must be purchased from third party: Expression, Phoenix Printworks for the Mac; Hewlett-Packard driver being developed.

lustrator are about the only ones these printers don't support. (Some printers, however, include a screen-snapshot utility to accommodate applications that don't directly support color printing.) In addition, these printers are much less expensive than their PostScript-equipped cousins. The Tektronix 4693D Color Image Printer, for example, sells for around $9000 including an interface card that installs in the Mac II.

As with 300-dpi black-and-white QuickDraw printers, however, the font handling in these color printers isn't as versatile as that in PostScript printers. In order to get the highest quality type, you must install fonts in your System that are four times the size of the type you wish to print. Currently there are fewer "four-times" QuickDraw fonts available as there are PostScript fonts. QuickDraw does not support rotated text, or text that follows an irregular curve.

If you need a color printer only to create informal overhead transparencies, you might check out a thermal-transfer printer that uses a video interface, like Mitsubishi's G330-70 Color Thermal Transfer Printer. Whenever you press its Print button, the 150-dpi G330-70 prints a replica of the current screen display. The G330-70 can simulate up to 4096 colors by dithering. The good news about this video interface is that an application needn't be equipped to handle color printing in order to generate color output; if you can see color on the screen, you can print in color.

What a video interface gains in simplicity, though, it loses in versatility. You can't print full pages, only screens—you print whatever is on the screen, including the menu bar and window frames. You're also limited to the resolution of the screen—no high-quality text or object-oriented graphics. It's easy to see why a printer like the G330-70 is unsuitable for desktop publishing or color proofing. But if you just want to create color transparencies for presentations, and if you don't mind including a menu bar, then the $5900 G330-70 is a bargain at about $3000 less than most other thermal-color printers.

Film Recorders: Mama, Don't Take My Kodachrome Away

If you want high-resolution hard copy of images that use a lot of colors, the only real alternative at this time is a film recorder. Film recorders, which produce 35mm slides, are capable of very high resolution: typically up to 4000 by 2700 lines on

SAVE
$23.40
off the cover price

12 issues for $24:

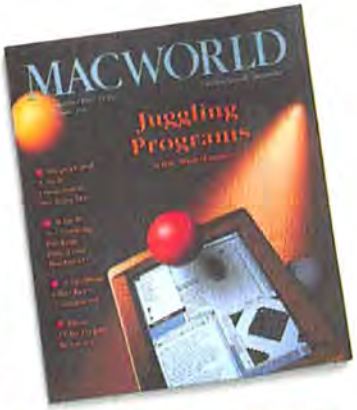
When you subscribe today

☐ Send me 1 year (12 monthly issues) of *MACWORLD* for $24. Save 20% off the basic subscription rate.

☐ SAVE EVEN MORE! 2 years (24 monthly issues) for $37.90.

Please Bill me later.

4AAG8



Name_____

Company_____

Address_____

City/State/Zip_____

By regular subscription, *MACWORLD* is $30 for 12 issues. The annual cover price is $47.40 (12 issues). Offer available to subscribers in the U.S. only. Please allow 6-8 weeks for delivery of your first issue.

MACWORLD

The Macintosh® Magazine

ALMOST
50%
SEE
BACK

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

		Dot Matrix				Ink Jet	
PanChroma	**PanChroma**	**ImageWriter II**	**ImageWriter LQ**	**M-2518**	**M-4018**	**PaintJet**	**JX-730**
CHC-345 Computer Friends	**CHC-645 Computer Friends**	**Apple Computer**	**Apple Computer**	**Brother**	**Brother**	**Hewlett-Packard**	**Sharp Electronics**
$6000 8.5 × 11	$12,000 11 × 17	$595 10 wide	$1399 15 wide	$1295 16.5 wide	$1795 16.5 wide	$1395 8.5 wide	$1995 15.5 wide
300	300	144	216	216	216	180	180
7	7	7	7	7	7	7	7
yes	yes	no	no	no	no	no	no
Mac II board ($700)	Mac II board ($900)	AppleTalk/serial	AppleTalk/serial	parallel[1]	serial/parallel	serial	serial
QuickDraw	QuickDraw	QuickDraw	QuickDraw	QuickDraw	QuickDraw	[2]	QuickDraw
yes	yes	no	no	no	no	yes	no
no	no	yes	yes	yes	yes	yes	yes
yes	yes	no	no	no	no	yes	yes

Film Recorders Compared

Model	LFR	Montage FR1	ProColor	SlideWriter	FilmPrinter
Manufacturer	Lasergraphics	Presentation Technologies	Matrix	Matrix	Mirus Corporation
Price	$9750	$5995	$6495	$11,795	$5895
Included film format	35mm slides	35mm slides	35mm slides	35mm slides	35mm slides
Optional film format	Polaroid 3 × 4 AutoFilm		Polaroid 3 × 4 AutoFilm		
Maximum resolution (dots per frame)	4096 × 2731	4096 × 2731	4096 × 3072	4096 × 3072	5333 × 8000
Colors	16 million	16 million	16 million	16 million	16 million
Hardware interface	SCSI	SCSI	SCSI	SCSI	SCSI
Software support	PICT, PICT2	EPS, Expression, PICT, PICT2	PICT	PICT	PICT, TIFF

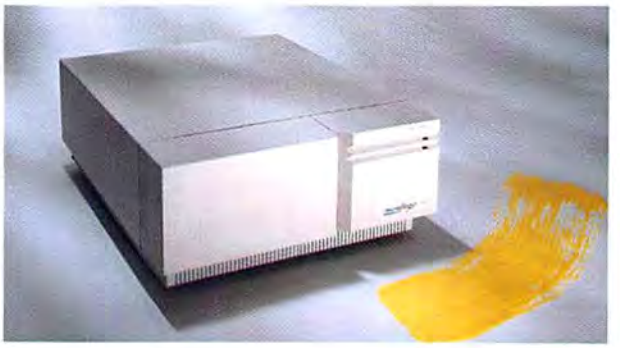
What's the Difference?

Impact Dot Matrix
Inexpensive printers suitable for adding spot color to reports and graphics. Too slow for low-volume publishing. Lack of resolution and limited palette (only seven colors) makes these printers unsuitable for prepress proofing. Cannot print on transparency film for presentations.

Ink-Jet
About the same speed, palette, and resolution as impact dot matrix, but can print on transparency film for low-cost presentations.

Thermal Transfer
Better speed and higher resolution. Palette of seven colors can be enhanced (at the expense of resolution) by dithering. Good for proofing color images that will be reproduced by a typesetter or film recorder. Great for fast and easy presentations. Not suitable for camera-ready art. Paper too slick for some publishing jobs.

Film Recorders
Excellent resolution and large palettes perfect for professional-quality presentations and production-quality artwork destined for color separations. Working with film is less convenient than with paper; not suitable for low-volume publishing or quick proofs.



Just a Spot of Color

If you can't afford an expensive color printer but want to add some spot color to your pages, the $875 Kroy ColorPlus system might be an answer. To use the Kroy system, you place a sheet of color transfer film over an image that was printed on a laser printer or photocopied. You then feed the page into the ColorPlus, which fuses color transfer film onto the black areas of a page. In just seconds, a black-and-white image changes into a colorful one. If you spend some time with scissors and tape, you can mask parts of a page so they'll remain black on white. You can also place pieces of different color film over different areas to create multicolor pages. The final color is sharp, dense, and even.

The ColorPlus system offers a snazzy feature not available on color printers. In addition to pastel colors in glossy and matte finishes, you can get metallic foil transfer films in a variety of glossy or matte colors, including gold and chrome. Using the metallic foil, you can create a remarkably good imitation of expensive foil embossing. Using foil transfer film on a scanned halftone image produces an eye-catching metallic image that is difficult or impossible to create with conventional foil embossing techniques.

If your color needs are limited to low-volume spot color of high quality, or if you can use the expensive look of foil embossing to advantage, the Kroy ColorPlus is a fun color alternative worth investigating.

a single 35mm frame. Compare that with the 640 by 480 pixels of a standard Apple color monitor. Film recorders also support large palettes of colors without dithering. In short, anything you can display on an Apple high-resolution video display, you can create, at higher resolution and with better color, using a film recorder. Commercial color-processing houses always accept 35mm film for generating professional-quality color separations, and 35mm slides make much better color presentations than transparencies; the colors from slides are generally richer and more saturated.

These gorgeous renderings come at a price. It takes several minutes to expose a single frame, and you still have to get it processed before you can see the results. Some film recorders let you use Polaroid instant slide film so you can produce slides in your office, but this film is a hassle to work with; you must still expose an entire roll of images before you get to view a single one, and you have to process and mount the slides for presentation. Any type of film output is expensive, often exceeding $1 per usable transparency. Even after you have the slides, you need a projector for viewing. Making 8-by-10-inch color prints for low-volume publishing applications can get expensive in a hurry.

Showing Their True Colors

No color printer currently available can faithfully reproduce the full spectrum of Mac II colors, at high resolutions, on paper. For top-quality presentations or camera-ready art, film recorders are really the only choice, but they are slow, expensive to use, and cumbersome. Thermal-transfer printers work at a lower cost per sheet and offer immediate gratification, but none of the current players has a color palette that even approaches the 16-million-color Mac II video. Still, they work well for proofing (well-heeled presentation houses often use a thermal transfer printer for previewing files before sending them to a film recorder), for low-volume publishing, and for making overhead transparencies for presentations.

Although most of the color printers currently available use thermal transfer, the up-and-coming technology is ink-jet. As the popularity of these printers increases, a driver standard that supports a wide range of software will evolve (see "Quicker Quality"). None of the models available now have the right mix of resolution, color palette, interface, and affordability, but ink-jet technology has the potential for supporting a low-cost, high-performance printer that will handle the proofing, presentation, and publishing needs of those whose budget or whose software precludes their using a film recorder. □

See *Where to Buy* for contact information.

What to do when a disk drive crashes

Rescuing a Hard Disk

by Bruce F. Webster

Computer Nightmare #27. After a good friend accidentally trashes his hard disk and loses lots of files in the process, you decide it's time to get serious about backups. So you buy a great backup program and save the contents of your hard disk to floppies. Sure enough, a few days later, you find that the hard disk has been inadvertently erased, due to a child's error. Pleased with your foresight, you launch the backup program and start to restore files from the archived floppies. Three-fourths of the way through, however, you run into a problem: the backup program can't read the inserted disk. A little shook, you insert the next one. It's bad too. And the next one. And the next one. You realize that there was some sort of problem with the floppy drive while you were backing up the hard disk. And you wonder how you're ever going to get those files back.

Something very much like this happened to me around midnight during the Labor Day weekend. I couldn't even blame my kids; I had deliberately erased the hard disk—right after backing it up—in an effort to test a backup utility. Of course, I had first saved (by hand) all the important files, but it still shook me. After all, if you can't trust your floppy drive, what can you trust?

Fortunately, help was at hand, in the form of two software packages: 1st Aid HFS, from 1st Aid Software, and Symantec Utilities for Macintosh (or SUM), from Symantec. Using them, I was able to recover all the files on the trashed floppies. For that matter, I could have directly recovered the deleted files on the hard disk without resorting to my backup floppies. And if you're doing any important work with the Macintosh, you shouldn't be without one or the other.

Out of Sight

How does a disk crash, anyway? First, you need to understand how information is stored on a disk, whether it be floppy or hard. Information (as you have been told repeatedly) is composed of bits, little mythical 0s and 1s running around inside the computer's memory. Groups of eight bits form bytes; a byte is typically the

---

Bruce F. Webster is a Macworld *contributing editor and a free-lance writer living in the redwoods near Santa Cruz, California.*

ILLUSTRATIONS BY JOHN HERSEY

amount of information used to encode a single character (letter, digit, punctuation, space) in a text file.

On a disk, bytes are collected into sectors. Each sector holds 512 bytes of the user's information, as well as another dozen or so bytes of housekeeping information. The bytes themselves are actually encoded in a special format, consisting of a limited set of values. This provides a certain amount of error checking; if illegal values appear in a sector, then the computer knows that the data has been damaged somehow.

Each file on the disk consists of one or more sectors. The sectors themselves don't need to be contiguous, that is, in successive order on the disk. Noncontiguous storage allows you to put a large file on a disk where there is sufficient free space, but no single available area big enough to hold the entire file.

The disk itself has a file directory. This is a special file that contains information about all the other files on the disk: file names, types, creators, attributes, sectors used, and so on. The file directory also contains information about the folders on the disk, such as what folders and files a given folder contains. Each disk also has a second directory that contains information about the disk itself (volume name, size, number of files, free space left), as well as the location of the file directory.

There are two basic approaches to organizing directory information on Macintosh disks. The first approach is called MFS (Macintosh File System); this is the original system used on the 128K Mac, and it seriously limits the number of files you can have on a given volume. The second approach is called HFS (Hierarchical File System). It is the predominant of the two and confers many advantages. If you're using System 3.1 or later, then you're using HFS. Of course, if you've been using the Mac for a long time, some of your older disks may still be organized with MFS, in which case you should probably copy those files to HFS-formatted disks and use them instead.

All of this is generally invisible to you. What you see is a set of windows and labeled icons, put up by the Finder. The screen organization itself—which folders are open, how the icons are arranged, and so on—is saved in an invisible file called Desktop, which you may see listed when you recover files from a damaged disk.

Disk Abuse

Given this intricate organization, there are several different ways in which a disk can be trashed. For example, if something changes or destroys information in the file directory, then you lose the main guide to what's on the disk. The files are still there; you just can't look them up. Here's an analogy: Imagine a library in which all the books have been rebound into identical, numbered volumes (sectors). If a book is big, then it's split up into several volumes; if it's small, then blank pages are added so that all volumes are the same size. To read a book, you look it up in the card catalog (the directory), which tells you which volume(s) to read, and in what order. However, if the card catalog is destroyed or damaged, you no longer know which books are in what volumes.

A second type of crash occurs when the contents of a file are damaged. An application might write directly to a disk sector already in use, overwriting whatever data is there. Or the information in a given sector may be garbled, either because of software problems or due to a momentary hardware glitch while writing. Or while playing with a file-editing program (for example, FEdit, MacTools) you might have inadvertently changed something you should not have changed.

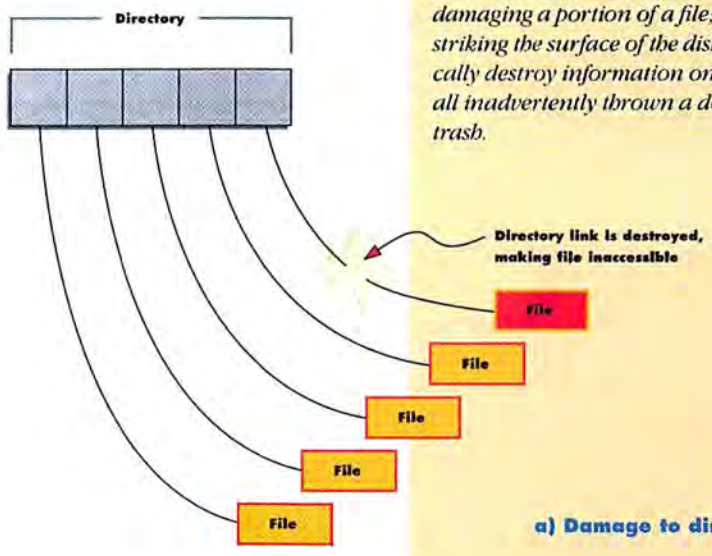
Also, the formatting of the disk itself can be disrupted in several ways. Physical damage to the disk—either by direct contact of the disk drive's read-write head and the disk, or by foreign matter (salt, Jolt, iron filings) getting between the disk and the read-write head—can damage or wipe out sectors. Exposure to magnetic fields (ringing telephones, the cover of the ImageWriter I, a little kid playing with magnets) can alter the disk's encoding. The result is a bad sector, which the Macintosh won't read.

Finally, there are the dumb errors. You throw away a folder, select the Empty Trash command in the Special menu—and then remember that you haven't transferred an important document out of it first. Or you're distracted while reformatting a floppy disk and discover that you've erased the hard disk instead.

At this point, you may be wondering how data survives for any length of time. All things considered, it survives amazingly well, mostly because a disk's physical build, as well as the computer's use of that disk, are designed to avoid data loss. Some simple precautions on your part can make the odds of losing data very small indeed

Four Ways to Lose a File

a) Damage to the file directory can destroy the link between the directory and the file; b) an application can inadvertently overwrite a sector, damaging a portion of a file; c) a disk drive head striking the surface of the disk platter can physically destroy information on the disk; d) we've all inadvertently thrown a document in the trash.



(see "An Ounce of Prevention"). But sometimes it happens anyway, and when it does, you'll want to have some means of recovering what you've lost.

Recovery Strategies

How can any program recover a crashed disk or restore deleted files? Through a variety of approaches. One, used heavily by SUM, is to save information about the files and disks; for example, keeping track of all files that are deleted and where they were located. Deleting a file merely means removing its entry from the file directory; therefore, you can "undelete" a file if you can restore the correct entry. This assumes that the sectors used by the file haven't been reassigned to other files; even if some have, you can still recover part of the information if it's a text file.

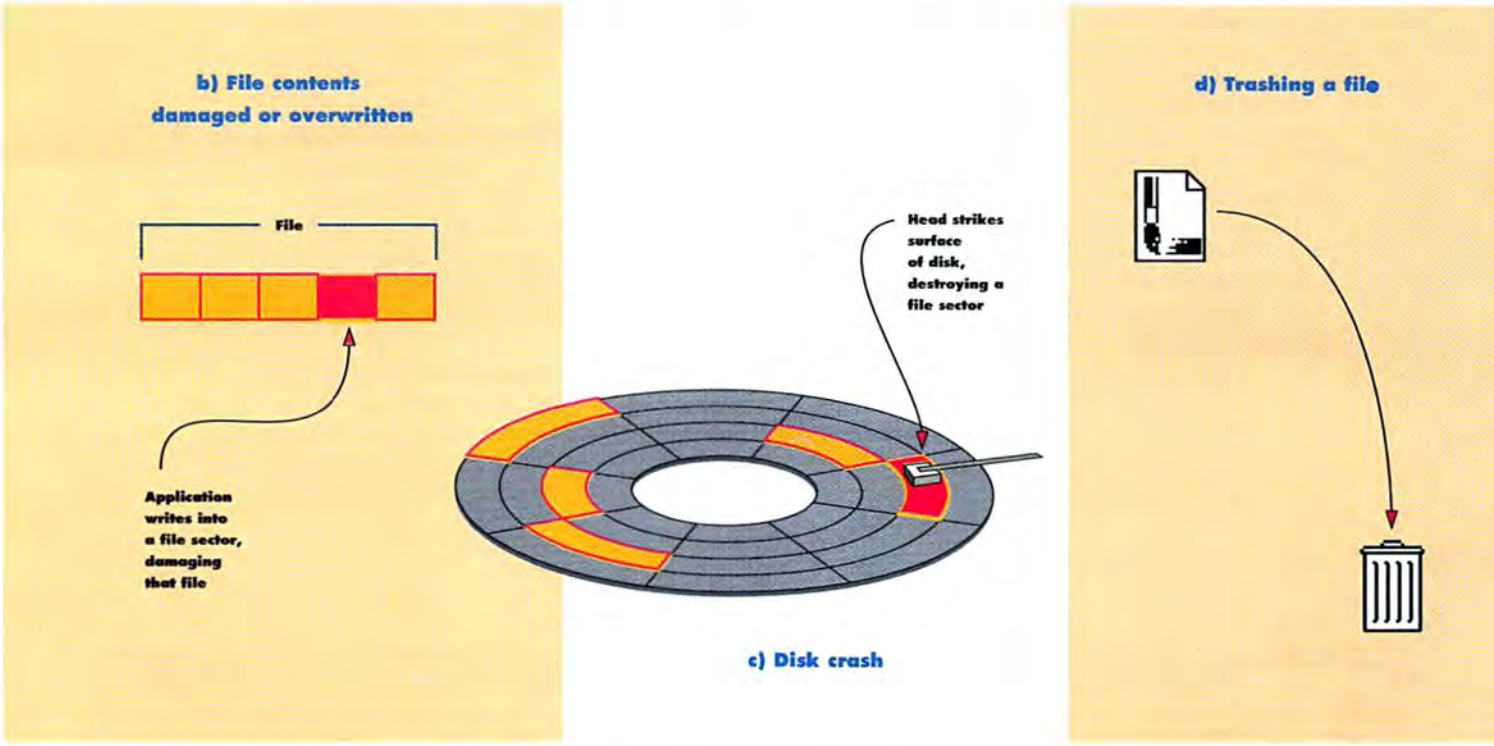
If one or more sectors in a file are damaged, then you can attempt to recover the rest of the file, filling the bad sectors with zeroed data. If the file directory itself sustains damage, you can use whatever information there is to help recover files. And if the directory is gone altogether, you can still scan all the sectors on the disk, trying to decide which ones go with which.

This, of course, would be difficult and tedious if you had to do it yourself. However, there are at least two commercial software packages to help you along: Symantec Utilities for Macintosh and 1st Aid. Let's take a look at each.

Parts of the Sum

Symantec Utilities for Macintosh contains a variety of applications designed to help you protect files in a variety of ways. It comes with two 800K disks and a 170-page manual, spiral bound so that it lies flat nicely. The applications on the disks include Disk Clinic, HD TuneUp, QuickCopy, Guardian, HFS Recover, Scanner, Floppy Recover, and Symantec Tools. In addition, there are two INIT files (Shield and HD Partition) and a desk accessory (HD Partition).

The main set of applications runs from within Disk Clinic, which looks as though it were written using HyperCard. You use Disk Clinic to select the function desired: undelete files, repair damaged disk, tune up hard disk, set options, and so on. The actual user interface is a bit tedious and awkward at places, but it works. Most of the applications can be run directly as well. Note that the SUM manual recommends not using these applications (except for Guardian/Shield) under MultiFinder;



that's a good idea for any utility that directly modifies files and directories, since there's a real danger of two or more applications messing with the directory and/or the same file, with unpredictable results.

The software itself has two basic approaches: prevention and recovery. The prevention software is called Guardian. It works in conjunction with an INIT file called Shield, and its purpose is to keep track of file deletions and modifications. You install Guardian by dropping Shield into the System Folder, rebooting, then running Disk Clinic to tell Guardian which volumes (hard drives or floppy disks) to protect.

Each time you delete a file, Guardian saves information about that file in a file-save record elsewhere on the disk. If you (or an application you're running) then accidentally delete a file, you can recover it using one of the SUM programs.

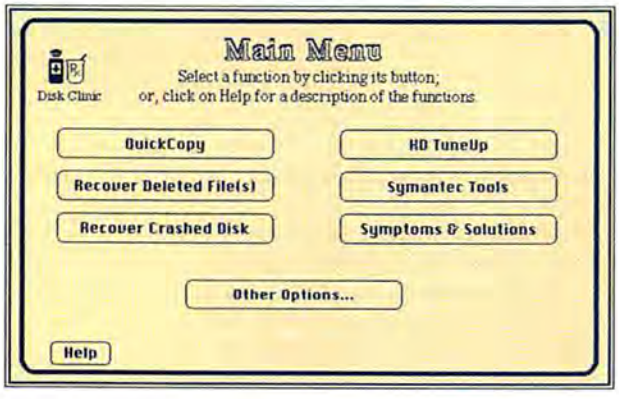
Guardian also maintains volume-save information about the volume itself. This procedure is designed to aid SUM in recovering disk information in the event of a disk crash. You can tell Guardian to save this information automatically each time you shut down or reboot, or to do it only when instructed by you. This information should be transferred to other volumes regularly, since it may be lost or damaged if the disk crashes; Disk Clinic provides an option to do just that.

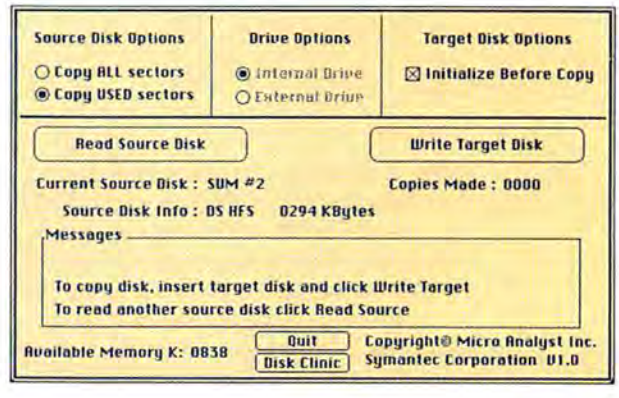
Finally, Guardian affords a modest degree of protection against certain viruses. It watches for an attempt to zero out the file directory of the start-up volume and blocks such a move.

Recovering Lost Files

The recovery phase comes when you find that you've lost data, through accidental (or even deliberate) deletion, through hard disk initialization, or through damage to a floppy or hard disk. You launch Disk Clinic and select the appropriate option (Recover Deleted File(s) or Recover Crashed Disk); Disk Clinic then takes you through a set of questions (Was Guardian installed? What type of device is it? and so forth). Based on your answers, SUM selects the best utility for recovering files. There are five altogether: Guardian, HFS Recover, Floppy Recover, Scanner, and Signature Scanner. You can use Guardian to recover files if you had it installed for the volume that crashed; otherwise, you use one or more of the others. The others are listed in order of effectiveness; HFS Recover is restricted to volumes formatted using HFS, while Floppy Recover is restricted to floppy disks.

One very important note: the last four (non-Guardian) methods cannot recover a fragmented file. One way to get around this limitation is to use HD TuneUp regularly. It attempts to defragment files by rewriting





SUM

a) Main screen of the Disk Clinic program in Symantec Utilities for the Macintosh (SUM). Used to invoke other utilities, such as QuickCopy, HD TuneUp, and so on.

b) The QuickCopy display after reading in a source disk. It is now ready to make as many copies (one at a time) as desired.

them into contiguous sectors. Note, though, that it does not defragment the disk itself—that is, it doesn't push files together in order to eliminate small chunks of free space between them. The best way to do that is by backing up the hard disk with a backup utility (such as DiskFit), then restoring the files to the hard disk. Be sure all the backup disks are good before starting the restoration, though.

There are other tools, as well. QuickCopy is a convenient means of copying nonprotected floppies using a single drive. QuickCopy reads in the source disk (either all sectors or only those in use), then writes the disk image out to one or more floppies, formatting first if you request it. This is very handy if you want to erase a bunch of already-formatted disks; just read in a blank disk (which has very few used sectors), then write it out (without formatting) onto the disks you want to erase.

Symantec Tools gives you the ability to edit sectors in a file or anywhere on the disk. It can also display a disk map showing which sectors are used and which aren't. You can view the sectors used by each file to see if the file is fragmented, that is, broken up into several nonadjacent pieces.

Finally, the HD Partition INIT and desk accessory let you partition a hard disk into several volumes, provided you have enough contiguous free space for each one. You can also encrypt each partition, requiring a password to mount the partition and decrypt the contents.

Using 1st Aid

The 1st Aid Kit, from 1st Aid Software, takes a different approach. It has a single 800K floppy with two programs—1st Aid HFS and SysVers—as well as a disk cache utility (Cache Flow) in both desk accessory (DA) and function key (F-key) versions. It also has some tutorial files, which have been deliberately damaged in different ways so that you can use 1st Aid to fix them, and some template files, which are used in repairing disks whose volume information has been lost.

1st Aid provides many of the same functions as SUM, including backing up volume information, initializing and duplicating floppies, repairing crashed disks, and recovering deleted files. The user interface is more traditional, with pull-down menus and the like.

For repairing a damaged disk, 1st Aid gives you two options: Quick Cure and Full Evaluation. Quick Cure attempts to recover files without checking for bad sectors, while Full Evaluation reads and checks every sector on the disk. Quick Cure took only 4 seconds to find and list all the missing files on a damaged 800K floppy; Quick Cure recovered those files safely to hard disk. Full Evaluation took 58 seconds to check out the same disk and found three bad sectors, only one of which was inside a file that needed to be recovered; 1st Aid was able to recover that file intact anyway.

However, 1st Aid was of little help in recovering deleted files or in restoring files from an initialized hard disk. This is because 1st Aid relies on *sector tags*—special pieces of information written in each sector—to restore deleted files. Unfortunately, many hard disks don't support sector tags, and Apple's own support for them is waning.

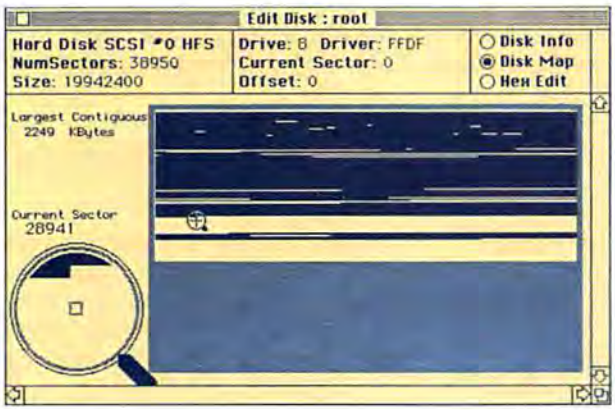
Even with that limitation, 1st Aid is a valuable package. It was easier and quicker to use in repairing the damaged floppies, and it recovered 100 percent of the files on the disks.

More valuable than the software is the 318-page manual, which comes in a three-ring, loose-leaf, 8-by-5-inch binder. This is not your typical user's manual for a software package. Instead, it is an extensive troubleshooting guide for Mac users that goes far beyond the scope of recovering deleted files or crashed disks.

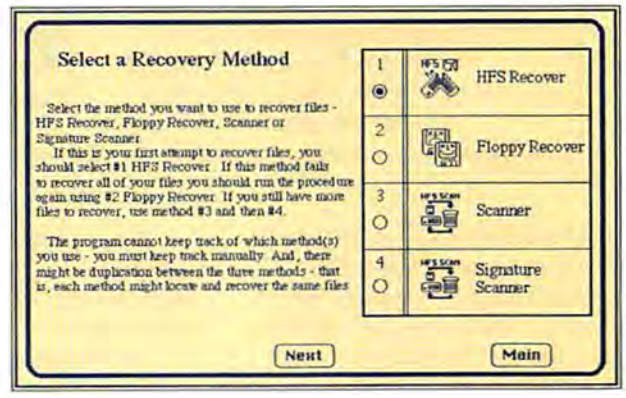
Comparisons

So how do 1st Aid and SUM stack up to each other? They were both able to recover all the lost files on my damaged backup floppy, as well as from a deliberately erased hard disk.

Recovering Deleted Files: SUM did a better job overall, especially if Guardian



c) Symantec Tools in Edit Disk/Disk Map mode. The dark areas are sectors of the hard disk currently in use; white areas are free sectors; the gray area is just a part of the display not being used. The magnifying glass lets you get a closer look at specific areas of the disk.



d) Another Disk Clinic screen, this one appears during an attempt to recover files on a damaged floppy. You have four different methods to choose from.

An Ounce of Prevention

So, what can you do to prevent loss of data, on either hard disks or floppies?

The best prevention is to back up files on a regular basis and obey the following rules to minimize the risk of losing data or damaging disks.

First, write-protect all the floppies you can, especially the master disks for any software that you buy, as well as any disks that you use for backup. Keep them write-protected unless it's absolutely necessary to write something on the disk (for example, while backing up).

Second, do not use master disks to run applications. Make working copies and use those, or (if you have a hard disk) copy the application to the hard disk. In either case, put the master disk safely away. If an application is copy-protected, then get Copy II Mac and use it to make a working copy or to install the application on the hard disk.

Third, think twice before deleting a file, and think three or four times before deleting a folder. Even utilities that recover deleted files can't help if you delete a file or files, then do a fair amount of work on your disk, including creating and copying files. That's because the new files will overwrite the old ones, and you'll lose the data, regardless of what recovery utilities you use.

Fourth, beware of the distinction between copying and moving. Dragging a file from one disk to another creates a copy; the original stays on the first disk, and a brand new copy appears on the second. If you then throw the copy away, the original remains untouched. However, if you drag a file from a folder on one disk into another folder on the same disk, you just move the file into the second folder.

Fifth, use the Restart command in the Special menu to reboot the system and the Shut Down command before turning the system off. This ensures that all disk drives are properly updated before the reboot or shut down. This is especially critical if you have the disk cache turned on (check the Control Panel DA).

Sixth, don't use the Erase Disk command in the Special menu unless you're sure you know what you're doing. If you do use it, be sure that the volume name shown is the same as the disk you want to erase. If it says something like "(SCSI 0)" after the volume name, then you're trying to erase the hard disk, and you probably don't want to do that.

Seventh, if you insert a floppy into the Mac and get any of the following messages, don't panic:

"This is not a Macintosh disk. Do you want to initialize it?"

"This disk is damaged. Do you want to initialize it?"

"This disk is unreadable. Do you want to initialize it?"

Whatever you do, do not initialize the disk. Instead, follow what the 1st Aid manual calls the HELP procedure: Halt, Eject, Lock, and Protect. Stop what you're doing, select the Eject button in the dialog box, and slide the write-protect tab on the disk up (so that the little hole in the upper-right corner of the disk is open). Leave the disk protected during any recovery procedures. Likewise, if files on the hard disk suddenly disappear, shut down and reboot from a floppy, and don't transfer any files to the hard disk until you've tried all recovery efforts.

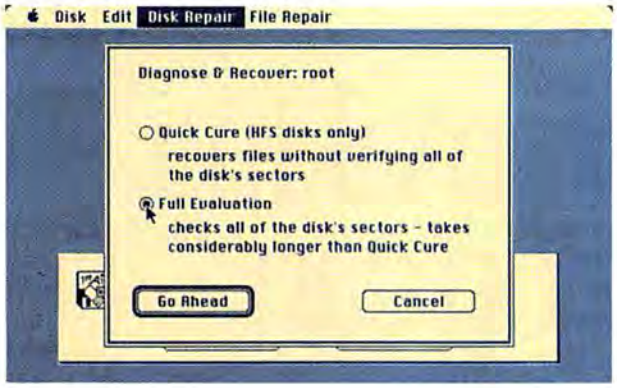
was installed. Even without Guardian, SUM was able to recover two of three files thrown away in a folder, though it took some 15 minutes to scan the 20-megabyte hard disk. 1st Aid was not able to recover those files because of lack of sector tag support.

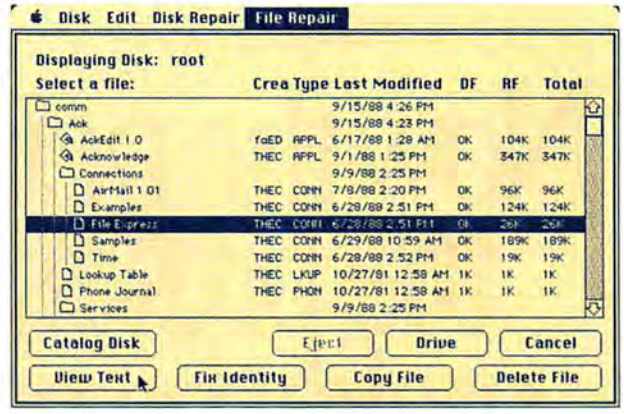
Recovering Files from an Initialized Floppy: Sorry, nobody can do this. When you initialize a floppy, the Mac actually writes over every sector, erasing forever whatever data was there.

Recovering Files from a Damaged Floppy: 1st Aid was easier and faster to use; however, both programs were able to recover all files on the damaged floppies from my disastrous backup attempt.

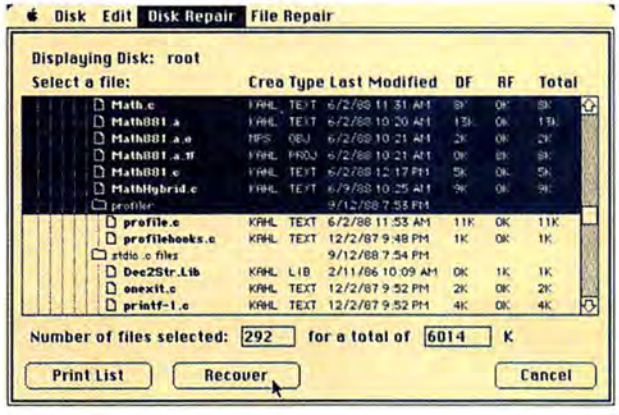
Recovering Files from an Initialized Hard Disk: When you initialize a hard disk (use the Erase Disk command in the Special menu), the Mac just clears the directory, so the file information is still intact. SUM has no problem recovering the files, assuming that you have been using Guardian/Shield and have a relatively up-to-date volume save file backed up on another disk. If you didn't have the volume-save file backed up, then SUM still restores everything; it just takes longer (about 15 minutes longer) because it has to search the hard disk for that file. If you haven't been using Guardian/Shield, then you probably won't be able to recover all the files; in this test, SUM was only able to recover 230 out of 583 files. 1st Aid, on the other hand, was unable to recover any files at all.

Recovering Files from a Crashed Hard Disk: There was no real way to test this, given all the ways a hard disk can get





b



c

1st Aid

a) 1st Aid in action. This dialog box appears after you select the Diagnose & Recover option in the Disk Repair menu. b) This display in 1st Aid allows you to attempt to repair individual damaged files on a floppy or hard disk. c) Selecting files to recover after 1st Aid has scanned a damaged disk.

messed up. Based on my experience with floppies, I'd say that both programs would work equally well, though 1st Aid is probably faster and easier to use.

Disk Copying: The QuickCopy utility in SUM is much better. It reads in a source disk once (either all sectors or just the used ones), then writes them onto any number of disks, formatting first if desired. The Copy Disk command in 1st Aid isn't as fast as QuickCopy, nor as convenient.

Additional SUM Utilities: SUM has a number of options that 1st Aid doesn't, including hard disk tuneup, hard disk partitioning, disk and file editing, and of course, the Guardian/Shield system.

Additional 1ST AID Utilities: As mentioned, 1st Aid offers the Cache Flow DA/F-key, which lets you force the disk cache to write to disk. The SysVers utility is handy if you're not sure which system version you're running under.

Conclusions

At the risk of sounding as though I'm waffling, I seriously recommend owning both SUM and 1st Aid. Their functions overlap quite a bit, but it doesn't hurt to have multiple solutions to the same problem, especially if lost files are at stake. The SUM software has greater functionality; it does a lot of things that 1st Aid doesn't do (or doesn't do as well), while there are few things that 1st Aid does that SUM doesn't. On the other hand, the 1st Aid manual is almost worth the price of the package by itself, especially for novice (and even not-so-novice) Mac users. An ideal package would be the 1st Aid manual (appropriately revised) combined with the SUM software (with some improvements to the user interface).

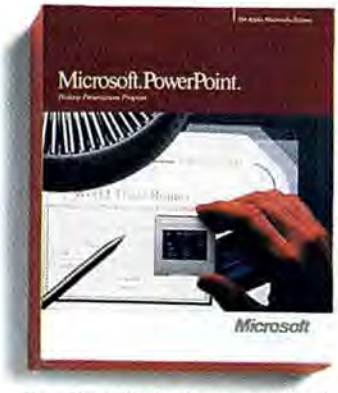
But whatever you choose, get at least one of them. The cost isn't that great, especially through mail-order software firms. And the first time that a program like this recovers a day's, a week's, or a month's work, you'll be glad you made the investment.

And while you're at it, learn to do backups. □

See *Where to Buy* for contact information.

Now the person making the presentation can make the presentation.

The old adage "If you want something done right, do it yourself" couldn't be more true than when you're making a presentation. Or, right now, more possible.



PowerPoint 2.0 takes the stress out of putting together presentations – even when you have last-minute changes.

In fact, all you'll really need is Microsoft® PowerPoint™ software and an Apple® Macintosh® to run it.

It's the easiest, most cost-efficient way to assemble a professional-looking presentation from conception to completion, right from your own desktop.

PowerPoint gives you the power to create your own picture-perfect overhead transparencies, flipcharts, 35mm color slides, speaker notes, and audience handouts. In such record-breaking time that there'll be nothing for you to do the night before the big day but sleep.

Its built-in word processor (complete with spelling checker) and drawing tools allow you to mix text and graphics in countless ways. You can use different typefaces, logos, special effects like shaded backgrounds, dropshadows, and diagrams. Or you can copy charts, tables, and illustrations from other programs, like Microsoft Excel and Aldus® Freehand™ with a simple cut and paste.

Once you design an overall "look" for your presentation, PowerPoint allows you to standardize that format automatically. So you can use it slide after slide.

And you can make global changes easily with the Slide Master, which instantly executes your revisions throughout.

At any point along the way, the Slide Sorter feature lets you view slides one by one or scan your entire presentation at a glance, or simply rearrange the order with a point and click.

Then, whenever you're ready, you can print out all your presentation materials – from attention-getting overheads to handy speaker notes – without ever leaving your desk.

If 35mm slides are in order, simply send your presentation to the nearest Genigraphics® center, the leading presentation graphics service bureau, and your slides will be on their way in 48 hours.

Lastly, last-minute changes need no longer cause traditional last-minute panic. Because a PowerPoint presentation is as easy to change as it is to create.

If you'd like a live PowerPoint demonstration, call (800) 541-1261, Dept. I11, for the location of your nearest Microsoft dealer.

And remember, the best part of doing a presentation all by yourself comes afterward.

When you get all the credit.

Microsoft®

© 1988 Microsoft Corporation. Microsoft and the Microsoft logo are registered trademarks and PowerPoint is a trademark of Microsoft Corporation. Apple, Macintosh, and Mac are registered trademarks of Apple Computer, Inc. Genigraphics is a registered trademark of Genigraphics Corporation. Aldus is a registered trademark and Freehand is a trademark of Aldus Corporation.

A New Trade Route

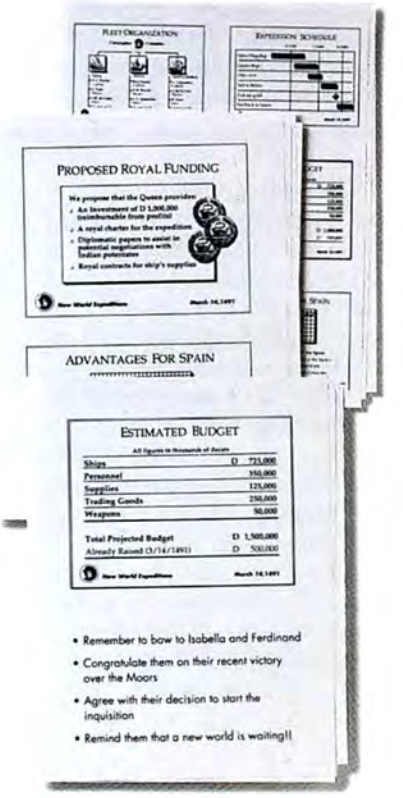
A direct route should be possible by sailing westward

- Shorter, therefore faster and safer
- Hitherto unexploited by the English or Portuguese

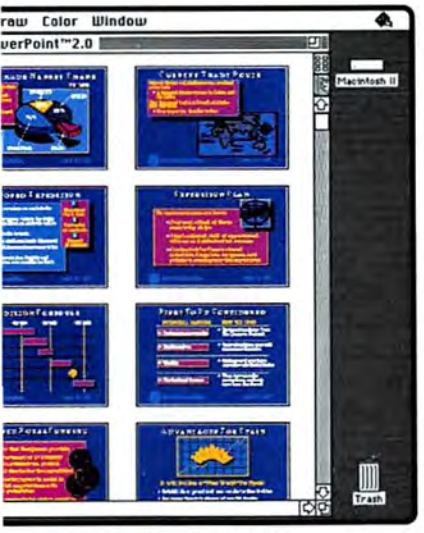
New World Expeditions —— **March 14, 1491**

With artfully designed PowerPoint overheads, your presentation will be the center of attention.

The Slide Show feature turns your Macintosh into a projector—for quick rehearsals or slick on-screen presentations.



With PowerPoint it's easy to print out your speaker notes, or handouts with up to two, three, or six slides of your presentation on a page.



The PowerPoint Slide Sorter lets you put your presentation in order with a simple point and click.

You'll create 35mm slides in your choice of 16.8 million decorator colors with a Mac® II.

Your audience will flip over charts like this, created entirely with PowerPoint.

Reviews

QuarkXPress 2.0

Desktop publishing program. ***Pros:*** *Adds four-color process separation; offers largest number of typographic controls of any desktop publishing software.* ***Cons:*** *Difficult user interface takes time to learn; text wrap does not include custom-wrap option.* ***Company:*** *Quark.* ***List price:*** *$795.* ***Requires:*** *1MB; hard disk; System 4.2 or higher; color monitor recommended.*

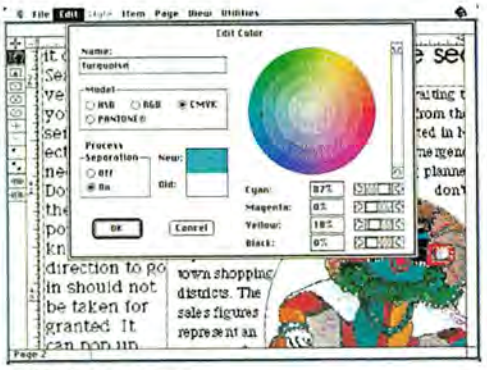
When desktop publishing first brought electronic page layout within the reach of Mac users, a cry arose among professional graphic artists: untutored users would commit fatal design flaws when let loose with the software. Learn the elements of design first, they cautioned, lest your pages sag and never sizzle. QuarkXPress 2.0 brings even more pre-production tasks to the desktop. Now you'll have to learn the basics of typography *and* graphic arts before you can unlock all the features in XPress.

As with earlier versions, QuarkXPress 2.0 offers power for users who have complex typographical needs. The program's kerning, hyphenation, and justification controls are excellent. And where PageMaker 3.0 restricts you to type sizes in 1-point increments and limits your largest character size to 127 points, XPress enables you to scale fonts from 2 to 500 points in ¼-point size increments. Quark has also added style sheets and four-color process separations (in addition to the program's previous spot-color capabilities).

Still, if you are a PageMaker devotee, XPress's interface may become a stumbling block. With PageMaker's flexible Pasteboard metaphor, it's easy to change a design element, undo a placement, and move text columns around. In contrast, you might feel stymied at first by the structured hierarchy of the text and graphics boxes in XPress. But if you approach XPress with a plan in mind, and a firm grasp of the program's underlying rules, you'll never regret the day you left PageMaker behind.

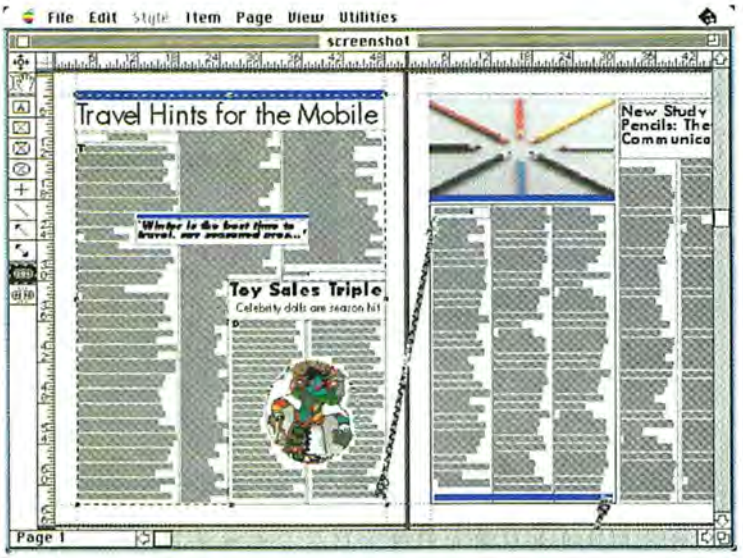
In the early rounds of the desktop publishing battle, XPress was the first program to provide text wrapping around irregularly shaped graphics. In this round, XPress is the first to directly support four-color separation for offset lithography. Text, graphic elements (such as lines and boxes), and color encapsulated PostScript (EPS) files created in PostScript drawing programs such as Adobe Illustrator can be separated in XPress. The program cannot handle continuous-tone color photos, such as a scanned TIFF file, although it will colorize a black-and-white TIFF file.

For graphics, you can blend new colors and alter existing ones, using one of four color palettes. The HSB (hue, saturation, and brightness) palette is used by artists mixing paints; RGB (red-green-blue) is the color medium of video output; CMYK (cyan-magenta-yellow-black) is familiar to designers and lithographers preparing four-color plates; and Pantone colors are a catalogued group of standard, pre-mixed ink colors, frequently used to specify spot-color print runs.



Wheel of Fortune
XPress's Color Wheel (found under Color...in the Edit menu) lets you mix and store new colors in a variety of palettes.

Hot Links and Boxes
The plaid arrow of the linking icon flows text from one box to another, traveling across multiple pages or within a single page. To unlink two boxes, activate the first box, click on the unlink icon (at bottom of the toolbox), then click on the "tail feathers" of the plaid arrow.



But XPress goes beyond the ability to mix and match in your favorite color palette. The Style menu, formerly the home of type faces and paragraph specifications, changes into a virtual offset print house, enabling you to select the dots-per-inch screen for halftone reproductions of scanned photos or line drawings. The program also lets you adjust picture contrast, tones, and highlights.

Rumor has it that XPress version 2.0 files can be sent directly to high-end Scitex printing presses. Unfortunately, that's only true for Scitex's version of XPress, called Visionary.

Making What's Good Even Better

XPress adds several text-handling features that were missing from the first version. A major flaw of XPress—its inability to cut and paste text within boxes, or to copy or move text or graphic boxes within the document—has been fixed, adding flexibility to the program. Furthermore, XPress lets you import a page from another XPress document into your file. Style sheets and templates, which are becoming a standard way of storing type specifications for repeated use, have been added.

One of my favorite features is the expanded search and replace function, with which you can change style attributes, such as boldface or point size, as well as individual words. Imagine changing all occurrences of bold type or 12-point Garamond text in a book-length document in one swoop. I used this feature in conjunction with the Font Usage function, which lists all the fonts in a document. When reviewing the list, I noticed a typeface that I did not want in my document. Using the search and replace function saved me from having to proofread every line to find any other occurrences of the typeface.

The Art of Boxing

Quark's box metaphor provides a method for structuring your document into chapters or sections with repeating formats (such as sidebars). Although you cannot extend boxes farther than the boundaries of a single page, you can link them so that text flows throughout the document, from one box to another, no matter what page it's on. The trick is not to change each column into a separate box in order to flow text, however, but to use the boxes to lay out separate design elements, such as headlines, sidebars, or main body text. The boxes can be copied and moved, to standardize complex layouts.

I got a bit dizzy using the linking icon. Unlike PageMaker, which also lets you flow text between pages, XPress uses a linking arrow. When you start to create links, the outline of the active box glitters like a movie marquee and the link is represented by a plaid arrow, stretching down to its partner. There is no way to make these arrows invisible, nor is it easy to undo a botched link. The closest parallel in PageMaker is its window shades, which are easy to move or delete; there is no way to keep track of the text flow in PageMaker, except to read the document. At least XPress's arrows reveal the pathway of your text as it winds its way through a document.

(continues)

Seek and Ye Shall Find
The secondary Search and Replace menu allows you to hunt down typographical features in the text. It is summoned from the main menu when you deselect the Ignore Attributes request.

Now is the opportune time to learn how to use QuarkXPress. The limitations of the last version would have frustrated me before I mastered the program. Version 2.0 comes with a four-chapter tutorial, ranging from an introduction to the program's tools (with an emphasis on boxes) to typography, design, and the world of color processing. As an all-in-one prepress software package, QuarkXPress is first class; it's worth the investment of time.
—Barbara Tannenbaum

See *Where to Buy* for contact information.

Swivel 3D *1.00*

3-D drawing, modeling, and animation tool. ***Pros:*** *Excellent user manual; linking allows 3-D objects to have moving parts; intuitive user interface; fast 3-D rendering; extensive animation features.* ***Cons:*** *Size of 3D World View is limited; drawing is mainly freehand; no CAD-like numeric input for drawing objects, only snapping to a grid; rotated polygons limited to 48 facets; uses only one light source.* ***Company:*** *Paracomp.* ***List price:*** *$395.* ***Requires:*** *1MB; 1MB of RAM for S version, 2MB or more for L version; 2MB recommended for color.*

Every once in a while a new software product surfaces that provides a significant new capability for particular applications. Swivel 3D provides more than just 3-D drawing and modeling, it also animates and allows you to create 3-D models of objects with moving parts.

Making object creation easy is one of Swivel 3D's greatest strengths, even though its 3D World View size is limited to a Cartesian three-dimensional space (a cube), which measures only plus or minus 455 inches in each dimension.

To create a new object, you begin with a default outline of a cube on the screen. Double-clicking on the cube brings up the Design Object View, actually a set of four views: Object, Cross Section, Top, and Side. The appropriate representation of the default cube now appears in each of these four views.

Swivel 3D provides five tools for turning the cube into the desired final shape. The Single Arrow Tool lets you drag single points in any view. The Double Arrow Tool enables you to edit an object's contour in any of the section views by dragging points on the object to new positions, changing its shape (symmetrically) in the process. You also have a choice of editing the side and top sections simultaneously or editing them separately. The Free Poly Tool draws a new object shape with a series of clicks; each click creates a point along the object contour. The N-gon Tool draws polygons with from 6 to 48 sides. By assigning a polygon 48 sides, you can, in effect, draw a circle in the cross-section view with a single click. Lastly, the Rectangle Tool creates a four-sided section when you drag a rectangle in the Top and Side views.

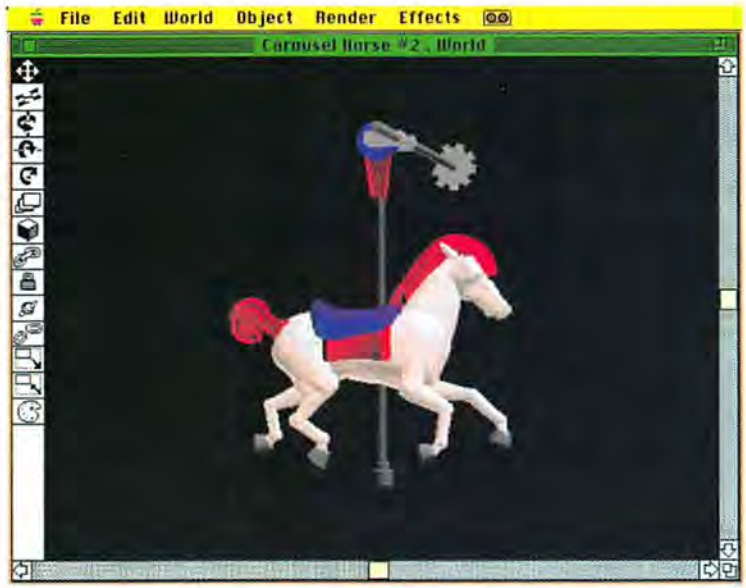
With a little practice, you can freehand sketch complex 3-D shapes with these five tools. Even though Swivel 3D provides some snap-to-grid capabilities, the program is weak when it comes to working with precise sizes or dimensions. I'd like to see Paracomp add more numeric input capabilities to make defining exact sizes and shapes easier. And to make renderings of round objects look more realistic, I'd also like to see the N-gon Tool handle more than 48 sides.

Linking and Rendering

Using icons, you link one object to another object. For example, you can define a bicycle with wheels that rotate on their axles, pedals that turn on a crank, and handlebars that turn with the fork and front wheel. You can define the way parts of objects move and those movement definitions become part of the description of the object. You also set up a tree structure containing parent-child relationships that define how the moving parts relate to each other. Whenever you create a link, you are simultaneously creating a parent-child relationship between the two parts.

Swivel 3D provides three types of Linking Tools: Free Link, which allows the child object to move in all six degrees of freedom relative to its parent object; Ball-Joint Link, which constrains the child object within the same *x*, *y*, and *z* positions, yet allows the object to swivel freely in all three degrees of orientation; and Locked Link, which completely constrains the child object in both position and orientation, effectively welding it to its parent. In addition, Position and Attitude dialog boxes let

(continues)



Horse
This carousel horse is built from nearly two dozen complex components. Swivel 3D smoothly blends the intersections of these complex 3-D shapes. Component pairs (such as the right and left legs) can be created by duplicating and mirroring.

The #1 Tool Kit.

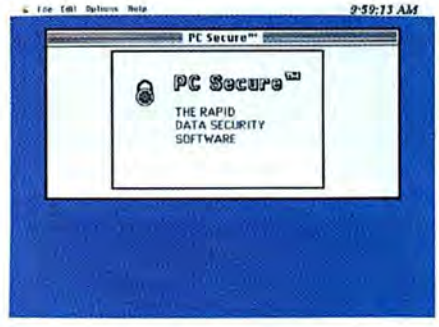
Back up your hard disk–fast.

Optimize your hard disk for better performance.

Recover a damaged disk or undelete accidentally erased files.

Locate files on your hard drive.

View and/or change folder organization.



Password protect your sensitive data.

All this for just $79. What's more, you don't have to be a technical genius to use it–PC Tools/Mac is easy to use and understand.

See why hundreds of thousands of people have made PC Tools the best-selling utilities for personal computers like the Macintosh. **For the dealer nearest you, or to order direct, call (503) 690-8090** M–F, 8:00 a.m.–5:00 p.m. (West Coast time).

Central Point Software
INCORPORATED
15220 N.W. Greenbrier Pkwy. #200
Beaverton, Oregon 97006
(503) 690-8090

PC Tools/Mac.

PC Tools is a trademark of Central Point Software. All other product names are trademarks of their manufacturers.

Circle 357 on reader service card

you define numerically the allowable amount of movement and the allowable range of attitudes of the parts of an object.

You use the standard Mac II color wheel to color an object. On a monochrome Mac, shaded renderings automatically produce either gray shades or dithered patterns, depending on how many gray shades your hardware can handle (Mac Pluses and SEs will always show dithered patterns).

You have a choice of getting wire-frame, hidden-line wire-frame, shaded, shaded with outlines, or contour shaded renderings. On color Macs, the shaded renderings look lifelike. You can request automatic shadowing when you want, and you can move the single light source. Most 3-D products provide multiple light sources, so Swivel 3D is comparatively weak in this area. However, it makes up for this weakness by letting you add surface detail to a 3-D object. Swivel's light source can project any pictorial image from the Scrapbook onto a flat surface or wrap the image around a 3-D object.

Move Over, Disney

Swivel 3D has many features for producing animations. Place an object at the beginning and end locations and orientations, tell Swivel 3D how many frames (cells) to create to get from here to there and off it goes. You can make the object grow or shrink, and you can change its World View orientation. Swivel then generates a series of images and either places them in the Scrapbook or creates a series of PICT files—one PICT file for each frame. You also have the choice of storing output in Paint-type or Draw-type formats.

These Scrapbook images or PICT files can then be used by other programs (such as VideoWorks II) to produce animated sequences of 3-D objects with moving parts.

A Tweening dialog facility gives you a number of options for creating and storing sequences, including a Fast Tween option that allows you to preview animation sequences in real time, albeit in outline form.

Paracomp also has a Command File Language capability that is described in a booklet provided by the company only on written request. Entitled "Script Command Set," the booklet outlines how to create text lists that describe objects and their movements. It is similar to a programming language and could be useful to advanced users who want to do the keyboard input required.

Inside the Box

Swivel 3D comes with two disks and an excellent 146-page user manual. The Program Disk contains two versions of Swivel 3D: 1.00L is for systems with 2 megabytes or more of RAM; and 1.00S is for users with less than 2MB.

The Image Libraries disk contains folders with finished sample images, tutorial files, and libraries entitled Alphabets, Components, and Simple Extruded Forms.

The Swivel 3D manual is concise and well-written; it's well illustrated and contains numerous tutorials. Some tutorial sessions use the object libraries supplied with the program, others have you create new objects.

Would I Buy It?

Swivel 3D packs 3-D value and power in an inexpensive package. It is well designed and well documented. Swivel 3D's user interface is almost self-explanatory and can be mastered in one session. The linking capabilities have many uses in animation as well as in demonstrating or simulating how things operate. Even though Swivel 3D currently lacks numeric input for drawing objects, it should still be in your library if you deal with 3-D images.

— David L. Peltz

See *Where to Buy* for contact information.

Nippon Space Module
This image was created for a TV documentary on the NASA Space Station. The linking of all the moving parts allows for full animation of the module's mechanical arm.

AppleFax Modem 1.1

Modem and software for transmitting and receiving facsimile documents. ***Pros:*** *Compatible with Group 2 and 3 facsimile machines; supports 9600-baud file transfers with other AppleFax modems; includes fax polling and "in care of" addressing at AppleFax stations.* ***Cons:*** *Does not work in the background under MultiFinder; received fax documents are barely legible on the Mac; fax documents do not retain proportions and scale of original.* ***Company:*** *Apple Computer.* ***List price:*** *$729.* ***Requires:*** *1MB.*

Facsimile transmission has finally come to the Macintosh. After a year's delay, Apple is shipping its AppleFax Modem, a hardware/software package that enables you to send and receive facsimile documents to and from other computers or facsimile machines. But you may not be happy having the Mac act as a facsimile machine, at least not with this first version of the AppleFax software.

Faxing Your Mac

The AppleFax Modem is a compact, platinum-colored box that comes with the AppleFax application and a driver for use with the Chooser. The package also includes the ImageWriter LQ fonts, which ensure best quality when sending a fax file to a facsimile machine. Installation for both the hardware and software is straightforward and well explained in the manual. The unit comes with a separate power supply.

There are two different methods for transmitting a fax document. First, when you're in an application, you can select the

(continues)

Tom Tjelmeland
President
T & K Roofing Company, Inc
50 employees
1988 Roofing Contractor of the Year

"Our business was going through the roof, but our old accounting system was holding us down.

"In the commercial roofing business, you have to be on top of things in the office, too. Accurate budgeting and planning are essential.

"But in the last five years, our business has really grown. And our stand-alone computers and simple accounting software system just couldn't handle it. We decided to switch to the Macintosh. And fortunately, our dealer showed us the Great Plains Accounting Series at the same time. It was just what we needed!

"It was so easy to learn and use, we didn't lose any time putting the system into place. And since it is fully-integrated and expandable, we've been able to add modules as our business required them.

"Adding Network Manager was easy—no data re-entry was necessary. And it gave us multi-user capability. Now, our people at eight different work stations can use Great Plains at the same time. And the customer assistance from Great Plains is excellent—the most responsive we've ever dealt with.

"We haven't even begun to use all the capabilities that Great Plains provides us. And we feel good about that. Take it from me—after you've outgrown one system, you don't make that mistake again."

Macintosh is a registered trademark of Apple Computer Inc.

Please send me a free copy of "Great Plains Success Stories," featuring the #1 overall rated accounting package for small and medium-sized businesses.*

Name _____

Company _____

Address _____

City _____ State _____ Zip Code _____

Business Phone _____

Mail To: Great Plains Software
Attn: Information Center
P.O. Box 9739, Fargo, ND 58109
Or call Toll-Free: 1-800-345-3276

GREAT PLAINS SOFTWARE®
GROW YOUR BUSINESS ON GREAT PLAINS™

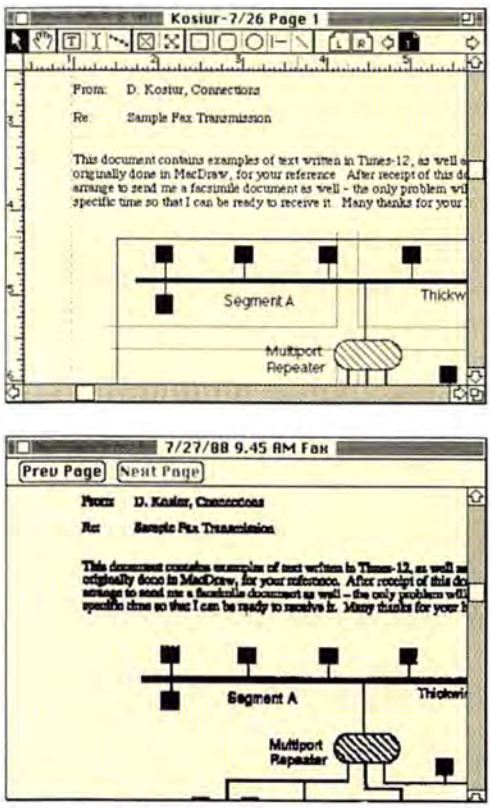
*Sheldon Needle survey, 1988

MW0189

Circle 156 on reader service card

AppleFax Modem with the Chooser and send a document immediately. Second, if you'd rather wait until a series of documents is created or wait for a time with lower phone rates, you can save files in their applications' format or as fax files. Then you group files for mailing to one address—or identify a group of addresses that will receive a document—and set a time for transmission. To save on phone costs, AppleFax lets you receive any incoming fax mail from the station to which you're sending a fax, so long as that station is an AppleFax Modem.

With the AppleFax application, you can create a series of address books that include phone number, station ID, best time to call, and information about the receiving equipment. An address can consist of a single station or a group of stations; an address can also include an "in care of" line,



Documents Compared

These two screen shots illustrate the difference in image quality between the original Mac document (prepared using MacDraw and ReadySetGo) and a document received from a facsimile machine. The original was printed on a LaserWriter and then transmitted to the AppleFax Modem; the result is this screen from the View Fax window (bottom).

MARK ROHAN

AppleFax Modem

for forwarding to another fax station. Using AppleFax you can assign a password to your station.

When you've accumulated several fax documents for transmission, you can send the group of documents in one envelope (see "May I Have the Envelope, Please"). If you choose the Send Station ID Message option, then your station ID and the current date and time appear at the top of each page. AppleFax keeps a log of fax traffic and has options for viewing and printing fax documents.

Despite Apple's delay in releasing the AppleFax Modem (it was originally announced last August and was slated to be available before the end of 1987), AppleFax still can't function in the background under MultiFinder. AppleFax must be the active application under MultiFinder in order for you to receive incoming faxes. In effect, this turns the Mac into an expensive fax machine. Also, the AppleFax Modem presents a dialog box that gives you the choice of picking up the phone for an incoming call. But if you do, that caller has to call again to transmit a fax to you. You cannot switch from voice to data transmission in one call.

Since the AppleFax Modem can exchange files only with other AppleFax modems, it includes a pass-through port for connecting another device, such as an ordinary modem or a printer. The AppleFax Modem powers up in the fax mode, but pressing the switch on the front of the modem puts the unit in pass-through mode. However, you can't use the AppleFax software while the modem is in pass-through mode (say, to update an address book), since AppleFax will not launch unless the modem is turned on and set to the fax modem mode. You must turn on the AppleFax Modem and set it on pass-through mode to access another device, which strikes me as another design flaw.

Dealing with Documents

You must exercise great care when preparing documents for faxing, particularly graphics files. Every fax I received using the AppleFax Modem was reduced by about 10 percent, while every fax that I sent to facsimile machines was enlarged by about the same amount. Plus, the vertical distortion is not the same as the horizontal distortion. This would cause havoc for an engineer sending CAD/CAM files or for a publisher receiving ads that must fit within certain dimensions. (I've been unable to determine if these effects are caused by the AppleFax Modem's not having a standard fax resolution. Most fax machines are either 200-by-100 lines per inch [lpi] or 200-by-200 lpi, but Apple does not state the AppleFax Modem's resolution.)

The View Fax option lets you open received fax documents in a window on the Mac. But don't expect to be able to read them (see "Documents Compared"). The software does not provide a zoom feature to allow you to read a fax on the Mac. Documents I received were largely illegible, due to the screen's resolution; it wasn't until I printed them on a LaserWriter that I could read them.

Printing on an ImageWriter doesn't improve quality much, either. Only laser printers can duplicate true fax quality. And if you're planning to receive a large number of fax documents, you'd better reserve a lot of disk space. Files that use less than 10K of disk storage in original form take up 200K or more when received over the AppleFax Modem. (Files saved in fax form for later transmission are usually smaller than the originals.)

When I used View Fax, two other things bothered me as well. First, the view window lacks a zoom box. Second, when viewing a fax document, I couldn't print it. You must first close the view window and then select Print Fax.

Room for Improvement

The AppleFax software could be made more convenient. For example, you must insert a *1* in front of all long-distance telephone numbers for the dialing sequence to be correct. It would be preferable if you could define a local area code and then have the modem automatically insert a *1* for all other area codes. Also, although you can set the number of times the modem will redial if the receiving fax is busy, you

(continues)

THERE'S MORE THAN ONE WAY TO SCAN A CAT

When you want to create graphics with your Macintosh, there's no need to pussyfoot around with anything less than ThunderScan. ThunderScan® turns any printed image into a detailed, high resolution Macintosh graphic. Then, with a powerful set of software tools written by Mac developer Andy Hertzfeld, ThunderScan lets you change, enhance and save the image in a wide variety of ways.

CAT *(AKA Kitty)*
Start with any original image, black and white or color.

FEED THE KITTY
Feed it into any ImageWriter (except LQ). ThunderScan simply replaces ImageWriter's ribbon cartridge, so you don't need an expensive desktop scanner for high quality gray scale scanning.

CAT SCAN
Now ThunderScan is zipping back and forth, digitizing the image at up to 300 dots per inch, in 32 true shades of gray.

CAT & MOUSE
With mouse in hand you have micro-control of the contrast, brightness and halftoning over all or selected parts of the image. You can scroll, erase, cut, paste, draw...

CAT'S EYE
...enlarge or reduce...

CAT PRINTS
...then print out your finished work on your ImageWriter. Or use ThunderScan's Custom PostScript® printing features. Rotations, frames, captions, linescreens and other special effects let ThunderScan tap the full resolution of LaserWriter, producing exquisite graphics.

CATALOG
Put images into catalogs, newsletters, reports, correspondence, presentations and more. ThunderScan saves in the major graphic file formats, so you can add images to any Macintosh® programs that use graphics.

CAT CALL
You can even send images from Mac to Mac by modem or via your AppleFax.™

So you see, there are as many ways to scan a cat as you can imagine. As long as you have ThunderScan. Just $249 complete. See your Macintosh dealer or contact us.

Thunderware®

Thunderware,® Inc.
21 Orinda Way
Orinda, CA 94563
415/254-6581
FAX 415/254-3047

ThunderScan, as shipped, is compatible with the Macintosh SE, Plus, and 512K. Use on the Macintosh II requires our Power Accessory for Macintosh II.

Circle 176 on reader service card

The following are trademarks of the companies indicated: ThunderScan, Thunderware and the Thunderware logo: Thunderware, Inc.; Macintosh, AppleFax, ImageWriter and LaserWriter: Apple Computer, Inc.; PostScript: Adobe Systems, Inc. © 1988, Thunderware, Inc. All rights reserved.

get no indication that the line is busy and the modem is redialing.

As it stands, the AppleFax Modem comes across as a halfhearted attempt to provide fax capabilities to Mac users. While it does allow you to create and transmit fax documents directly from Mac applications without printing them, you'll be disappointed with what you receive from other fax machines. Many of the AppleFax Modem's features are optimized for connection with another AppleFax Modem, which makes it a reasonable purchase if your office doesn't already have a fax machine. If you're contemplating sending fax documents from the Mac, I suggest that you wait until AppleFax runs in the background and you can do more with the program even with the AppleFax Modem turned off.
—Dave Kosiur

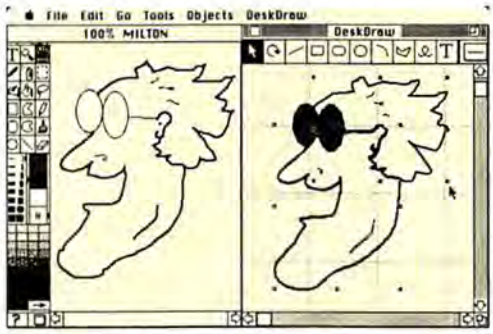
See *Where to Buy* for contact information.

DeskPaint 2.0 and DeskDraw

Graphics desk accessories. ***Pros:*** *Extremely convenient; converts bitmaps to object-oriented format; provides a wide range of features.* ***Cons:*** *Not intuitive; poorly written manual.* ***Company:*** *Zedcor.* ***List price:*** *$129.95 for the pair.* ***Requires:*** *512KE (with some limitations).*

When the Macintosh was first introduced, pasting graphics into a word processing document was considered quite a feat. The possibilities seemed endless—you could dignify your document with a logo, clarify it with a chart, or dress it up with a graphic. In practice, of course, adding a graphic wasn't so simple; it meant quitting the word processor, launching MacPaint, creating the artwork, quitting MacPaint, and reopening the text document, a contrived process that invariably took several minutes.

The invention of graphics desk accessories such as DeskPaint have eliminated such convolutions. With virtually an entire art department in a DA, you can add visual flair on the fly, without exiting the program you're using.



Metamorphosis
DeskPaint (left window) and DeskDraw are both open at once. Clicking on an element with the Auto Trace tool makes the DeskPaint drawing sprout a shimmering outline. Once copied and pasted into DeskDraw, the drawing becomes object-oriented, complete with MacDraw-type handles; alterations, like shading the sunglasses or straightening the tiny notches in the chin, are easy to make.

Double Features

DeskPaint 2.0 boasts a list of features that reads like a wish list for the ultimate paint program: editing at any resolution up to 4000 dots per inch; browsing; editing and slide show of MacPaint, PICT, or TIFF graphics files; adjustable-spray airbrush; distortion; free rotation; and so on (see "Keeping in Perspective"). There are even some features not found in MacPaint, FullPaint, or SuperPaint, such as a Charcoal tool for smudging dark areas, a lighten/darken image command, and a text tool that permits you to edit text with standard drag-cut-and-paste methods as you're creating it. If you get lost in this maze of features, the easy-to-use online help system will guide you.

DeskPaint 2.0 would leap to the forefront of the paint programs—especially in light of its Apple menu—if it only had the elegance and intuitiveness of its application-size brethren. Many of the thoughtful touches common to other paint programs—such as the ability to edit the paintbrush, to duplicate an object by dragging while holding down the Option key, or to undo by tapping the tilde key (~)—are missing. DeskPaint can be slow, too; often several seconds pass before it reacts to a command. And when you use the lasso, the selected item's outline doesn't shimmer, as it does in other paint programs. Instead, you see a whole rectangle that shimmers, as though you had used the marquee tool. When you actually drag the selection, only the enclosed object moves. But the appearance of a large rectangular selection is disconcerting, because you're never sure exactly what you're about to manipulate.

Without reading the manual, you would be hard pressed to distinguish between the nearly identical Pencil, Charcoal, and Auto Trace tool icons, or to figure out how to exit the text mode, or to understand why line and pattern selections change each time you click a new tool icon. The manual itself is disappointing; even though graced by profuse illustrations, it exhibits appalling syntax and spelling errors (including 40 misspelled occurrences of the word *marquee*).

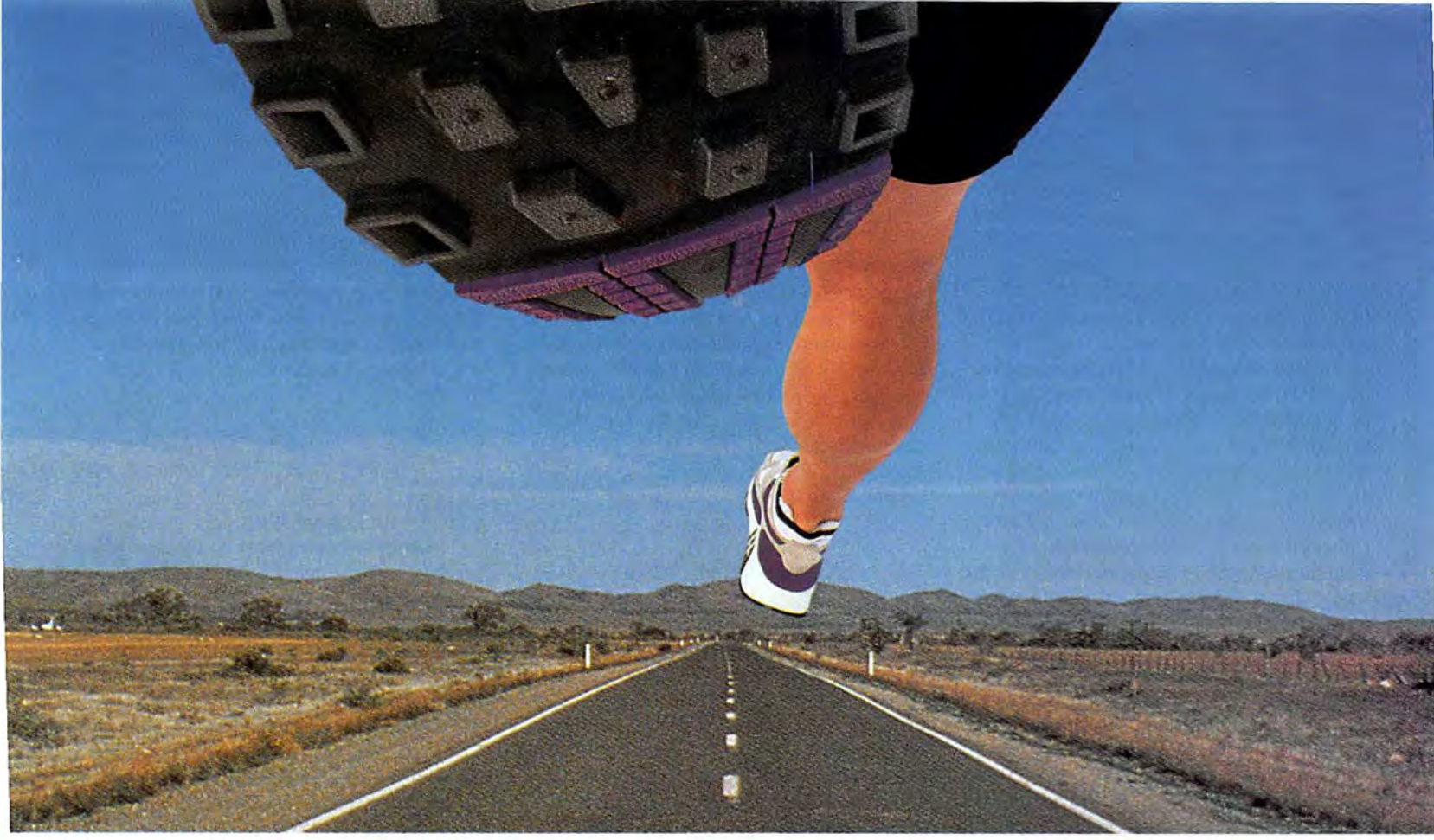
What's the Object?

One of the biggest limitations in the original DeskPaint was its inability to edit object-oriented (PICT or MacDraw-type) graphics, which have several advantages over bitmapped (MacPaint-type) drawings. For example, MacDraw objects can be reshaped, resized, or dragged out from behind other elements of the drawing at any time. And objects print smoothly on laser printers, without the jaggies associated with bitmapped art.

To address this deficiency, the developers of DeskPaint 2.0 have added a new DA called DeskDraw, which is an object-oriented graphics editor. DeskPaint 2.0, with DeskDraw, has tremendous potential because DeskPaint now offers an Auto Trace tool that converts bitmaps into objects for use in DeskDraw (see "Metamorphosis").

(continues)

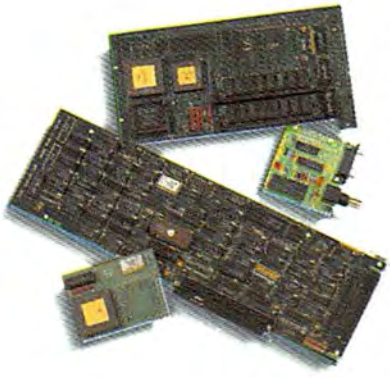
Keeping in Perspective
The tool palette changes to become an array of area-manipulation icons when you select part of a drawing with the marquee or lasso. These are DeskPaint's strongest tools; they work smoothly and allow some spectacular effects, such as perspective. Several of the special effects can be combined—a selection can be flipped, then rotated, then skewed.



MARATHON™

Going The Distance For Your Macintosh™ Workstation

Give your Macintosh the endurance it needs to keep running at top performance—MaraThon workstation products from Dove.



Your SE will achieve the speed of a Mac II with a 68020 accelerator, with options for a 68881 co-processor and additional RAM.

Step up the pace of your SE and communicate over Local Area Networks with a MaraThon LAN 020, a multifunction accelerator and Ethernet™ adapter.

Push your Mac II to 20, 25, or 32 MHz to run even the most complex applications in record time with the MaraThon 030 accelerators.

Stretch beyond the limits of Macintosh-specific peripherals using MaraThon input/output expansion cards for your Mac II. Additional serial and parallel ports allow you to connect IBM compatible devices such as scanners, plotters, and high-speed printers.

Win the productivity race with MaraThon workstation enhancement products from Dove. For more information or the name of your nearest dealer, call us at 1-800-622-7627.

MaraThon

workstation performance products from DOVE COMPUTER CORPORATION

1200 N. 23rd Street/Wilmington, NC 28405 919-763-7918

MaraThon is a registered trademark of Dove Computer Corporation. Ethernet is a trademark of Xerox Corporation. Macintosh is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp.

Circle 173 on reader service card

Unfortunately, the concept is not well executed. First, you have to click on both the inside and outside of every single item that comprises a drawing, so the name Auto Trace isn't quite accurate. Second, as in other programs with a tracing feature, the process fails with artwork involving shading, detail, or many small lines. As long as you're converting simple, clean line art, Auto Trace works well.

Once in DeskDraw, you can clean up the art by deleting or rearranging the handles, adding fill patterns, changing line thicknesses, and so on; the laser printout will be clean and smooth. The icons (such as polygons, arcs, text) and menu commands (for example, Send to Back, Duplicate, and Snap to Grid) in DeskDraw are familiar to MacDraw, Canvas, or SuperPaint users. The free-rotation icon works nicely except on text, circles, or rounded polygons, which rotate in only 90-degree increments. In general, even though DeskPaint has more features, you might find DeskDraw easier to work with; its simplicity and freedom from clutter contribute to a feeling of directness and stability that's absent in DeskPaint.

Drawing Conclusions

In addition to the two DAs, the package includes the DeskPaint application, whose functions are identical to the desk accessory. But in light of the smoother, more intuitive graphics programs available there would be little reason to consider using it. Only the supreme convenience of its desk accessory format makes DeskPaint/DeskDraw a contender in the graphics market.

Yet if you're using a 1-megabyte Mac and try to run large programs such as PageMaker and HyperCard, DeskPaint and DeskDraw often flash the "Can't do this, out of memory" message, especially if both DAs are open at the same time. One answer, of course, is to buy more memory for your computer. But then you defeat the whole point of DeskPaint/DeskDraw; if you had more RAM, you'd be better off using SuperPaint or any full graphics application in conjunction with MultiFinder.

Use the DeskPaint/DeskDraw package if you need the accessibility of the Apple menu and think you can live with the programs' quirks. But until this pair of desk accessories is polished to a shine, it's not quite a work of art. *—David Pogue*

See *Where to Buy* for contact information.

Personal Writer 15SL 1.1

Text/graphics/command tablet with software. ***Pros:*** *Provides functionality, including handwriting recognition, macros, keyboard shortcuts.* ***Cons:*** *Requires lots of memory, disk space, and desk space; needs a fair amount of time and practice to learn to read handwriting; uses only one screen on a multiscreen system.* ***Company:*** *Personal Writer.* ***List price:*** *$1295.* ***Requires:*** *1MB (2MB for use with applications), hard disk.*

Personal Writer 15SL is sort of an input tablet to end all input tablets. It provides the basic function of a graphics tablet—enabling you to draw using a pen instead of the mouse—but does so almost as an afterthought. Its main features are threefold: it recognizes handwriting and translates it into text input; it provides macro-like facilities so you can perform actions with the click of a pen; and it combines mouse and keyboard functions, giving you access to the most frequently pressed keys via the pen and tablet.

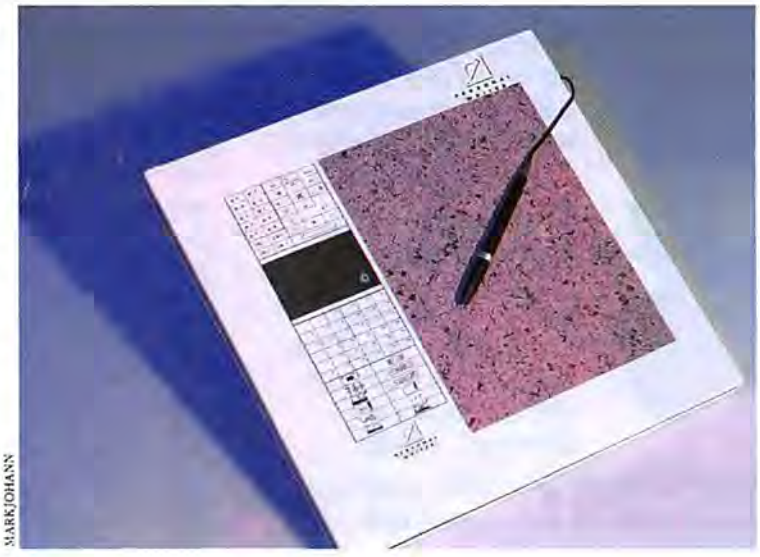
The Personal Writer tablet is 16 inches square, and requires a few inches' clearance behind it. The active area of the tablet consists of two sections: an 8½-by-12-inch writing area covered by a thin piece of sticky cork (which does a wonderful job of holding paper in place), and a 4-by-12-inch control area. The control area is divided up into four sections: a keyboard section containing Return, Shift, Esc, Delete, space bar, cursor keys, common ⌘-key combinations like ⌘-N, ⌘-O, ⌘-Z; a mouse section that lets you use the pen like a mouse over the entire screen; a macro section with 36 macro boxes; and a command section with 12 Personal Writer command icons.

To install Personal Writer 15SL, you copy files into your System Folder, turn the Mac off, plug the tablet into the Macintosh, and turn the Mac back on. You then must teach Personal Writer to recognize your handwriting. This involves using special learning sheets to practice letters, numbers, punctuation, and other symbols. You can also write in text and have the PW 15SL software analyze it, so that it can see how you write in normal situations.

After Personal Writer has learned to recognize (somewhat) your handwriting, you can begin to use it. When Personal Writer is in text-input mode, anything you write on the tablet is translated into a character and sent to your application as if you had typed it. You can do some editing via the tablet by crossing out letters or words. Unrecognized characters appear as question marks; you can then double-click on those characters and tell Personal Writer what they are, helping it to learn even more.

Options abound. A 100,000-word dictionary is available to help improve word recognition; Personal Writer attempts to match what you wrote with what's in the dictionary, making substitutions as it thinks best. You can also have its electronic voice speak aloud whatever you're writing on the tablet. That way, you don't have to constantly look at the screen to see if Personal Writer recognized what you just

(continues)



MARK JOHANN

The 16-inch-square tablet has an active writing area of 8½ by 12 inches. The control area consists of a keyboard section, a mouse section, a macro section, and a command section.

Macintosh Users Unite!

This year Macintosh users like you came together on GEnie™ to get their MAC questions answered by experts, their MAC games won, their MAC systems updated and their online MAC opinions confirmed, researched, and applauded

2,019,096 times.

Join the Revolution.

GEnie.™

For the people, by the people.

You've never been a follower. You want your voice heard. You want straight, unbiased information about your hardware and software. You want independent news. Opinions. And control.

GEnie understands. In the MAC RoundTable on GEnie, the people determine what is discussed. And since GEnie is not a hardware or software developer, you'll get the most objective information about what's new on the market. That's why smart MAC users like yourself turned to us over 2 million times this year. That's why you should too.

GEnie makes sure you have access to all kinds of great MAC software–including thousands of games, education and business productivity programs as well as hard-working utilities to expand your MAC. And the experts you trust will be online when you log on. Plus news, shopping, travel and reference data. All for only 8¢ a minute.

Sign-up is just $29.95, and your first 2 hours are free.* There are no hidden charges or monthly minimums. Now it's your call.

Here's how easy it is to sign-up from your keyboard now.

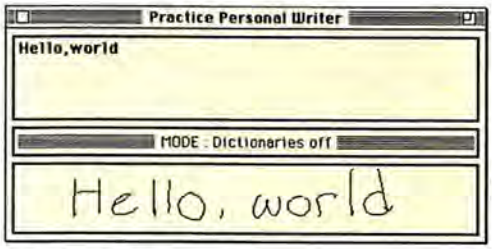
1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half-duplex)–300 or 1200 baud.
3. Dial 1-800-638-8369. When connected, enter HHH
4. At the U#=prompt enter **XJM11727,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In the U.S. or Canada call 1-800-638-9636. Join the online Revolution and let your voice be heard.

We bring good things to life.

*Basic rates and services in effect 9/88 apply in U.S. only. Non-prime time rates apply Mon.-Fri. 6PM-8AM local time and all day Sat., Sun., and nat'l. holidays. Subject to service availability. Some services offered on GEnie may include additional charges. *$10 credit applies. Offer good for 30 days from sign-up.

©1988 General Electric Company, U.S.A.



Pen Practice
Text that you write on the tablet appears in the practice window. Personal Writer then attempts to recognize what you've written.

wrote. And you can even teach it to replace a single shape with up to 11 characters.

Personal Writer functions nicely as a graphics tablet when you use the pen within the mouse area. You can also activate the entire mouse area (while running), giving you better control and detail.

You can program 36 macro command boxes in the macro area, selecting any of them with a simple click of the pen. The macros themselves can be of two types. Keyboard macros contain text and control keys (tabs, returns, and so forth). Recorded macros can actually learn a complete sequence of commands, including mouse movements, menu selections, and key presses.

Do You Read Me?

Did all this work perfectly? No. When I used two monitors, the mouse area only recognized the screen with the menu bar on it. There were a few glitches, usually when multiple applications were running while I used some of the Personal Writer utilities. For best results, you must learn to write letters separately, press down hard with the pen at all times, and leave a good space between words. Double-clicking on desktop icons is difficult; you tend to slide the icons around a lot, because the pen is moving slightly on the tablet surface as you press down to click.

Note also that Personal Writer requires a lot of memory: about 900K. If you're going to run applications on top of that, you really need 2MB of RAM. You can reduce the memory Personal Writer uses to 512K by not loading the code for the ongoing learning process, but only after you have the program well trained. And while in theory you can use Personal Writer on a two-floppy system, in practice you really need a hard disk.

The tablet, with its combined graphics/text capability, user-definable macros, and keyboard shortcuts, could be useful in a desktop publishing environment. For example, you could define several macros that would select different font/size/style combinations. A quick click on a box would choose a particular combination. The tablet/pen combination is useful for fine graphics work, especially for anyone not accustomed to sketching with a mouse.

As for Personal Writer's ability to read handwriting, the phrase that comes to mind is "a solution in search of a problem." It could be useful in filling out forms, but only after the person using it has gone through the lengthy teaching/learning process. It might have uses in word processing, but entering text via handwriting is tedious, slow, and error-prone, even compared to simple hunt-and-peck typing.

The PW 15SL is nice, but at $1295, it's also quite expensive. A less expensive solution might involve a graphics tablet that costs less (such as the Summagraphics Bit Pad Plus at $495) and one of the various macro software packages. If you really need handwriting recognition, the Personal Writer 15SL may well be the product for you. In the long run, though, it might be simpler to learn how to type.—*Bruce F. Webster*

See *Where to Buy* for contact information.

Acknowledge 1.0

Macintosh communications toolkit. ***Pros:*** *Embedded telecommunications programming language; modular data management; automatic phone journal; automatic script generation; many bundled applications with source code; support for third-party developers; plethora of other features.* ***Cons:*** *Poor documentation for nontechnical users; complex programming; hefty price.* ***Company:*** *SuperMac Software.* ***List price:*** *$495.* ***Requires:*** *512KE; hard disk.*

Acknowledge calls itself a communications toolkit and actually lives up to that name. This excellent package consists of the Acknowledge program itself, a few stand-alone utilities, and several types of files used by Acknowledge, including Connection files, Service files, Lookup Tables, Phone Journals, record files, and text files.

Connection files contain Connections, Acknowledge's name for a given telecommunications setup. Among the Connections that come with Acknowledge are a terminal emulator, a bulletin board system, an electronic mail manager, and a general online services program. Connections are written in TAL (Telecommunications Access Language), Acknowledge's programming language.

Service files function like TAL libraries that can be used by several Connections. For example, the CompuServe Service file contains routines for logging on to and off of CompuServe (among others), while the Hayes Modem file contains routines for controlling a Hayes-compatible modem.

Lookup Tables contain information such as phone numbers, network addresses, user names, and passwords, each associated with an identifier. Connections and Service files can access those items by referencing the identifiers.

Phone Journals keep track of the date and time, service name, phone number, elapsed time, and service user ID for each call. You can open up and view the Phone Journal, sorting it by any of those fields. You can maintain multiple Phone Journals, edit them, copy their information to other files, and otherwise manipulate them as you would other kinds of text files.

Record files allow you to ask Acknowledge to record your interactions while you are calling up another computer; Acknowledge will then convert the recording to TAL code that you can use to create Connections and Service files.

And text files are just that—regular text files (though they have a special Acknowledge icon). They can hold the output from an online session, documents that you want to upload to another computer, or text that you've cut and pasted in from a screen display.

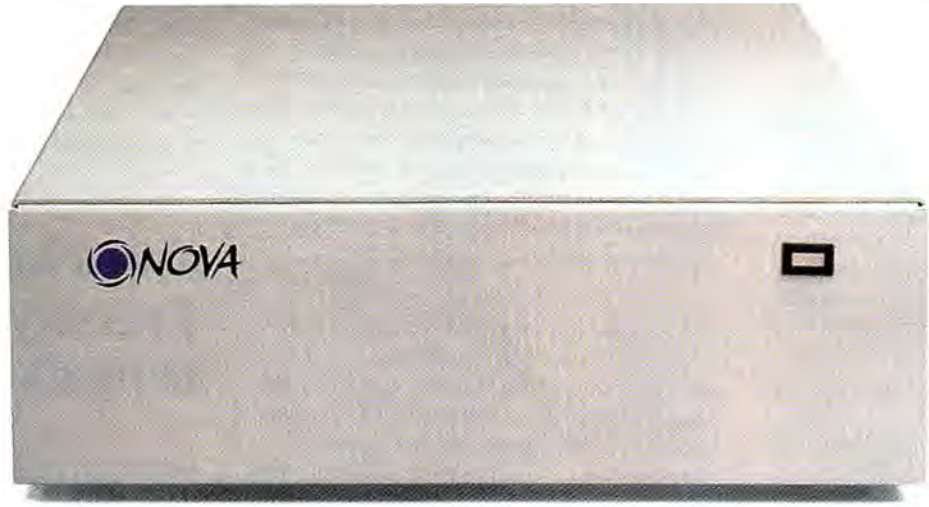
Customizing Communications

TAL is a major aspect of Acknowledge. It has over 250 commands, keywords, predefined variables, and operators. The language itself resembles current BASIC implementations (optional line numbers, alphanumeric labels, while loops) with some event-oriented control structures. Programming in TAL isn't terribly difficult, but it can get messy, an indication that TAL needs better control structures.

As mentioned, Connections and Service files are written in TAL, and it's possible to do source-level debugging (with

(continues)

Go for a drive that lasts longer than the average car.



Introducing the only Macintosh hard drives with a full 5 Year Limited Warranty.

In this age of temporary, disposable, better-to-replace-it-than-repair-it products, Microtech brings you the totally unexpected.

And that's a complete line of fast, powerful hard disk drives for the Macintosh, each one designed and built so well we can confidently offer an unprecedented 5 year warranty.*

Which means, very simply, that you can fully expect the Nova internal and external drive you install today to be quietly storing and retrieving your files long after some other drives have retired.

You can choose the Nova 30MB drive, the all-time best-seller in the Microtech line. Or the new 40 and 80MB models, the fastest drives you can buy, no matter which measure you use. Or the remarkable Nova 120, featuring more megabytes per dollar than anything else in its class.

But no matter which Microtech drive you choose, you're assured of the most thoroughly tested, best-backed drives in the business. So years from now, you'll still know you made the best decision possible.

SIZE (MB)	Access Time	Internal†	External
Nova 30	28	$ 479.00	$ 569.00
Nova 40	19*	$ 599.00	$ 679.00
Nova 80	19*	$ 949.00	$1039.00
Nova 120	28	$1229.00‡	$1279.00

*Volume pricing available. †Internal drives available for the Macintosh SE and II only. ‡120MB internal drive available for Macintosh II only. *Quantum's DisCache allows access times to drop as low as 12 milliseconds.*

To order, call us today. MasterCard and Visa accepted with no extra charge.

MICROTECH
INTERNATIONAL, INC.
29 Business Park Drive, Branford, CT 06405

1-800-325-1895
(203-488-7744 in CT)

*The five year warranty is offered at no additional cost on hard disk drives sold and delivered in the United States or Canada. Certain restrictions and exclusions apply. Terms and conditions of the five year limited warranty are available upon request. Prices and specifications are subject to change without notice.

© 1988 Microtech International, Inc. NOVA is a trademark of Microtech International, Inc. Macintosh is a trademark of Apple Computer, Inc. DisCache is a trademark of Quantum Corporation.

Circle 243 on reader service card

tracing and single-stepping) while running under Acknowledge. But a connection consists of more than just TAL code. You can define menus, with sections of TAL code associated with each menu item. You can define dialog boxes, again interacting with TAL code. And you can create icons to represent a given Connection within a Connection file.

Acknowledge comes with source code for most of its Connection and Service files, so that you can see how certain things are done and adapt the code for your own uses. It was very easy for me, with some judicious copying, to add BIX to the On-line Services Connection and to create a separate Service file for BIX (see "Windows Galore"). Creating or adapting dialog boxes or icons isn't quite as easy; you have to use AckEdit, a custom version of Apple's ResEdit (resource editor) utility.

Acknowledge also has a Communications Control panel that lets you define your communications settings, including baud rate (300 to 57,600), duplex, terminal type (TTY, VT52, VT100), protocol (MacBinary, MacTerminal, Text, Xmodem, Xmodem Text, auto select), communications port, and character set (United States, United Kingdom, German, Danish, and others). These settings apply to all Connections and Services, so you may need to reset them manually for individual sessions.

Not for the Timid

The obvious target for Acknowledge is a corporate environment—obvious for three reasons. First, Acknowledge is expensive; hackers, home users, and small businesses aren't going to plunk down $500 for a communications program. Second, it has the potential for hiding most of the confusing and often low-level aspects of telecommunications behind a Mac interface, allowing executives to avoid tedious mucking about through communications systems. Third, it requires a full-time programmer to get beyond the canned solutions and simple script generations.

Acknowledge might crack a secondary, smaller market, that of developers. For another $500 (per year), you can become an Acknowledge Certified Developer—if your application meets with SuperMac's approval. As a Certified Developer you can distribute up to 250 copies of your application with a special (nonprogrammable) runtime version of Acknowledge; distribution of more than 250 copies requires additional licensing fees.

Windows Galore

The upper-right window shows the three Connections (BBS, On-line Services, and Terminal) in the Connection file Samples. The upper-left window (On-line Services) shows a user signing off from BIX. The BIX window shows the TAL code (in the BIX Service file) that produced the sign-off message and added the entry to the Phone Journal. The Lookup Table shows the phone number, user name, and password (hidden by Acknowledge) used to make the call. And the Phone Journal window shows the last several calls, starting with the most recent. Below that is the Acknowledge status bar, set up for debugging.

If Acknowledge has a major failing, it's this: the nontechnical user is going to have a hard time getting started with this package. The *User's Manual* is a thin (74 pages) book that documents more than it instructs. Compounding the problem is the lack of agreement between the *User's Manual* and the distribution disks. Chapter 2, "Getting Started with Acknowledge," refers to the Acknowledge Master Disk, and that is the name that appears in screen shots. The appropriate disk (out of a set of five) is actually labeled Acknowledge Application Disk, and its volume name is simply Acknowledge. Chapter 3, "Running Connections," makes heavy reference to two connections, MiniTerminal and On-line Services. What it doesn't tell you is that those Connections are not in the Connection files folder that you were instructed to copy from the Application Disk. Instead, they're hidden within a Connection file named Samples, which itself is in a folder on a different disk, with MiniTerminal labeled just Terminal.

The *Programmer's Manual* isn't much better. It's thick (278 pages) and detailed but doesn't do a great job of teaching TAL programming. Its only tutorial section shows you how to use the recording feature to create a Connection; it gives no real instruction in designing and implementing a Connection of any complexity. Like the *User's Manual,* it forgoes instruction for documenting. The *TAL Reference Manual* (213 pages) helps fill in the gaps. The examples for each item (command, variable, and so on) are especially useful. It is clear, however, from the *Programmer's Manual* and the *TAL Reference Manual,* that programming under Acknowledge is not for the novice.

Even with these weaknesses, Acknowledge is an impressive package that does many things right and that can take most of the hassle out of telecommunications. It will probably make great inroads into the corporate market, becoming the business power user's telecommunications package of choice. What about the nonbusiness user? As for me, I was doing most of my telecommunications on an MS-DOS system, since the software there was so much better than MacTerminal. Now I'm back on the Mac for good.—*Bruce Webster*

See *Where to Buy* for contact information.

Two NuBus Prototyping Boards

MacProto. ***Pros:*** *Large wire-wrap area; built-in LED aids debugging.* ***Cons:*** *No device driver supplied; weak documentation; doesn't handle bus reset; no schematic of the board; trivial programming examples.* ***Company:*** *Adex Corporation.* ***List price:*** *$299.95.*

Hurdler II. ***Pros:*** *12-bit parallel port; three 16-bit timers included; easy interface to popular LSI interface chips; auto-configuring device driver included in ROM; good documentation including driver listing and board schematic.* ***Cons:*** *Smaller wire-wrap area than MacProto.* ***Company:*** *Creative Solutions.* ***List price:*** *$279.*

When the Macintosh first brought a consistent and friendly user interface to software, the only real cries of despair were heard from developers. Faced with the sometimes daunting task of learning a whole new way of writing user interfaces and having to master three volumes of *Inside Macintosh* (Addison-Wesley, 1985) before they could

(continues)

MAKE A POSITIVE FINANCIAL STATEMENT.

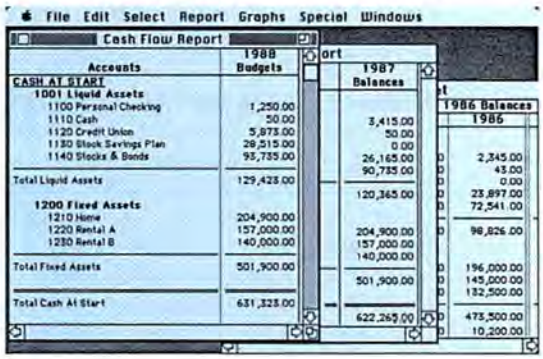
If your cash is flowing in the wrong direction, it's time you turned the tide with Dollars and Sense® 4.0, the financial management program for Macintosh® computers that actually manages your money, instead of merely counting it.

It loves you as much as your money.

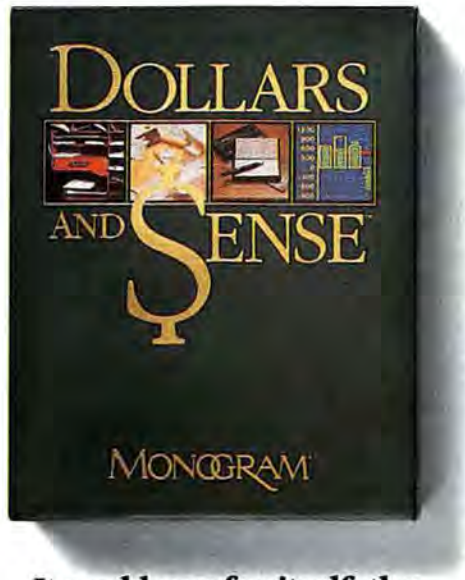
The reason over 250,000 users like Dollars and Sense is that it dispenses with the drudgery quickly and easily. It hates dry, boring work almost as much as you do.

Double-entry bookkeeping is automatic. Cutting and pasting between windows is a snap. In fact, everything is so much easier that you can finally use your time to concentrate on how your money works.

Instead of how your software works.



New version 4.0 adds sophisticated analysis, reporting and "what if" strategic planning capability to the world's best-selling personal financial management program.



It could pay for itself the first time you use it.

Once all your entries are recorded, Dollars and Sense offers you all kinds of ways to interpret your financial situation in graphic detail.

All you have to do is ask questions like, "What if?" "How?" and "Why?"

In a heartbeat, questions about your past, present and future are answered with lists, charts and graphs that clearly indicate whether you're headed for big bucks or the big bang. You can examine trends. Projections. And even flag special entries for special purposes.

Like those somewhat questionable write-offs.

All of which could save you much, much more than the paltry cost of the world's most fabulous financial software.

A few closing statements.

What else would you like? Income statement? Balance sheet? Chart of accounts? Cash flow? Customized reports? They're just a few of the financial insights you can gain with Dollars and Sense. In fact, Dollars and Sense is so sophisticated that over 100,000 small businesses use it to handle their accounting.

And version 4.0 gives you some truly helpful new features. Like sorting capability. Two years' data capacity. And an uncanny ability to import and export data from other programs—like Excel™.

So if you'd like to make a positive financial statement – or just an assessment of your personal values – let Dollars and Sense take charge of your finances.

It's the surest way to make your money account for itself.

MONOGRAM

531 Van Ness Avenue
Torrance, CA 90501
(213) 533-5120
FAX: (213) 533 1365
CompuServe ID: 76701,113
Orders only: (800) 443-0100, Ext. 348R

Circle 87 on reader service card

translate their ideas into Macintosh realities, many would-be software authors turned away from programming for the Mac until superior tools, like HyperCard, made the task of creating Macintosh software easier to tackle.

A similar situation now faces hardware developers who wish to create add-in boards for the Mac II. In order to get performance and flexibility, the Mac II uses the NuBus architecture. Apple has created a system that can support add-in boards without using the configuration jumpers or switches common on most other computer peripheral boards. To further simplify installation, the Mac's designers eliminated the need to reconfigure the operating system or modify start-up procedures to install a properly designed board; driver installation can be almost automatic. Just as

MARK JOHANN

The Hurdler II from Creative Solutions (top) and the MacProto from Adex Corporation.

with application software, the price of this end-user convenience is borne mostly by the developer. A new book, *Designing Cards and Drivers for Macintosh II and Macintosh SE* (Addison-Wesley, 1988), is devoted to the fundamentals of interfacing with the Mac II NuBus and the slot-support routines. In addition, much of the information in *Inside Macintosh Volume V* (Addison-Wesley, 1988) is vital to properly designing and interfacing a Mac II add-in.

To build a Mac II board from scratch you must design a hardware interface to the NuBus, program a slot-declaration ROM that allows the Mac II to find a board at boot time, and design a suitable software driver. Those tasks can easily become more difficult and can require a more sophisticated development environment than designing the circuit that you're trying to interface. Fortunately, two products that make building a board for the Mac II easier are now available. MacProto from Adex Corporation and Hurdler II from Creative Solutions are prototype boards that implement the basics of the Macintosh II interface on a NuBus board, but leave a wire-wrap area to allow you to attach your own circuitry to the interface. Although neither of these boards eliminates the need for *Designing Cards and Drivers* or *Inside Macintosh V*, they do address some of the trickier issues of NuBus and Mac II interfaces, and they allow you to move to the heart of your project.

Both boards handle address decoding, byte swapping, and latching of address and data during bus cycles to ease the timing requirements for the user circuit. Both have space for a slot-declaration ROM. Both also have a bidirectional parallel port to provide a simple interface to circuits that only need low-speed data transfer. Both boards also operate as NuBus slaves; all transfers must be initiated by a master processor (generally the Mac II system board).

MacProto

MacProto's approach is probably too simple for most applications. It supports a slot-declaration ROM and a single 8-bit-wide parallel I/O channel. Two bits of the parallel port are used to drive a multicolor LED that's convenient for testing and diagnostics, but those two lines are also available for user circuitry. Another bit of the port is dedicated to interrupt service, so only 7 bits are available to the user. This shortfall and the lack of available handshake lines make the parallel port cumbersome to interface with circuits that need to transfer more than 5 or 6 bits at a time.

MacProto doesn't use the Mac II's reset logic but contains its own power-up reset circuit, which requires a 30-second wait between power off and power on to be sure the board is properly reset.

Although MacProto's slot-declaration ROM has the basic information required for the Mac II to find the board at power up, it doesn't have a driver or the code necessary for the board to find its own slot or install its own driver. If you're using the ROM supplied by MacProto, the supporting software must be hard-wired to a specific slot or must query the user for the slot number the board is installed in.

MacProto isn't particularly well documented. You have to do a lot of reading between the lines (or probing with an oscilloscope) to determine what's really going on with some of the signals. The programming examples are trivial and accompanied by little explanation, and Adex has not included a schematic of the board.

Because it takes such a simple, barebones approach, MacProto has a large wire-wrap area left over for your circuit. Still, MacProto remains little more than a Mac II–size wire-wrap board with a basic NuBus interface. Unless you have the capability to write your own drivers, program EPROM, and design much of the interface yourself, MacProto probably won't do much to ease your design effort.

Hurdler II

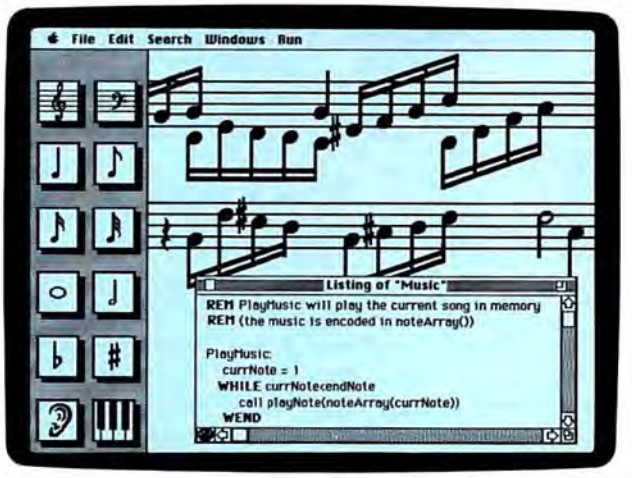
The Hurdler II, from Creative Solutions (the same company that markets MacFORTH), is a more sophisticated approach to Mac II board prototyping. The Hurdler II has a built-in 12-bit parallel port to allow simple 8-bit transfers with a full handshake. The port is implemented with a Zilog Z8536, which also provides three 16-bit timers and eight levels of vectored, prioritized interrupts. Support circuitry lets you connect other popular LSI interface chips —Motorola MC68230, MC68901, and Zilog's Z8530 (the same chip used to implement the Mac's printer and modem ports)—with no additional glue logic.

The Hurdler II slot-declaration ROM has a completely functional driver that automatically installs and configures at boot time. It allows access to all of the features of the Z8536 and many user-implemented functions through standard Macintosh Device Manager calls. The manual includes a thoroughly explained listing of the driver, and you can license the driver source code from Creative Solutions if you wish to include it in a production product.

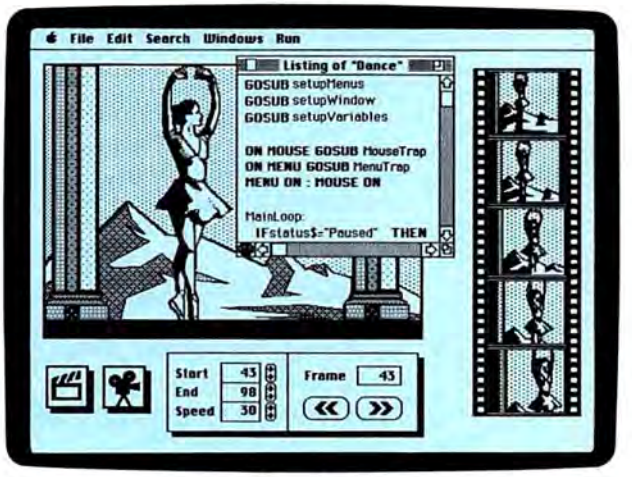
The Hurdler II is full of nice little extras. The excellent documentation includes a full schematic of the board. Two alternate connectors are supplied for providing an outside-world connection (DB25 centronics parallel and 50-pin IDC). Its design allows you to replace the slot-declaration ROM with a 1-byte-wide RAM chip for testing and debugging your own drivers. In short, Hurdler II is an effective tool for getting a Mac II add-in board up and running with a minimum of pain.—*Ron Risley*

See *Where to Buy* for contact information.

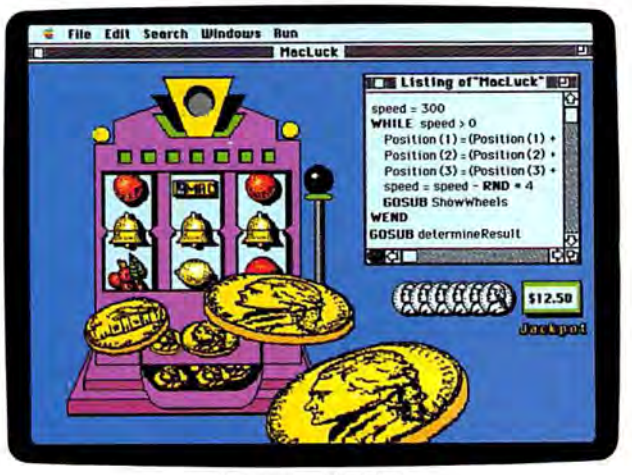
Teach your Mac to perform unnatural acts.



It can sing.

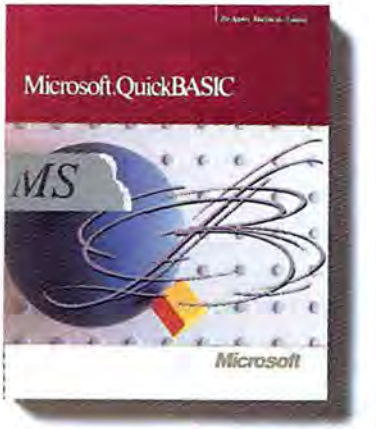


It can dance.



It can even spit nickels.

If you're losing your passion for running the same old programs on your Mac,® add a little excitement to the relationship. Start writing your own, with the new Microsoft® QuickBASIC for the Macintosh.®



The consummate new Microsoft QuickBASIC for the Macintosh.

BASIC is already the easiest language to learn on the Mac. And now, with new Microsoft QuickBASIC, it's even easier.

We've built the compiler and the interpreter into one program. Which means you can compile and execute whatever your heart desires with a simple double click of the mouse. We've even added a complimentary personal finance program so you can practice. See any Microsoft dealer for a trial run.

You're going to have a lot of fun programming your own Mac, even when you're getting down to serious business. With new Microsoft QuickBASIC, you'll learn how to customize business applications and programs so they meet your specific needs and work with existing applications.

And don't be surprised at some of the ingenious things you can create right off the bat.

That's perfectly natural.

Microsoft®

© 1988 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation. Macintosh and Mac are registered trademarks of Apple Computer, Inc.

Portions of Microsoft QuickBASIC for the Macintosh were developed and are copyrighted by Absoft Corporation, Auburn Hills, Michigan, and are based on a version of the Absoft AC/BASIC™ compiler. All rights reserved.

Data Acquisition and Control Systems

ADC-1. ***Pros:*** *Low cost; versatile in control applications; BSR interface included.* ***Cons:*** *Slow maximum acquisition rate.* ***Company:*** *Remote Measurement Systems.* ***List price:*** *$449, plus $279 for ADControl software interface.* ***Requires:*** *512K.*

MacPacq. ***Pros:*** *10-kHz maximum acquisition rate; HyperCard, BASIC, and Pascal interfaces available; 64K onboard memory.* ***Cons:*** *Macro control language takes time to master.* ***Company:*** *Biopac Systems.* ***List price:*** *$1195 (includes PacqManager software).* ***Requires:*** *512K.*

MARK JOHANN

Low-cost data acquisition systems now available from Remote Measurement Systems (top) and Biopac Systems (bottom). Both stand-alone systems weigh approximately two pounds.

Data acquisition cards for the SE and the Mac II are now available in great variety. For Mac II owners, and for SE owners who can dedicate their SE's only card slot to a data interface, an internal card is a tidy solution. For owners of older Macs, or for SE users who need to use the slot for an accelerator or other board, a stand-alone data acquisition system that uses the Mac's serial port is the obvious choice.

The ADC-1, from Remote Measurement Systems (RMS), and the MacPacq, from Biopac Systems, are stand-alone data systems. Each is about the size of a cigar box, weighs approximately two pounds, and features screw-terminal strips for analog and digital I/O lines. They both use low-power ICs, so that extended battery-powered operation is possible. Despite the hardware similarities, and the general-purpose character of any data acquisition device with computer-controllable I/O, these systems are actually optimized for different applications. If you want to read and respond to a set of environmental monitors or check sensors distributed through a building, the ADC-1 can do the job, but if you are interested in scientific data acquisition and control of lab instruments, the MacPacq is a better choice.

ADC-1: A Dedicated Controller

The ADC-1 offers 16 analog input channels, 4 digital input channels, and 6 output lines for control of relays or low-voltage devices. It communicates with the Mac through the serial port—it's basically an RS-232C peripheral. A unique feature of the ADC-1 is a transmitter for BSR X-10 control modules, which enable you to use your computer to manage home appliances over AC power lines.

Although the ADC-1 has been tested in a variety of academic data acquisition applications, it is more typically used in the field of biology than in the electro-optics field. The reason for this is the accurate but leisurely Intersil 7109 at the heart of the ADC-1's circuit board. This 12-bit converter normally operates in auto-zeroing mode at 20 conversions per second; this rate can be boosted to 120 conversions per second at some cost in accuracy. The 20 conversions-per-second rate is adequate for monitoring pH, temperature, and other slow-response sensors and for use with chromatography detectors. A university research group has developed a dedicated chromatography software package for the ADC-1. Nonetheless, the ADControl software can be adapted to control, for example, temperature and humidity in a building or an environmental chamber (see "Playing by the Rules").

A HyperCard stack included with ADControl offers a simple, program-free mode of control. This is definitely a trend: of six new data systems examined for review, every one features a HyperCard interface, at least as an option. In a bank in the Southwest, for example, one ADC-1 stack answers the telephone and then announces the time and temperature.

MacPacq: Packing In the Data

The MacPacq features eight analog input lines and eight digital I/O lines. While the MacPacq's A/D converter offers only 8-bit resolution, it can perform 10,000 con-

(continues)

File Edit Mode Displays Options Configure Rules Manual Control

ANALOG INPUTS			
#1 - open	0.0	#9 - open	0.0
#2 - open	0.0	Rm 30 temp	72.9
#3 - open	0.0	#11 - open	0.0
#4 - open	0.0	#12 - open	0.0
#5 - open	0.0	#13 - open	0.0
#6 - Open	0.0	Light Level	297.2
#7 - open	0.0	#15 - open	0.0
#8 - open	0.0	#16 - open	0.0

Show Rule List
Pause Rule Evaluation
Edit Rule
Set Rule Evaluation Rate
Clear All Rules

DIGITAL INPUTS		Count
#1 Open	OFF	0
#2 Open	OFF	0
#3 Open	OFF	0
#4 Open	OFF	0

DERIVED PARAMETERS

Electric costs are $ 0.00 per month

CONTROLLED OUTPUTS			
Green LED	ON	Controlout #4	OFF
Orange LED	OFF	Controlout #5	OFF
Red LED	OFF	Controlout #6	OFF

Playing by the Rules
This screen from the ADControl program shows the ADC-1 set up to monitor lights and temperature in one room of a building. The Rules menu allows simple IF . . . THEN programming of conditions, as in IF (temperature greater than 80 degrees F) THEN (turn on air conditioning).

12 ISSUES FOR $23.95!

YES! Please send my FREE copy of 101 Best Desktop Publishing Tips and begin a one-year subscription (12 issues) to Publish! at the low introductory rate of just $23.95 (that's 40% off the regular subscription rate).

Send no money now. We'll bill you later.

FREE BOOK

- How to set text diagonally
- Making the most of your font choices
- Secrets of special typographical effects
- Time-saving tricks for using clip-art
- Tips on retrieving lost images

And over 95 other valuable tips from the best desktop publishers in the business!

Publish! Publish! Publish!

5CMR6

Name _____

Company _____

Address _____

City/State/Zip _____

SAVE 40%

Allow 6–8 weeks for delivery of your first issue. By regular subscription, Publish! is $39.90 for 12 issues.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Publish!

Subscription Department
P.O. Box 55415
Boulder, Colorado 80321-5415

Track Time. Bill Clients. No Sweat.

See Us at MACWORLD
Booth #541.

You're a professional who bills by the hour. You're smart. You work hard. In today's business world, you don't have the edge if you can't get your bills out on time.

Which is why we invented **Timeslips® III,** the best-selling time and billing system of all time. It lets all your colleagues handle thousands of clients, with up to 128 projects per client. And tracks all simultaneously. Using Timeslips III, small and medium-size companies report capturing 20% more billable time.

© Copyright 1988, North Edge Software Corp. All rights reserved.

Reviewers Rave!

Timeslips III (★★★★½) provides a host of sophisticated functionality, power and it's a pleasure to use.
MacUser

Pays for itself, especially when you realize how much time is actually being spent on a project.
Financial Mac

Timeslips III is DA (desk accessory). Always instantly accessible, a built-in "stopwatch" times any phone call or activity while you work. Then calculates the total fee and updates your client file. Automatically.

Timeslips III accurately tracks time and expenses. Then creates custom bills (thousands of formats are possible), and gets them out fast. You can even import your logo design as a backdrop to your bills.

Timeslips III is a powerful, growth-oriented, productivity tool. It gives you control over your business with user defined reports, including work-in-progress, employee and activity breakdowns by project, for some or all clients.

For all that it does, you may be surprised it only costs **$199.95.** You could recover that in one day.

For press reviews, product information, or the name of your nearest Timeslips III dealer, call **1-800-338-5314.**

And get closer to success.

North Edge Software Corporation, 239 Western Avenue, Essex, MA 01929 (508) 768-6100

TIMESLIPS is a registered trademark of North Edge Software Corporation.

System Requirements: MAC+, MAC SE or MAC II with 512K and two 800K floppy drives, or a hard disk and one 800K floppy drive.

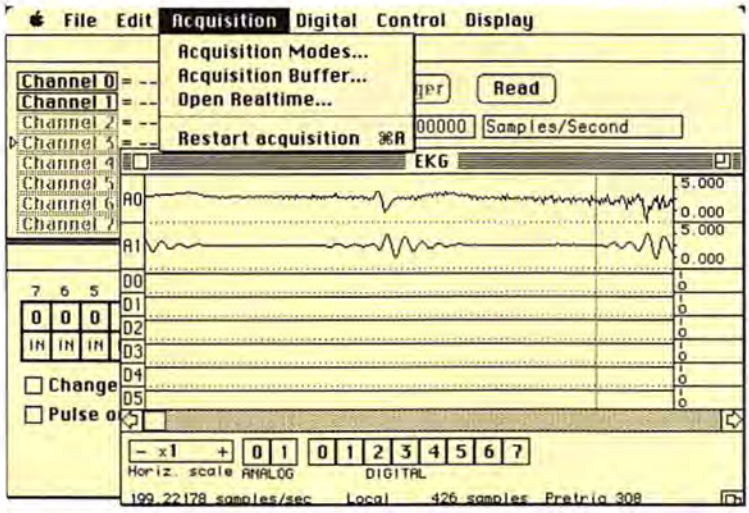
NORTHEDGE

Timeslips® gives you the edge.

Circle 559 on reader service card

Going through Channels

The PacqManager software for MacPacq makes it easy to set up the Mac as a dedicated multichannel chart recorder. The Acquisition menu, besides controlling a simple oscilloscope-like real-time mode, enables you to use the MacPacq as a remote (not connected to the Mac) high-speed data capture station.



versions per second. This fact alone opens up a range of applications that are not possible with the ADC-1. For example, you can program the MacPacq to capture high-speed transients directly into its 64K data buffer for readout by the Mac, and the MacPacq can do this in programmed mode in an electrically "difficult" environment (large fluctuating electromagnetic fields) while physically disconnected from the Mac itself. While the MacPacq can also handle general control functions, the PacqManager software system emphasizes data acquisition rather than AC-device control.

As a result, it's easy to use the MacPacq as a replacement for either of two laboratory workhorses, the chart recorder or the oscilloscope. The oscilloscope function corresponds to a single choice under PacqManager's Acquisition menu, and the available acquisition modes for sampling and triggering are all reminiscent of standard Textronix scopes (see "Going through Channels"). A preprogrammed application called ChartRecorder, included in the package, enabled me to set up a two-channel chromatography system in ChartRecorder in five minutes, practically without consulting the manual.

Programming in PacqManager's macro language provides more challenge than these exercises. For serious use, I highly recommend one of the $95 language modules (Microsoft BASIC, True BASIC, or the Turbo Pascal module tested for this review); the HyperCard stack, HyperPacq, is another option at the same price. Both HyperPacq and the stack that RMS includes with ADControl offer a small-scale version of the capabilities in National Instruments' LabView package.

Tangerines or Oranges

Both systems are good values and perform to their specifications. Both boxes contain well-designed circuit boards showing no signs of rework or postrelease modification. For low-speed data acquisition and control, the ADC-1 will satisfy most requirements, and it's well developed as a home/factory/office control device. For general-purpose laboratory work, the MacPacq's faster converter and more sophisticated scientific applications software make it a better bet. It's also encouraging to see the visual-style instrument interface that was introduced commercially in LabView now appearing in low-cost HyperCard versions.—*Charles Seiter*

See *Where to Buy* for contact information.

LightspeedC 3.0

Integrated C development environment. ***Pros:*** *Easy to use; doesn't compromise capability; well documented and easy to learn; integrated source-level debugger; reasonably priced.* ***Cons:*** *2MB of RAM required to run debugger.* ***Company:*** *Symantec.* ***List price:*** *$175.* ***Requires:*** *Mac Plus; 2MB of RAM and MultiFinder to use the debugger; hard disk recommended.*

With its previous programming systems (MacPascal, the original LightspeedC, and Lightspeed Pascal), Think Technologies (now a part of Symantec) has built a reputation for delivering capable, reasonably priced, and easy-to-use development environments. LightspeedC 3.0 maintains that reputation by adding a source-level debugger to version 2.15—further enhancing one of the most easy-to-use software-development environments available on the Macintosh.

The LightspeedC environment is completely integrated—there are no separate editor, compiler, or linker applications. As with previous versions, the project document forms the foundation of LightspeedC 3.0, maintaining all the information needed for the development environment to intelligently compile applications. This includes the interdependencies of the source files, the object code of the compiled sources, and optionally, the source-level debugger's tables.

Having all the vitals in one place for a program under development allows LightspeedC to compile, link, and launch the program with a single command. It also provides for an automatic *make* capability—LightspeedC only recompiles those files that have changed since the last compile.

The Editor

The functional, multifile text editor that is part of the LightspeedC programming environment is virtually unchanged since the previous version. It provides all the basics you'd expect—capabilities like autoindent, font control, search and replace—and it adds a few features that enhance the day-to-day functionality of the editor. For example, the search-and-replace capability facilitates more complex text manipulation by working across multiple files and letting you search and replace using regular expressions (like the UNIX grep command). The editor also balances parentheses and brackets—helpful in tracking down annoying errors in syntax when compiling.

LightspeedC's text editor has a couple of features that are as useful as they are unique. Holding down the option key (or the ⌘ key) while clicking in the title bar of a source file's window pulls down a menu that lists all the header files included in that source file. Selecting one of the header files opens a new window containing that file. The editor also allows you to hold down the Option key (or the ⌘ key) and double-click on any symbol in the source file to immediately get to the place where the symbol was defined—very helpful in traversing source code.

(continues)

Why do so many Mac II Owners Choose National?

Because National memory expansion cards give them:

1. Top A/UX performance

Apple + A/UX ™ + National adds up to a powerful workstation. One that gives them the highest performance for their memory-hungry A/UX applications.

What applications do you have in mind? Software development, CAD/CAM, high resolution graphics, large databases, or multi-user applications? The NS8/16 memory expansion card has the power to unleash your creativity.

2. Up to 16 Mbytes of memory in a single NuBus slot

1MB RAM chips to save power consumption and card slots. And they're 100ns chips to give top performance. Your applications will run dramatically faster.

Your Mac II ™can hold up to five NS8/16's, for up to 80 Mbytes of RAM.

3. Full A/UX Compatibility

The device driver is included. A/UX uses the NS8/16 as system memory so all of your A/UX programs will run without any modification.

Also included is software that allows the expanded memory to be used as a RAM disk in the standard Mac operating system.

You get a full five-year warranty and support from the leader in add-in products for the Mac II.

Join the satisfied Mac II users who have chosen National memory expansion cards

Call today 1-800-538-8510

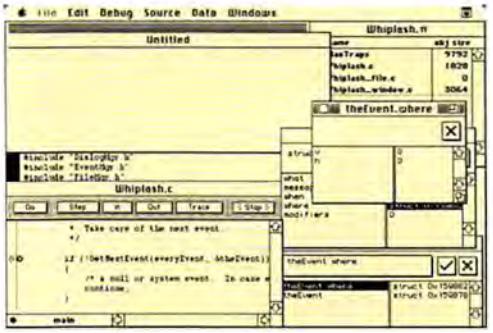
(in California 1-800-345-4006)

National Semiconductor

Circle 196 on reader service card

Compatible Products Group
Tel: 408-562-4719

Macintosh, Mac II, and A/UX are trademarks of Apple Computer Inc.



No More Bugs
The source-level debugger in the latest version of LightspeedC allows simultaneous viewing of an application, its source code, and its variable data.

The Compiler

The fast LightspeedC compiler generates either 68000 or 68020/68881 binaries at a speed in excess of 15,000 lines per minute on a Plus or an SE. It supports all that is currently considered standard C (including function prototypes) and promises to conform to the ANSI (American National Standards Institute) standard of the C language soon after that standard is finalized. The compiler also supports inline 68000 assembly language, though it doesn't generate assembly source from C source files.

To speed up an already fast compiler, LightspeedC 3.0 supports precompiled header files, which dramatically speed up the compilation of a program by effectively reducing the number of source lines the compiler needs to process. Porting C source from other environments is facilitated by the fairly complete standard C and standard UNIX libraries provided with the system.

The Debugger

Although it requires a minimum of 2 megabytes of RAM to be fully functional, certainly the most notable feature of LightspeedC 3.0 is the source-level debugger. Based around MultiFinder, the debugger integrates nicely into the rest of the LightspeedC environment. When you activate the source-level debugger option, LightspeedC automatically invokes the debugger after you have successfully built the program. In addition to the program's windows and menu bar, LightspeedC adds two more windows: one displays the currently executing source file; the other shows variables and data structures.

Within the source window, you can set and change breakpoints, move in and out of functions, and observe the current call chain through the clever use of a pop-up menu. Switching between the source observation window and an editing window requires only a single command. The data window lets you examine and modify the values of variables, including structures and unions, with an easy, mouse-based interface. For example, double-clicking on a pointer automatically dereferences it, and double-clicking on a structure opens a new window displaying the field names and values of that structure.

General Impressions

LightspeedC is probably the most usable C development environment available for the Macintosh. Because of its well-designed interface, you find yourself able to focus on programming work rather than spending undue amounts of time learning to use the development system.

However, LightspeedC 3.0 is not without its shortcomings, though most complaints that I have could be considered nit-picking. I'd like a few more bells and whistles in the text editor (text markers, for instance), and it would be nice if LightspeedC were extensible. If a programmer could add tools to the LightspeedC environment, that would enhance its functionality. I'd also like to see an integrated resource compiler. With the otherwise comprehensive development environment, it makes sense that creating resources should be more integral to the build process than having to go to ResEdit or some other external resource editor.

Still, LightspeedC remains the best-performing C compiler available for the money. Its minor shortcomings are more than compensated for by the fact that it embodies the same high standard of usability that went into the Macintosh itself. And LightspeedC seems to be driving the Macintosh interface philosophy into the area of software development, where people have not heretofore recognized the need for clear, intuitive interfaces.—*Jim Takatsuka*

See *Where to Buy* for contact information.

Datacopy 830 Flatbed Scanner

Scanner. ***Pros:*** *Flatbed design allows easy scanning of books and large artwork; software allows gamma correction and provides some image processing features.* ***Cons:*** *Expensive; can't select or alter irregularly shaped area within an image; minor bugs.* ***Company:*** *Datacopy Corporation.* ***List price:*** *Scanner, $2800; SCSI interface, $200; MacImage software, $495.* ***Requires:*** *1MB, SCSI port, hard disk.*

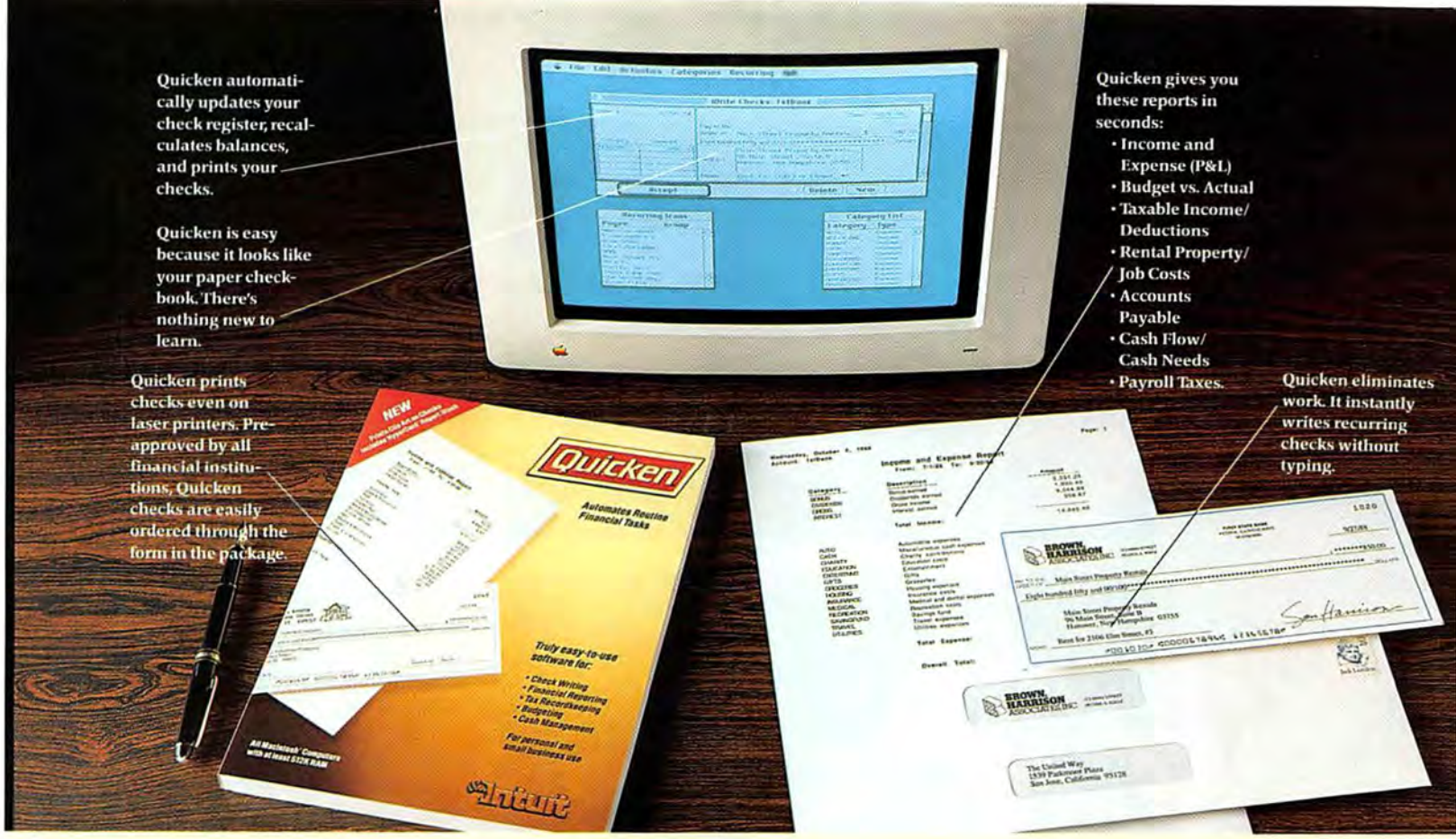
Conventional wisdom holds that the more levels of gray a scanner can detect, the better its images will look. Given a choice between a 6-bit scanner (which can discern 64 gray shades) and an 8-bit one (which detects 256), most people would take the 8-bit unit—and shoulder the burden of finding disk space for the larger image files it creates.

Technically, "the more bits, the better" is a sound rule. In practice, however, discerning between 6- and 8-bit scanned images is difficult. Indeed, the Datacopy 830 shows that a 6-bit scanner can produce first-rate scans (see "Six Bits Versus Eight").

The 830 is a member of the crowded field of 300-dots-per-inch (dpi) flatbed scanners—photocopier-like units in which the original lies face-down on a piece of glass while the scanning mechanism moves beneath it. (For an introduction to scanning, see "Getting Started with Scanners," *Macworld,* November 1988.) The

(continues)

Datacopy's new 300-dpi flatbed scanner.



End Financial Hassles. Quicken®, $49.95

Quicken is the absolute fastest, easiest way to do your personal or small business finances. It saves you hours of time while perfectly organizing your finances. With Quicken, you'll always know exactly how much money you have and where it's going.

Forget Financial Hassle

Quicken is so automatic, it does your financial work for you. It actually learns your regular bills. Just confirm the payment amounts on your auto loan, utilities, and other bills. Quicken does 14 bookkeeping steps and hands you the printed checks already addressed for mailing. All you do is sign them and seal the envelopes.

Finish Financial Work in Seconds

Instead of dreading tax time, use Quicken to print itemized lists supporting each tax deduction. Or, let Quicken deliver other detailed reports such as income and expenses by category, P&Ls, and budget vs. actual comparisons. Quicken provides complete reports on screen or on paper almost instantaneously. Quicken will finish in seconds the same work that used to take you hours.

No Accounting Mumbo Jumbo

Quicken is as easy as the pen and paper you use now. You'll see the familiar checkbook and check register right on your screen. The only thing that changes is how fast you finish your financial chores. This is bookkeeping that's totally hassle-free.

The World's #1 Selling Financial Software

Here's why Quicken is the world's most popular:

...an all-around excellent product. It is one of the best implementations of the Macintosh user interface that we've seen; it's very fast even when running from floppy disk.

—David Beaver, **MacWeek**

Quicken is a great program. ...Its combination of an outstanding implementation of the Mac interface, sophisticated keyword-searching techniques, and a readable, well-designed manual make it the industry standard. ★★★★★

—Ken Landis, **MacUser**

For Personal and Small Business Use

No other financial software provides more flexibility to handle the wide range of personal or business needs. Quicken is for service and manufacturing businesses, doctors, consultants, designers, retailers, as well as for households. Quicken is ideal for anyone who wants relief from bookkeeping hassles.

Specifications:
Software Compatibility: Exports data in SYLK format for use in spreadsheets like Excel® Exports data to HyperCard™
Hardware Compatibility: All Macintosh with 512K RAM. All printers, including laser printers. Also available for IBM and compatibles, Apple IIe, IIc, IIcPlus, and IIGS.
Capacity: Unlimited number of bank accounts. Unlimited number of transactions. Unlimited number of income/expense categories. Maximum amounts to $9,999,999.99.
Other: Unlimited FREE technical support. Not copy-protected. Checks are preapproved by all financial institutions in the U.S. and Canada. Sample checks and order form are enclosed in Quicken package.

Try Quicken FREE for 30 Days

Order Quicken from the coupon below, or through our toll-free 800 number. If you're not completely satisfied with Quicken for any reason, simply return it for a full refund. No questions asked.

Quicken $49.95

I want to try Quicken on your no-risk 30-day guarantee. If I'm not completely satisfied, I may return it within 30 days for a full refund. Quicken for $49.95 plus $3.00 shipping and handling. California residents add sales tax.

Call 800-624-8742
(in California, call 800-468-8481),
or send this coupon with your check or credit card number to Intuit.

Name _____

Address _____

City _____ State _____

Zip _____ Phone _____

☐ Macintosh version ☐ IBM version
☐ Apple II version ☐ DeskMate version
☐ 3½" disk ☐ 5¼" disk
☐ Check enclosed (no purchase orders, please).
☐ Visa ☐ MasterCard ☐ Am Ex

Card Number _____

Expiration Date _____

Intuit 540 University Avenue
Palo Alto, California 94301

MW0189

Six Bits Versus Eight
The top image is scanned by an 8-bit scanner (a DEST PC-2020). The bottom image is scanned by the 6-bit Datacopy 830. In these 300-dpi printouts, the 8-bit image reveals more accurate grays.

830's competition includes Microtek Lab's MSF-300Q and Abaton's Scan 300/FB. A look at these products reveals some close similarities to the 830, and for a good reason: all of them are manufactured by Microtek Lab.

Like all of today's scanners, the 830 connects to the Mac with a SCSI cable. And like most scanners, it doesn't have a SCSI connector on its rear panel; instead the 830 uses an adapter box that connects between the scanner and the Mac and translates the scanner's outgoing signals into SCSI, and the incoming SCSI signals into ones the scanner can read. Scanner manufacturers take this route in order to market the same hardware for both the Macintosh and the IBM PC.

That's convenient for them, but the adapter boxes can be clumsy to use. Fortunately, Datacopy's isn't as bad as some. It doesn't require a separate power supply, as do Microtek's and Abaton's. And unlike Microtek's, the Datacopy adapter doesn't require that you remove the case and venture inside to change the SCSI address. You do have to find room for the adapter on your desk—or let it dangle and put undue stress on the scanner's connector.

The Software Difference

The Datacopy 830's SCSI adapter is better than its cousins', but what really sets the 830 apart is the MacImage software. The programs accompanying most scanners have bare-bones gray-scale features. Rarely can you edit gray-scale images or change their brightness and contrast (a process often called *gamma correction*). For gray-scale work, you need to spend a few hundred dollars for an image-processing program such as Letraset's ImageStudio or Silicon Beach's Digital Darkroom.

MacImage provides the usual controls for adjusting brightness and contrast before the scan, and for specifying the size of the original and whether it's line art or a continuous-tone image. And like most programs, MacImage lets you edit non-gray-scale images in an enlarged view similar to MacPaint's FatBits mode. The program also has excellent file-handling features. It can open and save files in MacPaint, SuperPaint, Encapsulated PostScript, PICT, RIFF, and TIFF.

Unlike its competitors, MacImage allows you to remap gray-scale data to change brightness and contrast after the scan and to obtain special effects such as posterized and solarized images. The program also has commands that perform electronic equivalents to common photographic darkroom techniques. The Burn & Dodge command lets you darken or lighten an image. Reduce & Intensify lets you reduce light tones and intensify dark ones. Add Diffusion blurs an image to create textured or soft effects. All three commands operate on an entire image or on a selected area. Unfortunately, you can't select and alter an irregularly shaped area within an image.

Before scanning, you use MacImage's pop-up menus to specify the characteristics of the scan. You can also use the Image Setup pop-up menu to choose one of 15 combinations that let you quickly configure the software for common scanning jobs. Choosing the Quick Scan Photo option, for example, sets up MacImage to scan a photo at 75 dpi and 16 gray levels. Choosing Gray View 64 Levels sets up the program to create a 300-dpi, 64-level gray-scale image. You can also create your own image setups tailored to your applications—a nice touch.

Alas, MacImage did occasionally choke. The program crashed when I used the Control Panel's Monitors setting to change the number of grays displayed on my Mac II. And it often hung when I clicked on a document's close box after using an image-altering command.

There's one other problem with the 830/MacImage duo: it's expensive. At a total cost of $3495, an 830 with MacImage costs a grand more than Microtek's MSF-300Q. The MSF-300Q's scanner software is of the bare-bones variety, but with the money you'd save, you could buy ImageStudio *and* Digital Darkroom and still have money left over. And the MSF-300Q is available with a built-in SCSI port.

The 830 is a fine scanner and MacImage is one of the better scanning programs I've seen, but neither is priced competitively. If you can get a deal on the pair, I recommend them. Otherwise, shop around.—*Jim Heid*

See *Where to Buy* for contact information.

With MacMainFrame, it's so easy to access an IBM mainframe, a mouse could do it.

If you're like most Macintosh® users, one of the reasons you got hooked on the Macintosh in the first place is that it's so easy to use.

Which is why you'll be happy to know that now you can use any Macintosh, from the 512Ke to the Macintosh II, to access any IBM® mainframe with scarcely more than the click of a mouse.

MacMainFrame™ is a Macintosh-to-IBM mainframe link that puts your Macintosh and your mainframe on speaking terms.

MacMainFrame gives you complete Macintosh-to-mainframe functionality including file transfer.

You can access the host remotely from your satellite or home office. Or from client sites.

And because MacMainFrame builds on the flexibility inherent in your Macintosh, you can even create your own personal operating environment. With convenient features that include everything from keyboard remapping to user-definable screen colors.

In all candor, when it comes to connecting the Macintosh with IBM, no other Macintosh-to-mainframe link is as true to the Macintosh ideal as MacMainFrame.

For the authorized MacMainFrame dealer or distributor nearest you, call 1-800-289-2526, extension 27.

Or write to Avatar Corporation, 99 South Street, Hopkinton, MA 01748.

Avatar.

Macintosh is a registered trademark of Apple Computer Inc. IBM is a registered trademark of International Business Machines Corporation. Avatar is a registered trademark and MacMainFrame is a trademark of Avatar Corporation.

Circle 319 on reader service card

Alchemy 1.1

Digital sound-editing program for keyboard samplers. ***Pros:*** *Stereo sound-editing features; allows you to transfer sounds between different samplers; reads and writes Sound Lab, Sound Designer, and Dyaxis files.* ***Cons:*** *Doesn't control front-panel settings; copy protected.* ***Company:*** *Blank Software.* ***List price:*** *version 1.2 $450.* ***Requires:*** *Mac 512KE, 800K external drive, MIDI interface, and supported sampler; 2MB or more of RAM recommended.*

The Mac's sharp graphics and approachable operating style make it ideal for editing digitally recorded sounds. Musical *sound samples,* usually 1–10 seconds long, can be stored in the memory of a musical keyboard called a *sampler.* The sampler plays back a sound—be it a recording of a grand piano, a trumpet, or a choir—in the pitch corresponding to the key you press. In addition, a sampler lets ivory ticklers "play" non-keyboard instruments. (For background on Mac music applications, see "Getting Started with Music," *Macworld,* November 1987.)

But creating convincing samples often requires extensive editing. Sampling keyboards provide built-in editing software, but it's typically torturous to use because samplers lack such interactive niceties as video screens and typewriter keyboards. Armed with a computer and sophisticated software, you can change sound-design headaches into new frontiers for aural experimentation.

Digidesign's Sound Designer and Blank Software's Sound Lab were two of the first Mac-based sample-editing programs. Now Blank Software's Alchemy is ushering in some significant improvements over its predecessors. But it also has some drawbacks that make assessing your needs before buying important.

Alchemy is designed to be the centerpiece of a digital audio network comprising multiple samplers attached to a Mac via MIDI, SCSI, or the Mac's modem port. From Alchemy's command post, you can move samples from one keyboard to another, even if the keyboards use different sampling *rates* (the number of times per second an original sound is measured). Before Alchemy, managing a sound library meant drowning in floppy disks—and still not being able to move sounds easily between samplers.

In the Editing Room

Like Sound Lab and Sound Designer, Alchemy lets you loop, edit, and manipulate digital sound samples in many ways. And like Sound Designer, Alchemy also lets you digitally equalize and mix samples and change their volume. (For a closer look at Sound Lab, see *Reviews,* July 1987; a review of Sound Designer appears in the October 1987 issue.)

But Alchemy has a faster, more responsive feel. One reason is that Sound Designer uses temporary disk files as it operates, but Alchemy keeps opened samples in memory. This means, however, that Alchemy users are more likely to lose work during a power failure or system crash.

Another interesting twist is that Alchemy can open stereo samples and can create stereo samples from monaural ones. You can make changes affecting both channels simultaneously, or edit them individually.

A sound-editing program's greatest strength is its graphic waveform display, and Alchemy's displays are more useful than Sound Designer's. Both programs let you zoom in on a small portion of a sample for detailed editing, but Alchemy helps you keep your bearings by showing a small overview of the entire sample (see "Selected Samples"). Alchemy recalls up to eight different waveform views per window, allowing you to quickly navigate through a complex sample. And Alchemy can load and display as many samples as will fit in the Mac's memory; Sound Designer can't load more than three samples at once.

Both programs can display a graph depicting a waveform's harmonic content, based on a fast Fourier transform (FFT) analysis. (FFT is an algorithm that allows you to break any waveform into a series of sine waves.) Sound Designer's FFT display is a 3-D plot showing a sound's harmonic content as well as how the sound changes over time. Alchemy's 2-D waveform plots lack the latter feature but atone for this omission by allowing you to alter harmonics, in a separate window, to perform *resynthesis.*

Resynthesis lets you alter the harmonic content of a sound. For example, say you sampled a kick-drum from a record, but a guitar was playing at the same time. With Alchemy, you can remove the guitar from the sample by removing its harmonics. You can also resynthesize to modify existing instrument sounds for special effects.

At least in theory. Unfortunately, Alchemy's harmonic-editing features lack the thoroughness of the rest of the program's features. A complex sample can have hundreds of harmonics; Alchemy just doesn't provide enough tools to tame them. As it stands, the resynthesis procedure makes editing a complex waveform an exercise in manual labor.

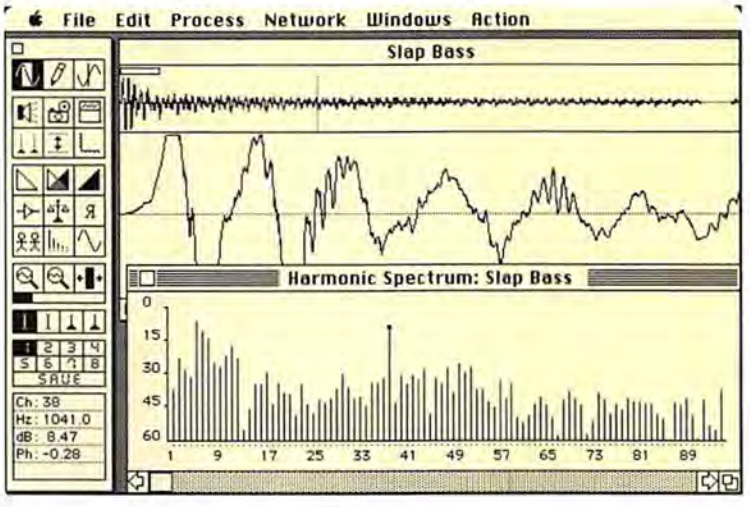
A Sound Buy?

Alchemy is an excellent program that's remarkably easy to use given its sophistication—thanks, in part, to a manual that's clear and complete (except that it lacks an index).

But the arrival of Alchemy doesn't mean the departure of Sound Designer or Sound Lab. Alchemy's sampler-networking philosophy prohibits it from controlling

(continues)

Selected Samples
In this Alchemy display of an electric bass sample, the top window shows the sample's waveform. A close-up of part of the sample appears below. The zoomed portion of the sample is shown by drawing a rectangle above it in the overview display. The lower window is the Harmonic Spectrum window, used for resysnthesis.



NEW SUITCASE II. NOW OUR BAG IS REALLY PACKED.

PostScript is a registered trademark of Adobe Systems, Inc.
Alert sounds feature requires a Mac II or System version 6.0 or later.

The new SUITCASE II is really packed. Now you can have up to 99 suitcase files full of fonts and DAs, or files containing FKEYs and alert sounds, that you can access at any time—and you don't have to install them in your System file. Plus you can see in the menu what a font will look like before you use it. By merging PostScript® fonts into one family, SUITCASE II unclutters your font menus. And by compressing fonts and sounds, SUITCASE II saves you precious space on your hard disk. So, whether you're a new Mac user or a dyed-in-the-wool Mac enthusiast, you need SUITCASE II.

SUITCASE USERS CALL FOR UPGRADE INFORMATION

MacUser said, "If you can only buy one program for your Mac... buy SUITCASE," and gave us five mice, their highest rating. And they awarded us BEST NEW UTILITY PROGRAM. Since then, we've picked up the *MacWorld* WORLD CLASS AWARD and a *MacGuide* GOLDEN GAVEL, even *before* SUITCASE II was released!

When it comes to performance, praises and prizes, it looks like SUITCASE II has it in the bag.

Fifth Generation Systems, Inc.
11200 Industriplex Blvd.
Baton Rouge, LA 70809
(800) 873 4384, (504) 291-7221

Fifth Generation SYSTEMS, INC.

End users circle 250 on reader service card
Dealers circle 364 on reader service card

keyboard-specific settings, often called *front-panel settings* because you adjust them with the sampler's front-panel knobs. Sound Designer, by contrast, is available in several versions, each custom-tailored to a specific sampler. Sound Lab is tailored to the Ensoniq Mirage—a sampler whose front-panel settings are difficult to adjust.

In short, Alchemy mediates between samplers and lets you create a central sound library. Sound Designer and Sound Lab are sampler specialists that let you tame front-panel settings. (Sound Designer II, in development at this writing, will incorporate some of Alchemy's networking features—but like Alchemy, at the expense of front-panel support.)

Alchemy is faster, more polished, and easier to use than Sound Designer and Sound Lab, but its inability to control front-panel settings is a limitation. If you have only one sampler—especially one with hard-to-use front-panel controls—you must decide whether Alchemy's second-generation sample-editing features warrant the trade-off. *—Jim Heid and Erik Holsinger*

See *Where to Buy* for contact information.

Chuck Yeager's Advanced Flight Trainer 1.0

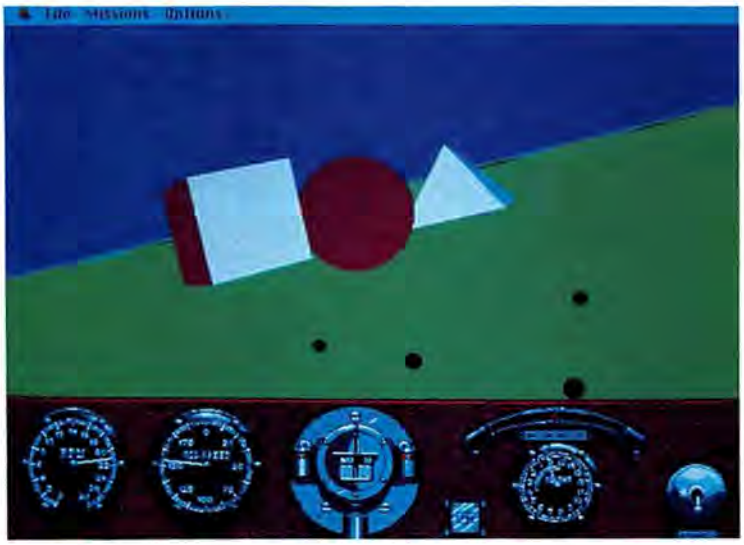
Flight simulator. ***Pros:*** *14 airplanes; beginner to advanced lessons; freestyle, formation, racing, and stunt flying.* ***Cons:*** *Airplane quiz must be passed each calendar day; no map, radar, or direction-finder.* ***Company:*** *Electronic Arts.* ***List price:*** *$49.95.* ***Requires:*** *512K.*

MAC 3+

General Chuck Yeager is the legendary United States test pilot who inspired the original astronauts in Tom Wolfe's novel *The Right Stuff.* Now he's endorsing the latest flight simulator from Electronic Arts—the Advanced Flight Trainer (AFT). Designed to give you a test pilot's experience of 14 different airplanes, AFT is the first 16-color flight simulator for the Macintosh II.

Pop Quizzes and Lots of Planes

When you load AFT each new calendar day, the program presents you with an airplane silhouette to identify and a question about it that you must answer—or the game quits on you. The 45-page manual provides the essential information about the planes and the format for reporting test-flight results. But if you just want to fly, the daily quiz becomes a bother.



Staying the Course *From the cockpit of your craft the test course appears to be made of towering pyramids and massive pylons. To help you judge distance, a pattern of spheres gets progressively larger as you descend to the ground.*

The smorgasbord of simulations includes Spad, Sopwith Camel, Spitfire, and P-51 Mustang, which are World War I and World War II fighters; Cessna Skyhawk and Piper Cherokee, easy-to-fly domestics; X-1 and X-3 rocket planes from the history of test piloting; F-16 and F-18 fighters and an SR-71 high-altitude reconnaissance jet; and finally, two test pilot's nightmares and one test pilot's fantasy for mettle testing. There is optional, realistic sound for each simulation.

Chuck Yeager's Advanced Flight Trainer is geared for the experienced pilot. Nevertheless, it's also an excellent choice for a first flight simulator. AFT provides 8 basic training routines and written lessons suitable for beginners, as well as 15 advanced flight exercises, 5 airplane-racing and 6 formation-flying scenarios (there's only one designated plane per stunt, but you can create up to three stunts using any planes). Racing begins with one opponent, with each victory adding a tougher opponent, until you are racing against four computer-generated opponents. The manual mentions a dialog box that you can use to save and play back races, but version 1.0 does not implement this feature.

Views and Displays

The world of AFT is essentially a test course of towering pyramids, massive pylons, and landing strips of various sizes. On a Mac II, color is a big help in distinguishing land mass from airspace. Unlike some simulators, the ground and all structures on it appear solid, even in black and white. To help you judge distance visually, a pattern of spheres that gets progressively larger as you descend to the ground appears on screen. Similarly, you use a trail of spheres to track maneuvers during racing and formation flying, much as you might use the stripes on a highway to keep your car on course. However, there are no airport homing signals, nor is there radar or even a map to supplement visual orientation—a serious drawback.

Keyboard commands provide a selection of views in all directions. Unfortunately, the control panel only appears when you select the cockpit view. However, there is a feature called HUD (heads-up display) that displays critical flight information on the front windscreen. The HUD is especially useful when you're taking lessons; first you observe a maneuver, then you try to match your cursor to the trail of the programmed cursor, and finally you try the maneuver without the programmed cursor's assistance. HUD operates with all views, but continuous access to the full control panel would be better.

AFT hits a nice medium between simplicity and realism. In its two 800K floppy disks there's plenty of challenge. On a Mac II, you'll love the color and the smoothness of the animation. Chuck Yeager's Advanced Flight Trainer clearly rates a place among top Macintosh flight simulators.—*Keith McCandless*

See *Where to Buy* for contact information.

Backing Up for the Future.

Fast, reliable and convenient, the PCPC JETSTREAM is the most advanced tape backup system available today.

The PCPC JETSTREAM is a super high performance system. It will archive over 2 gigabytes of data at speeds up to 14.4 Mb per minute. You can now back up multiple drives onto a single, low cost 8 mm video tape cartridge.

The JETSTREAM allows you to schedule backups to take place even when you're not around. It's the backup for the future...and it's available today.

Call PCPC at 1-800-622-2888 or 1-813-884-3092 for more information and the name of your nearest dealer.

Personal Computer Peripherals Corporation

4710 Eisenhower Blvd., Bldg. A4 ■ Tampa, Florida 33634 ■ (813) 884-3092 ■ (800) 622-2888 ■ FAX (813) 886-0520

Circle 223 on reader service card

TurboSynth 1.0

Modular synthesis software. ***Pros:*** *Excellent software implementation of modular synthesis; wide variety of modules provide great flexibility in sound design.* ***Cons:*** *Can't create SND resources; sketchy documentation; no help screens; key disk required.* ***Company:*** *Digidesign.* ***List price:*** *$349.* ***Requires:*** *1MB, MIDI interface.*

In the 1960s, music synthesizers were made up of separate circuits called *modules.* To create a sound, you connected one or more oscillator modules, for producing basic tones, to one or more sound-modification modules—such as *filters,* which let through some frequencies but squelched others, and *envelope generators,* which controlled how the sound's dynamic qualities changed over time. You connected these modules using cables called *patch cords.* Entwined with patch cords, a modular synthesizer looked like a telephone switchboard with a keyboard.

When advances in electronics made portable, inexpensive synthesizers possible, most synthesizer manufacturers abandoned the modular architecture. The new generation of synthesizers eliminated patch cords and their hassles, but sacrificed the sound-generating flexibility of the modular systems.

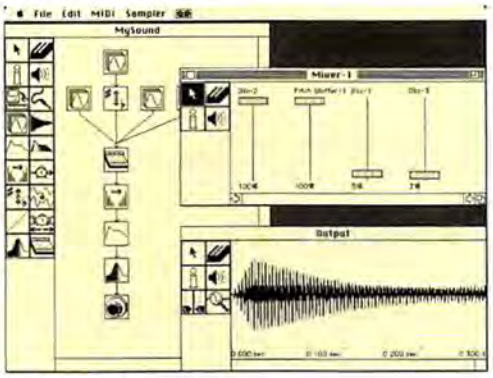
Like the modular synthesizers, TurboSynth provides a battery of sound-generating and sound-modifying modules that you interconnect with patch cords. But TurboSynth's modules and patch cords exist only on the Mac's screen. Instead of plugging and unplugging actual cords, you use the Patch Cord tool to draw lines between modules, which are represented by icons (see "Synthesis by Numbers"). Beneath each module are algorithms that mathematically describe what goes on in an oscillator, a filter, an envelope generator, and so on. Click on TurboSynth's speaker icon, and the program crunches through those algorithms to create the sound; then TurboSynth plays the sound through the Mac's speaker (for more accurate sound attach the Mac to a stereo or external amplifier).

When you're satisfied with a sound, you can transfer it over MIDI to any Digidesign-supported sampling keyboard. Using concepts similar to those of a compact disk (CD), sampling keyboards play back recorded samples of pianos and other instruments. Click on the Mac-to-Keyboard icon, and TurboSynth transfers the sound to the sampler, where you can play it in full fidelity.

Sounding Off

A new, untitled TurboSynth document contains one icon—the output jack. To create a sound, you might first add a sound-generating module—for example, an oscillator—by selecting one from the palette and then clicking within the document window. TurboSynth represents the oscillator module with an icon that you can drag to any location. For a simple sound, you could attach the oscillator to the output jack by drawing a line between them. More often, however, you'll want to create complex sounds by using multiple oscillators, combining them with the mixer module, and using TurboSynth's sound-altering modules.

You adjust a module's settings by double-clicking on it to open a window that contains icons and tools of its own. Modules that produce waveforms or envelopes display their output graphically and provide tools for making fine adjustments. Modules that mix or modify sounds provide sliders similar to the Mac's speaker volume control in the Control Panel. Most module windows also contain Get Info icons for assigning descriptive names and making other adjustments.



Synthesis by Numbers

With TurboSynth, you create sounds by connecting on-screen oscillators and sound-modifying modules. The sound shown here uses four oscillators, one detuned slightly by a pitch-shifting module. The mixer module's window reveals the loudness settings of each oscillator. The output of the mixer module is connected to the input of the spectral inverter module, which alters the sound's timbre over time by inverting its harmonic spectrum. The sound then goes to the envelope amplifier, which controls the sound's loudness, to the resonator module, which further alters its timbre, and finally, to the output jack.

More Than a Synthesizer

If TurboSynth did nothing more than emulate a modular synthesizer, it would still be a revolutionary program. But it goes beyond that by letting you include sampled sounds as part of a TurboSynth sound. By combining oscillator-generated sounds with sound samples, you can create new sounds that have some qualities of both. A new version of TurboSynth will work with Digidesign's Sound Accelerator board, which adds CD-quality audio to a Mac II or SE. Digidesign says that combination will allow you to hear the results of module adjustments as you make them.

A sample-editing program, such as Digidesign's Sound Designer or Blank Software's Alchemy 1.1, can save completed sounds in Sound Designer format, which both programs can read. As an Ensoniq Mirage owner, I found Sound Designer useful for adjusting a sound's *loop points* (which cause the sound to repeat when you hold down a key). The Mirage imposes restrictions on loop points, and the Mirage version of Sound Designer works within those restrictions better than TurboSynth does.

Alchemy users can open TurboSynth files saved in Sound Designer format and then save them as SND resources, which can be added to HyperCard stacks. Unfortunately, TurboSynth can't create SND resources, nor does it support Apple's audio Interchange File Format (IFF).

If your main interest in TurboSynth is to expand your sampler's horizons, these shortcomings aren't a major consideration. But TurboSynth's sketchy documentation is. What's there is good, but it isn't enough. TurboSynth can create an infinite number of sounds, but you're on your own in finding the best ways to produce them.

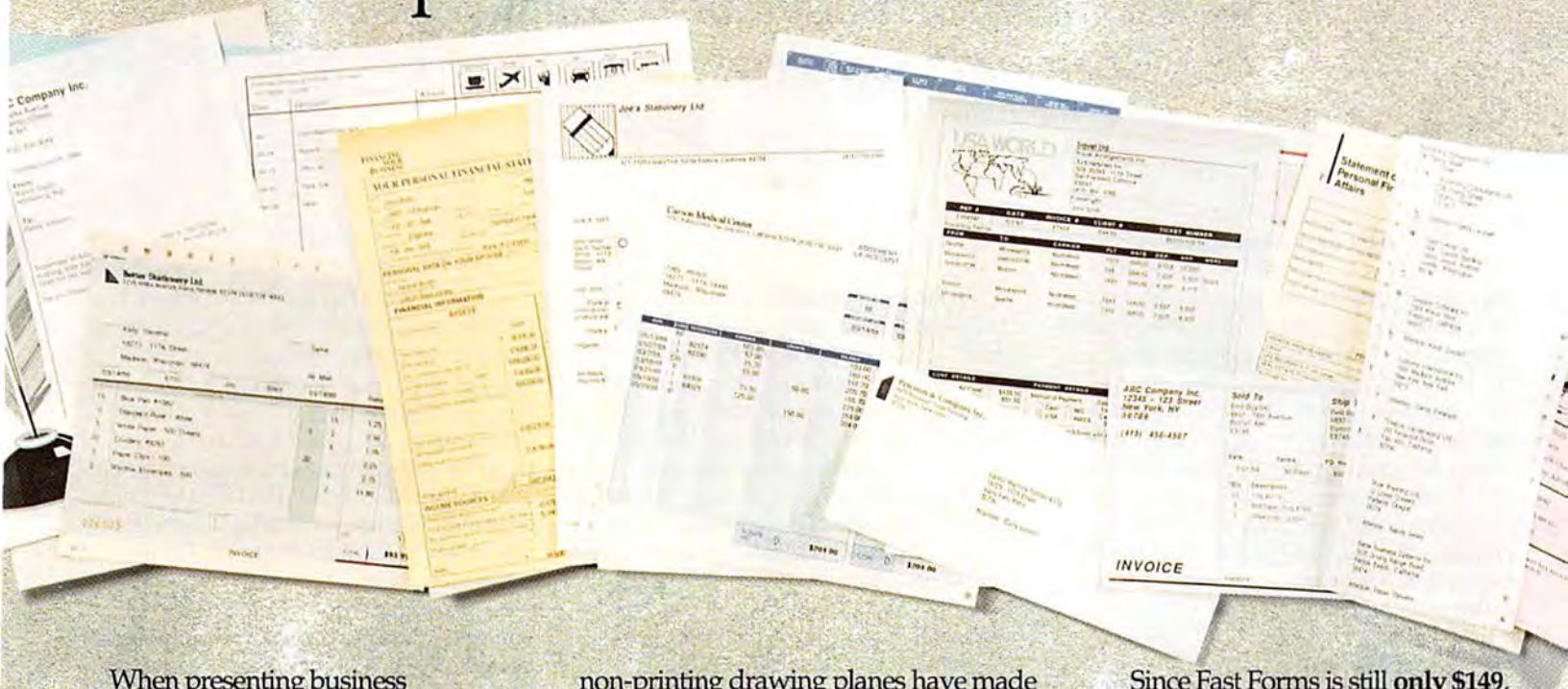
TurboSynth's learning curve is steep. The program needs a hands-on tutorial—ideally, accompanied by an audiocassette—that shows you how to use each module to produce different results. A reference card and help screen showing each icon's name and purpose would help, too.

Even though TurboSynth is not easy to learn, it is an enchanting program that will have you clicking, dragging, and listening into the wee hours. TurboSynth successfully combines the flexibility of modular synthesis with today's software and sampler technology. *—Jim Heid*

See *Where to Buy* for contact information.

Fast Forms™

Paperwork Without The Work.



When presenting business information, it is important to portray a professional and consistent image. Business forms are no exception.

Fast Forms gives you the **power and freedom** to create, customize, and use professional forms on your Apple® Macintosh® computer.

You can use Fast Forms for tasks ranging from simple office memos to order forms, packing slips, complex invoices or even annual tax forms.

All with the flexibility to match the look of your most familiar forms.

And once you've drawn or scanned your forms, use the **Fast Forms desk accessory** (also included) to fill in and print while using any other program.

At last you can quickly address an envelope or print an invoice without interrupting your more important work.

drawing a form

Features such as gray screens, hairlines, variable type sizes, text editing, customizable grids, and printing and non-printing drawing planes have made Fast Forms the drawing program of choice by **thousands of users**.

pen / fill patterns

Place **data entry fields** on your form where information is filled in. Fast Forms will format fields and even perform **calculations** for you automatically.

Since version 1.2 now supports both **import and export**, Fast Forms works even better with your other Macintosh programs.

Now you can import information from your database to fill in and print any form, or export information while using Fast Forms as an effective data entry tool.

For offices with more than one Macintosh, additional desk accessories can be purchased separately.

And yes, for those of you who want some help getting started, Fast Forms still comes with a **free template disk** filled with forms ready to use.

Since Fast Forms is still **only $149**, you're guaranteed great value for your money.

filling out a form

Plus, if you buy Fast Forms today, we'll refund your money tomorrow (early 1989) when you purchase **Fast Forms Professional,**™ the next generation of forms management solutions.

For more information on Fast Forms, please call or write:

Shana Corporation

Advanced Technology Center
105, 9650 - 20 Avenue
Edmonton, Alberta Canada T6N 1G1

(403) 463 - 3330

Fast Forms and Fast Forms Professional are trademarks of Shana Corporation. Apple and Macintosh are registered trademarks of Apple Computer, Inc. Copyright © 1988 Shana Corporation

Circle 297 on reader service card

Window Shopping

An assortment of statistic, astronomy, quotation, and HyperCard travel organizer packages

by Lawrence Stevens

The computer can help people who have little training in a field do things they never imagined they could. Among the programs I'm reviewing this month is one that lets you create sky charts like an astronomer and another that helps you perform statistical studies even if you can barely multiply.

Like many people, I can identify only one constellation reliably—the Big Dipper. I like star gazing, but not the fiddling with calculations or overlays necessary to create a diagram of the sky.

Sky Travel 1.0

Sky Travel 1.0 ($69.95, from Microillusions) makes identifying celestial bodies easy by creating a diagram of the sky for you. Simply specify your observation point (by placing a cross hair on a map location), a date and time, your elevation, and the direction you will be looking, and Sky Travel will calculate the position of the stars and planets and display a view of the sky. You can choose to have the display change in real time, minute by minute; or you can stop the movement or accelerate it up to 64 times real time. You can print your view or save it as a MacPaint file.

The Sky Travel display offers a wide range of choices. For example, it can include constellation or planet symbols, add constellation lines, or show deep space items (those not visible to the naked eye). Once the display is set, you can slowly change your viewing angle and direction and scan the sky. You can have the program find any planet or constellation. You can even look at planets that would be below the horizon, since in the program the earth is transparent.

If you're interested in learning as well as observing, you can click on any star, planet, or constellation and the program will display information about your selection. Sky Travel's manual is also a great learning tool. Only about a third of its 76 pages are devoted to explaining how to use the program (it only takes about 15 minutes to learn). The rest of the manual is a fascinating "Guided Tour of the Universe," with information about such things as Halley's Comet and eclipses, as well as wonderful historical experiments. Do the experiments and you can discover which star guided the three Magi to Bethlehem, and which constellations the Egyptians used to align the Great Pyramid at Giza.

This program has something for everyone from poetic sky-gazer to Trekkie to serious astronomy student. I highly recommend it.

Crystal Ball 1.0

Crystal Ball 1.0 (which requires one megabyte) is a relatively easy way for nonmath types to get up to speed in a major area of statistics: probability and forecasting.

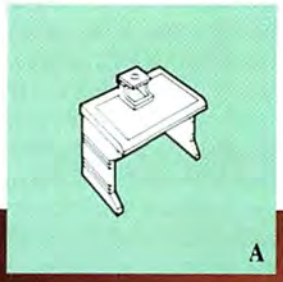
Here's how Crystal Ball works. You use Excel, Works, or Multiplan to create a spreadsheet that contains your best guesses of particular quantities. For example, you might estimate 7 as the number of defective products out of every batch of 75, or you might estimate the price of a stock at $65. You then create a formula based on a number of these estimated quantities. For example, the formula might determine gross profit based on the number of defects, the market price, and whether a competitor comes out with a similar product; or the formula might provide the value of a stock portfolio that is based on the combined values of stocks, options, puts, and calls.

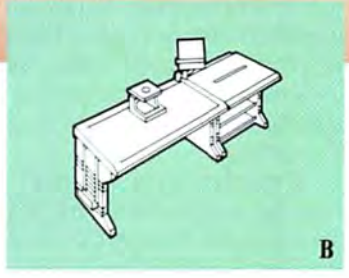
After importing the spreadsheet into Crystal Ball, you must define the probability distribution for the estimated value. Determining probability distribution is a complex procedure, but Crystal Ball makes it relatively painless with the combination of a clear manual and illustrative screen graphics. Using the stock you estimated at $65 for an example, if you believe that it

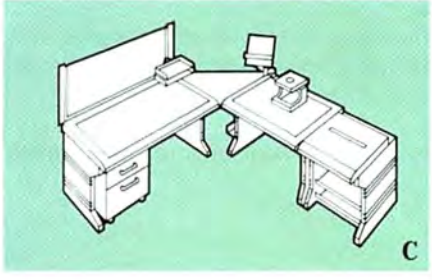
(continues)

Each card in the City to City stack has several buttons that lead to other cards or perform functions. Along the bottom of this card are the buttons that lead to other category cards, such as market data and business information.

Right, it's efficient.
Right, it's great looking.
Costs an arm and a leg, right?







Wrong.

If you think you can't afford computer workstation furniture as up-to-date as your Macintosh, think again.

Breakthrough prices. The basic workstation (drawing A) costs less than $305. For under $635, you can set up the intermediate workstation (drawing B). And the full featured workstation (drawing C and photo) is less than $1300. Since the WorkManager™ System is modular, you can start small and add on as your needs—and resources—grow.

Breakthrough design. The WorkManager™ System has the ergonomics of high-priced designer furniture systems. The work surface is the perfect typing height for Mac keyboards, and features a comfortable beveled leading edge. A covered, recessed channel holds cables and surge protectors. Built-in sockets handle WorkManager™ accessories.

Breakthrough construction. Strong, lightweight structural components are molded of steel reinforced Resinite™ composite. Molded-in color makes surfaces highly scratch resistant.

The WorkManager™ System. For people who need workstations as advanced as their computers—from the people at MicroComputer Accessories, Inc.

WORKMANAGER™

S Y S T E M

MicroComputer Accessories, Inc.

Need a hand? Call our MicroComputer ACCESS(ories) LINE: 800/521-8270. In CA call 213/301-9400.
USA: 5405 Jandy Place, P.O. Box 66911 • Los Angeles, CA 90066-0911 • Fax 213/306-8379
CANADA: Call 416/259-5051 • In Canada call 800/387-7300 • Telex 06067768 FABCAN • Fax 416/259-5137
EUROPE: Call 32.2.538.6173 • Telex 24088 CETREL • Fax 32.2.537.3777
© Copyright 1988 MicroComputer Accessories, Inc.

Circle 276 on reader service card

MicroComputer

can be anywhere from $60 to $70, but it is most likely to be $65, you would use the normal distribution, represented in Crystal Ball as a mountain sloping equally on two sides. On the other hand, if you think the value is just as likely to be anywhere between $60 and $70, you would specify a uniform distribution, which is represented by a straight horizontal bar. (There are a total of 12 distributions, including an option for creating custom distributions.)

When you run the simulation, Crystal Ball actually tries out all the possibilities Monte Carlo fashion. If you specify a uniform distribution for your stock, it will randomly select a number from $60 to $70. If you pick a normal distribution, it will tend to choose numbers near the peak ($65). You can decide how many times to perform this tossing-of-the-dice action (normally over 1000 times). For each "toss of the dice," the bottom-line figure (in this case, the value of the entire portfolio) is computed. In the end you get a chart depicting the results. The chart could tell you, for example, that in 70 percent of the tries, the value of the portfolio was $10,000 and in 5 percent of the tries, the value of the portfolio was −$500. This gives you an idea of your chances of success or failure, and helps you plan strategies.

While the program is relatively straightforward, the concepts are not easy for a newcomer to statistics to understand. It will take you at least two or three solid days of practice before you know what you're doing. But compare that with the time it would take you to complete a course in statistics, and you'll be glad you bought Crystal Ball ($395, from Market Engineering Corporation).

2001 Quotes 1.0

In front of me is a copy of Bartlett's *Familiar Quotations.* I'm going to time myself to see how long it takes to find one quotation related to *equal* or *equality.* Here goes . . . okay, it took 19 seconds. Now I'm going to do the same thing with 2001 Quotes 1.0 , a HyperCard stack from Christie Associates. I'm starting with its index on my screen so all I have to do is scroll to the word *equality* and click return—OK, that was about 7 seconds. Less than half the time. And to find a second quote on *equality* in 2001 Quotes, I only have to press return again. But I can't do that more than two more times, since 2001 Quotes has only 4 cards on that subject; my Bartlett's has over 40.

That's the crux of the matter. 2001 Quotes may be faster, but Bartlett's weighs in with 22,500 quotes, about a tenfold advantage. And 2001 Quotes may not even be faster if I count the time it takes to start up the computer and load the stack. And it certainly isn't faster if I'm working on a plane and have to wait to return to my office to find a quote instead of reaching into my backpack for my copy of Bartlett's. A final consideration—price. The program costs the same as my hardback edition of Bartlett's—$24.95—and you can get a paperback version for less than half that. 2001 Quotes requires 1MB.

If you still prefer the stack to the book, you'll find that 2001 Quotes does have some good features—it has a wide selection of subjects and a variety of quotes from many different points of view. The section on equality, for example, includes quotes from Aristotle, Mao Tse-tung, and e. e. cummings.

Also, 2001 Quotes has a find function that lets you search for quotes by keyword. Sometimes this works fine, but more often you get words used in unexpected ways, or worse, you get the wrong word entirely. For example, when I tried to find quotes using the keyword *book,* I got a quote from Booker T. Washington.

Personally, I would only give up the greater number of quotes in Barlett's for a really special program. 2001 Quotes is fun, but it isn't special.

City to City

HyperCard is utilized to much greater advantage in City to City ($49.95 from TenPoint0). City to City has multiple levels of HyperCard stacks containing helpful information for travelers to any of 30 American cities. The first card for each city sports a scanned photo of a famous landmark and a paragraph describing the city in general. Along the bottom of the card are 12 buttons that take you to information cards about specific aspects of the city. The envelope button provides business information, with addresses and telephone numbers of express mail, post offices, Western Union, and printing services. The place-setting button has information about restaurants and includes codes for type of cuisine, price, and quality. And the man-in-the-moon button brings up a card that contains the names and addresses of all-night or late-night eateries, pharmacies, food markets, and newsstands. There are also cards for lodging, market data, media, sports, shopping, tourism, and transportation.

You can create a card that contains your travel profile—such information as frequent-traveler numbers or airline and car-rental preferences—which can be used by your company's travel planner. And there is a detailed itinerary card on which you can list plane connections, lodging, and appointments. Once you've chosen the cards that are important to you and filled out the itinerary card, you can print a booklet containing a custom packet of travel information.

It can be hard to get the kind of information in this stack—late-night facilities, shopping areas, and places to hear jazz, for example—when quickly blowing in and out of town. If you're an occasional traveler and don't feel like picking up a guidebook at a newsstand, this booklet might be convenient. But the data is a bit limited. For example, each city stack contains only 18 hotels (6 each in 3 price ranges), 2 printing services, and 2 office-supply stores. And there is another potential problem. The program is now only a few months old and the information is still fresh, but there is no guarantee that it will remain so, since the manufacturer has no plans to create regular upgrades.

When I travel on business, I find that I divide my time between my hotel and my appointments. For me, City to City's data is sufficient. But if you have special requirements, you're going to have to input some of your own data. If you will be returning to the same city, or if others in your organization will be traveling there, the input time spent will be rewarded with a well-organized, easy-to-access custom stack of travel information. □

See *Where to Buy* for contact information.

Peel this Apple and get Macintosh performance without the Macintosh price.

On the surface, this Apple® appears to be a flawless, shiny Lisa.™ But get under its skin and you'll discover Macintosh™ Plus capabilities in all their glory. There's just one way this Apple doesn't measure up to a Macintosh. At $995*, the Lisa falls impressively short of a Macintosh price tag.

Meet the New Lisa with MacWorks™ Plus

We thought it looked like a perfect match: the highly efficient Lisa and the myriad of Macintosh software solutions. On the one hand, there was the Lisa, a professional business computer with an extra-large 12" screen, Macintosh graphic interface, familiar mouse, easy-to-reach internal components, space for an internal hard disk drive, three expansion slots, and a numeric keypad on the keyboard. Then there was the popularity of the Macintosh Plus, with its amazing capabilities, functionality and software applications.

What we did to bring the two together was develop a software program called MacWorks Plus. MacWorks Plus brings Macintosh functionality to the Lisa, plus compatibility with every application that runs on the Macintosh Plus. With MacWorks Plus, the Lisa can run HyperCard, MultiFinder, AppleShare, WordPerfect, Adobe Illustrator and Cricket Draw. (To name a few.)

The Apple Lisa with MacWorks Plus runs the latest Macintosh software.

How We Support Lisa and MacWorks Plus

We do a lot more than market the Lisa and MacWorks Plus. We offer a complete line of out-of-production, new and used Apple compatible products. And we are the only company authorized by Apple Computer Inc. to sell and service their out-of-production equipment. Because of this, we have invested sizeable resources in developing improvements for all of the out-of-production and reconditioned products we sell. Plus, every product that comes from us must pass rigorous Apple quality control tests. We also back our products with a 30- to 90-day money-back guarantee.

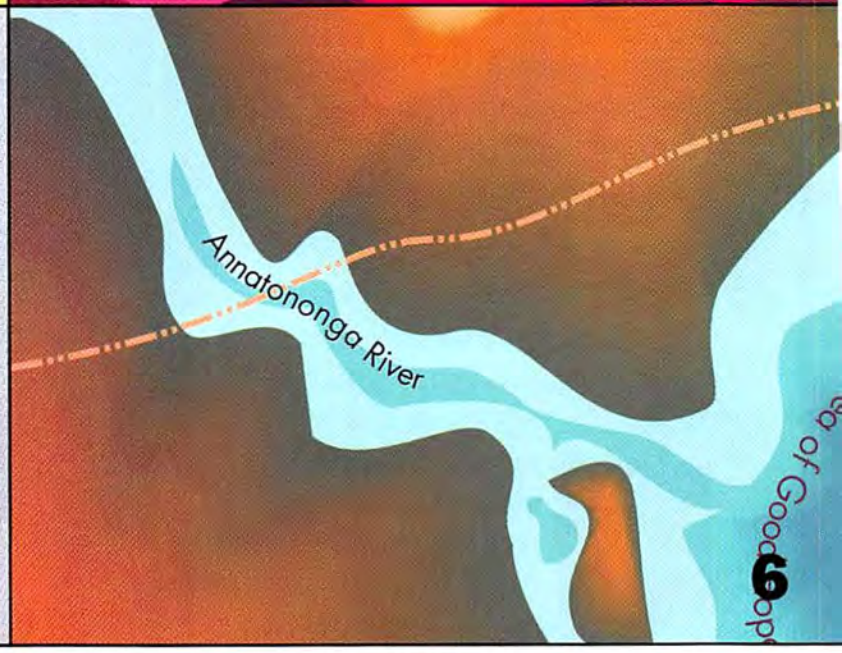
Call 1-800-821-3221 for your Apple Lisa

If you like the capabilities and compatibility of Macintosh, but don't like the price, pick the Lisa with MacWorks Plus. To order a Lisa, or get a copy of our product catalog, call 1-800-821-3221 and we'll send your order out today. All major credit cards accepted.

Sun Remarketing, Inc.

©1988 Sun Remarketing Inc. P.O. Box 4059 Logan Utah 84321, 1-801-752-7631, FAX 1-801-563-3226 *Depending on options

Circle 186 on reader service card



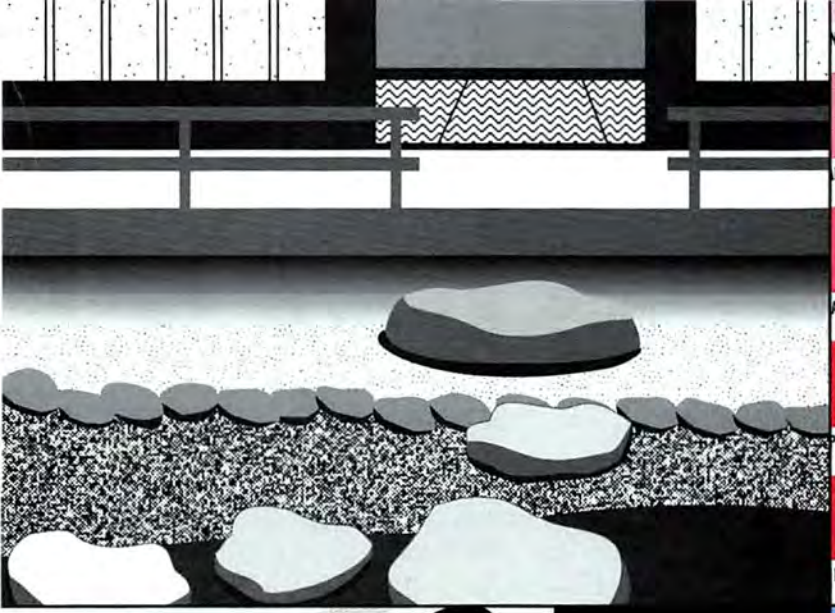
INTRODUCING CREATIVE FRE

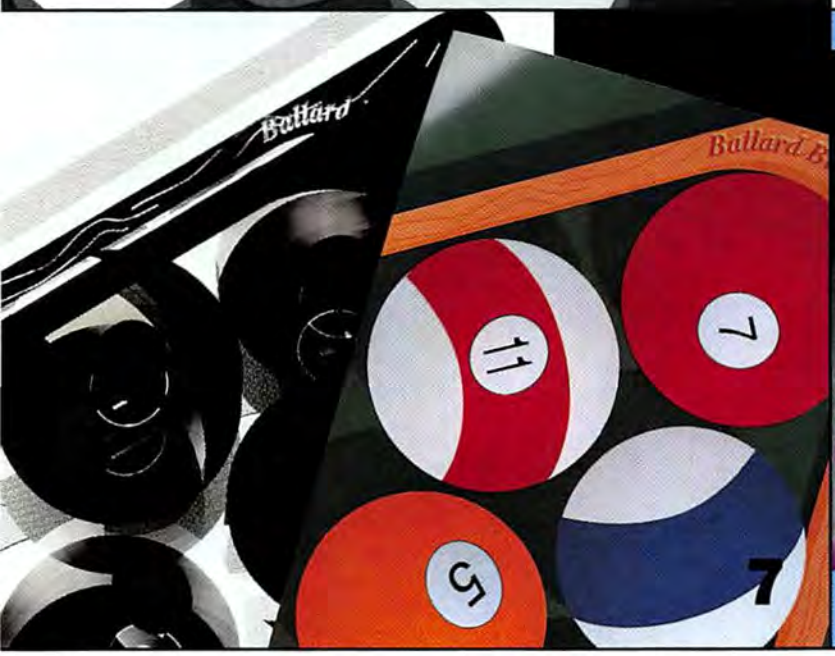
Imagine what you could do with an advanced drawing program that was actually easy to use.

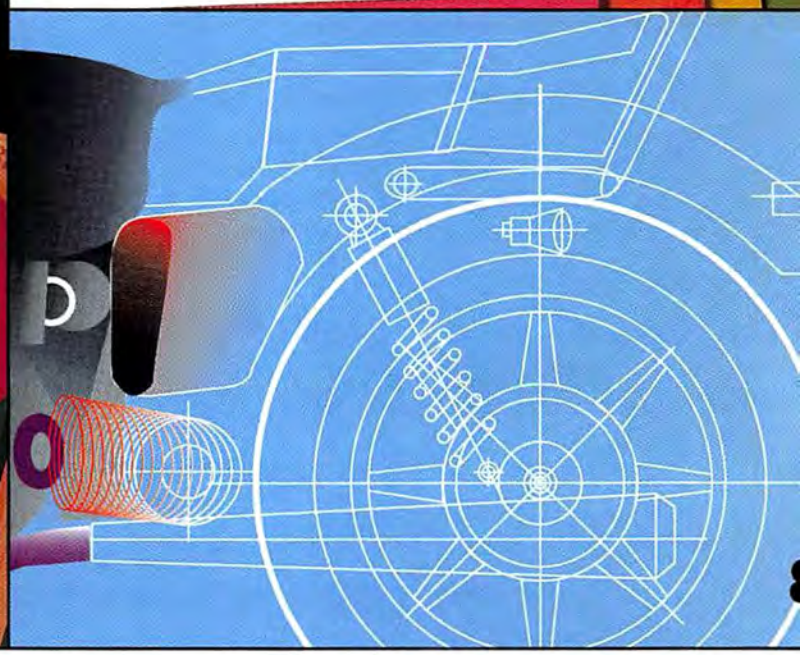
A program that could give you the freedom to create more with your Macintosh® than any other drawing program; even work as sophisticated as the illustrations in this ad.

That's the power of Aldus® FreeHand™ 2.0. And here are some of the things you'll be able to do with it.

1. Achieve unequalled control over your type. Curve text on a path, create stroked and filled type, and mix sizes, styles, fonts and colors in the same type block. **2.** Not only can you import PICT, EPS and TIFF images, you can actually work with them. There's no easier way to enhance existing artwork. **3.** Choose graduated, radial and patterned fills from our extensive library, or create your own PostScript®-language fill patterns for special effects. **4.** Now PANTONE®* Colors are available in Aldus FreeHand 2.0. So it's easy to see and specify the colors you want. **5.** Use the autotrace function to convert any PICT or







EDOM. ALDUS FREEHAND 2.0

scanned TIFF image to instant line art. It'll both save time and expand your options. **6.** Our blend feature allows you to transform one shape into another and produce airbrush effects with colors. **7.** A built-in color separation capability for spot and process color makes it easy to output separated film—saving hours of production time. **8.** Make short work of technical drawings with the most comprehensive set of advanced PostScript-language tools available; plus a set of familiar Macintosh drawing tools.

To experience creative freedom first-hand, visit an authorized Aldus dealer, or call 1-800-33- ALDUS to order a free self-running demo disk. I Washington state, call (206) 628-2375.†

ALDUS *Aldus® FreeHand*

411 First Avenue South, Seattle, WA 98104 (206) 622-550

*Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materi

†Offer good in U.S. and Canada only. The demo disk requires a Macintosh Plus, SE or II.

Aldus and the Aldus logo are registered trademarks and Aldus FreeHand is a trademark of Aldu Corporation. PostScript is a registered trademark of Adobe Systems Inc. Macintosh is a registe trademark of Apple Computer, Inc. PANTONE® is a registered trademark of Pantone, Inc. Proc color reproduction may not match PANTONE® identified solid color standards. Refer to current PANTONE® Color Publications for the accurate color. ©1988 Aldus Corporation. All rights reser

Circle 329 on reader service card

Drive Safely.

Safety first.

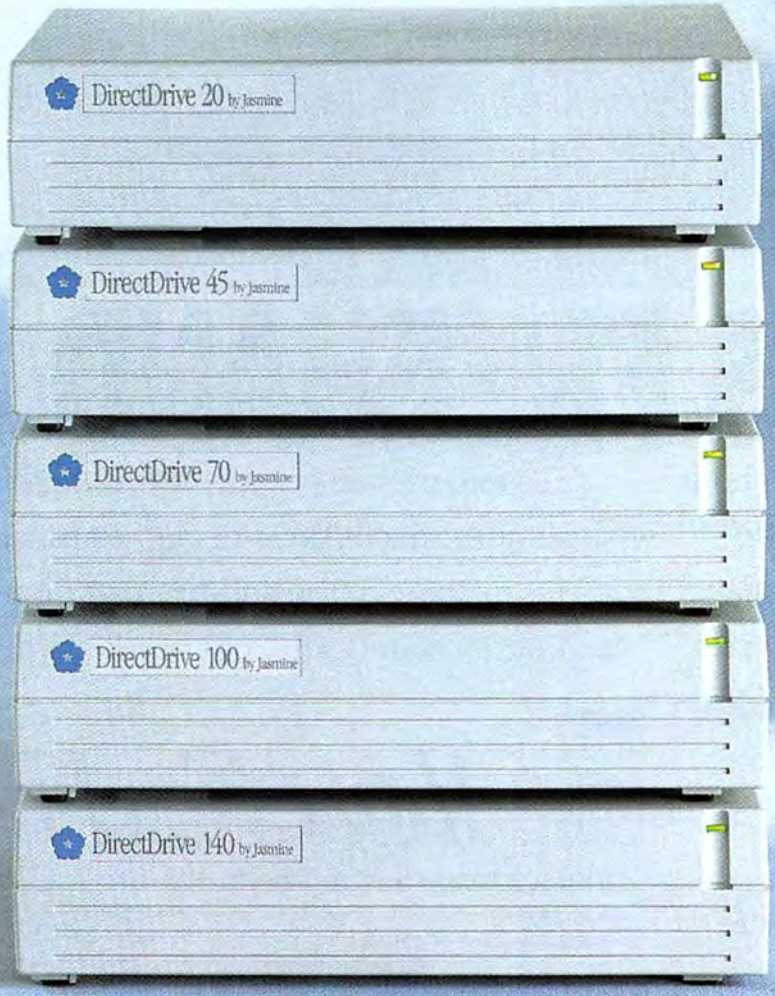
That's the basic rule of thumb with disk drives because you can't risk crashing. And that's precisely why you should buy a Jasmine DirectDrive.™ Ranging in storage from 20MB up to 140MB, all DirectDrives have to first pass the Jasmine torture test: 10 million read/write commands with stop starts at low voltages.

Equipped with Symantec™ Utilities for Macintosh, you can even recover data from a mistakenly initialized hard drive—something nobody else can do.

Then back everything up with Microseeds' simple yet powerful Redux™ software that's included too. And our true SCSI partitioning means you can allocate distinct storage "partitions" to different users, managing everything from the control panel. Yet another Jasmine exclusive.

We drive faster than the competition and offer a no-nonsense two year limited warranty.

It's storage you can definitely afford. And given the value of your data and our safety record, you can't afford to consider anything else.



DirectDrive 20— $549
DirectDrive 45— $799
DirectDrive 70— $999
DirectDrive 100—$1249
DirectDrive 140—$1499

Call for P.O. pricing.

Jasmine
1-800-347-3228

©1988 Jasmine Technologies, Inc. DirectDrive is a trademark of Jasmine Technologies, Inc.
Symantec Utilities for Macintosh is a trademark of Symantec Corp. Redux is a trademark of Microseeds.
Prices subject to change.

Jasmine Technologies, Inc.
1740 Army Street
San Francisco, CA 94124
415-648-1625 (FAX)
415-282-1111

Circle 102 on reader service card

New Products

Information on the Mac's latest hardware, software, and accessories

Edited by Mary Margaret Lewis

This section covers Macintosh products formally announced but not yet evaluated by *Macworld*. All prices are suggested retail. Please call vendors for information on availability.

HARDWARE

ColorMax A 19-inch color display system for the Mac II with landscape-mounted monitor and display adapter board. Pixel display measures 1152 by 870 and provides 82-dpi resolution. Full-tilt swivel base; front-panel on/off, brightness and contrast controls; and flicker-free screen included. Displays up to 256 of its 16 million colors simultaneously. $5299. Sigma Designs, 415/770-0100.

CrystalPrint Publisher PostScript-compatible page printer with 3MB of RAM and 11 built-in font families (35 typefaces). Print resolution is 300 by 300 dpi. Compatible with Mac 512K and Apple IIGS computers. Drum and toner sold separately. $4499. Qume, 408/942-4000.

Expanse II and Expanse II/SA NuBus expansion chassis for the Mac II, and Expanse II/SA, stand-alone version. Operates in 24-bit or 32-bit mode and can house eight Mac II NuBus option boards. Increases 6-slot capacity of Mac II to 14 slots. Expanse II $1995; Expanse II/SA $1495. Second Wave, 512/343-9661.

FS102 Hard Disk/Tape Backup Unit An 88MB hard disk with access time of 18 ms and a 60MB TEACV tape drive that backs up data at 3.5MB per minute. Management software provides hard disk partitioning, password protection, performance timing, and manual head-parking capabilities. $3995. Everex, 415/498-1111.

HammerTape Tape Drive Tape drive with 150MB and 300MB capacities. 150MB unit backs up at 8MB per minute; 300MB unit, at more than 14MB per minute. Backup software supports file-by-file and image backups, and A/UX operating system. HammerTape 150 $1895; HammerTape 300 $2895. FWB Software, 415/474-8055.

Insite Model I325 Floptical Disk Drive Entry-level, high-capacity disk drive with 25MB unformatted removable disk storage and 20.8MB formatted memory. Plugs into SCSI host adapter for the Mac. Single unit $500; volume discount available. Insite Peripherals, 408/727-8484.

Mac/DOS SE MS-DOS coprocessor board for the Mac SE. Lets users run MS-DOS and Mac software simultaneously. Comes with disk-transfer and file-conversion utilities, plus cable to transfer files from PC to Mac. $795. PerfecTek Corporation, 408/263-7757.

MacStor Capsule Internal hard disk dealer's kit. Set the interleave and choose from six different SCSI drivers with SilverLining disk-management software. AppleTalk users can share hard disks over the phone or over AppleTalk cabling with SilverServer networking software. Can be installed on a two-floppy SE without replacing the upper floppy drive. $299. LaCie, 503/684-0143.

Mac II–Compatible Color Monitors Color monitors designed for CAD/CAM and similar applications. Available with 15-inch or 19-inch CRTs, at 1024-by-768-pixel resolution. 15-inch model $2195; 19-inch model $2995. Pixelink Corporation, 508/562-4803.

Mac II–Compatible Color Monitor

MBC-SE-625 Mac SE Expansion System Consists of an MBC-625 system board, separate enclosure with necessary power supply, SE Bus Extender board and interface, and all required cables. $1890. MetraByte, 508/880-3000.

MBC-625 Base Data Acquisition Board Data acquisition board for the Mac II and SE. Consists of multifunction NuBus-compatible base board that is capable of accepting piggyback boards. $1290. MetraByte, 508/880-3000.

MC3200NU Coprocessor A 20 MFLOPs-per-second, 10 MIPs coprocessor for the Mac II aimed at 32-bit, floating-point intensive applications. This single-slot processor board executes computation-intensive vector and scalar operations for simulation, modeling, signal processing, image processing, and PostScript support. 2MB system, h/w only, $10,000; FORTRAN and C development environment $8500. Mercury Computer Systems, 508/458-3100.

(continues)

NuView Image processing board for the Mac II. An 8-, 16-, or 24-bit color-image-capture board that digitizes and manipulates real-time images from standard NTSC or RGB source, such as video camera or VCR. Color QuickDraw–compatible. $2099. AST Research, 714/863-1333.

PC-685 Input Device Input device for serial connections (RS-232) on the Apple Desktop Bus. Converts output from any RS-232 device to keyboard data for input into any application. All-metal housing. Compatible with Mac SE, Mac II, and Apple IIGS. $475. TPS Electronics, 415/856-6833.

PhoneNet Repeater Repeater for PhoneNet System. Two-port device that reclocks, equalizes, and amplifies AppleTalk signals. $495. Farallon Computing, 415/849-2331.

PM 1200 SA Mini Modem Miniature 1200-baud, Hayes-compatible external modem. Features autodial, autoanswer, pulse or tone dialing with volume-controlled speaker. Hookup through RS-232C connector and RJ11C telephone jack. $119. Practical Peripherals, 818/991-8200.

PocketHammer Hard Drive External high-capacity SCSI tape subsystem for the Mac. Compact; available in capacities of 40MB, 80MB, 100MB, and 200MB. Average disk access times range from 14 to 18 ms. $1295 to $2895. FWB Software, 415/474-8055.

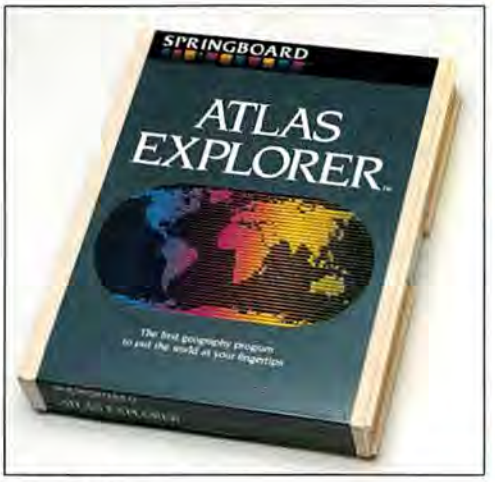
QT-Mac40 Cartridge Tape Drive A 40MB cartridge tape drive. Uses DC 2000 or equivalent mini, ¼-inch data cartridge. Connects directly to the SCSI port on the Mac Plus, SE, and II. Has Apple read-write compatibility, multiple-tape backup, and Tecmar's PowerTag file-selection features. $1395. Tecmar, 216/349-0600.

Ultra 16 and LM-317 Monitors Mac-compatible monitors. The 16-inch Ultra 16 offers autosynchronous scanning, automatic picture sizing, and infinite color palette in analog mode and 8, 16, or 64 colors in TTL mode. LM-317 is a landscape-mounted monochrome display featuring 1664-by 1200-pixel resolution and paper-white phosphor for sharp characters and detail. Ultra 16 $1375; LM-317 $949. Princeton Graphic Systems, 609/683-1660.

Westcom SCSI Hard Drives External and internal model SCSI drives for the Mac Plus and SE. Includes 15MB–20MB public domain software and stackware library with DAs, communications, utility, word processing, and database software. Also includes two SCSI ports, and AC jacks. Internal drives start at $415; external drives start at $519. Westcom Computer Systems, 919/746-4961.

SOFTWARE

Atlas Explorer World geography drill and practice software. Has 37 geographical maps, and information on state and province boundaries. Will quiz you on locations or general information for a given region. 1MB min. memory. $49.95. Springboard Software, 612/944-3915.



Atlas Explorer

Bookends for Mac HyperCard stack reference-management system. Printouts that can be customized; word processor–style text editor. 1MB min. memory. $99.95. Sensible Software, 313/528-1950.

Components General Ledger First in a series of three accounting modules. Flexible set-up; unlimited custom journals, such as cash receipts and disbursements; and forms-oriented output. 1MB min. memory. $595. Satori Software, 206/443-0765.

Components General Ledger

DAtabase Data management DA that files a variety of information from color pictures to multifont text to calculated figures. 512KE min. memory. $129.95. Preferred Publishers, 901/683-3383.

DTP Advisor HyperCard application that combines a graphic-design tutorial with a project-management database and interactive set of forms. Tutorial covers layout, typography, and printing. 1MB min. memory. $79.95. Brøderbund Software, 415/492-3200.

Focal Point II Time- and schedule-management program with reporting capabilities. All functions are linked. Does project management and task tracking. 1MB min. memory. $199.95, $89.95 for registered Focal Point owners. TenPoint0, 415/329-0500.

Hard Disk DeadBolt Security utility program that protects applications and data files through encryption. Supplied as either application or DA. Compatible with AppleShare file server and MultiFinder. 512KE min. memory. $89.95. FWB Software, 415/474-8055.

HyperADC-1 HyperCard stack for use with ADC-1 peripheral data collection unit or in simulated mode. Provides data acquisition and control while enabling the Mac to monitor its external environment. 1MB min. memory. $45. Remote Measurement Systems, 206/328-2255.

HyperAnimator Random-access animation tool. Enables you to create and control lip-synchronized talking heads (sound-synchronized images) on your computer. Converts text into a phonetic stream for automatic speech synchronization. 1MB min. memory. $149.95. Bright Star Technology, 206/885-5446.

Hyper Family-Tree HyperCard stack that records and displays genealogy information. Use it to make pedigree charts, trace family lines, and produce birthday calendars. 1MB min. memory. $49.95 plus $3 s/h. Leister Productions, 717/697-1378.

(continues)

Macintosh Accessories

Mac II Workstation

Everyone who needs the power of the Mac II also needs the space that the Monitor and Processor occupy. With no desk space to organize work and lay out projects, the Mac II's effectiveness is limited. The Mac II Workstation takes a totally new approach to workstation ergonomics. It provides a unique arm suspension system and shelf area giving the operator the ultimate in adjustability and space savings.

$530.00

MacTilt SE

The Mac SE sitting on the desk leaves the screen too low for comfortable operation. MacTilt SE elevates the Mac 4" and provides 30° tilt and 360° rotation for better viewing and greater operator comfort.

$89.95

Mouse Cleaner 360°

By regularly cleaning your Mouse, you can eliminate sluggish operation and expensive repair bills. By removing the grime from the tracking rollers, free cursor movement is quickly restored. Compatible with Macintosh, IBM, and any Mouse using either a 7/8" or 1" positioning ball.

$16.95

MacTilt for Mac II & Large Screens

The same outstanding features and user benefits of the MacTilt SE are now available for your Large Screen Display or Mac II Monitor. Call for specific models.

$89.95 - $99.95

The Muzzle

The Muzzle protects your confidential files, documents, and software on your hard drive by preventing the Mac SE from being powered up. Models are also available which allow operation of the Mac SE, yet prevent access to the 3.5" disk drive for showroom and software demonstrations. **$69.95**

Mac Extension Cables

Ergotron's Extension Cables allow the user to position the Monitor or Keyboard up to 8' away from the Macintosh SE or Mac II.

$30.00-$45.00

Ergotron Accessories are available at your local Apple Dealer or Distributor including Bonsu, Micro D, and Ingram. In Canada contact Softcode.

Ergotron, Mac II Workstation, and MacTilt SE are registered trademarks of Ergotron, Inc. Mouse Cleaner 360° is a trademark of Ergotron, Inc.

ERGOTRON®

3450 Yankee Drive
Eagan, MN 55121
612/452-8135 • 800/888-8458

Circle 148 on reader service card

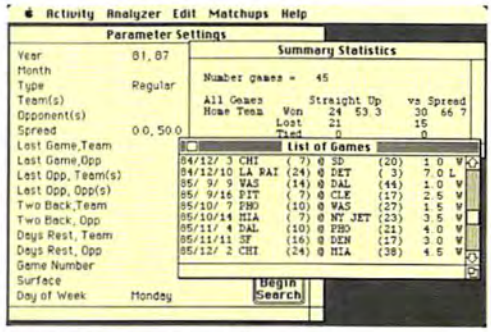
Instant Mail Manager Communications package gives Mac users access to Western Union's EasyLink electronic mail service. Binary file transfer lets you transmit variety of documents. Maintains file and folder icons and formats specific to the Mac. 512K min. memory. $195. Western Union, 201/825-5000.

MacJet Software that allows Macs and PCs to share the same printer. Gives the Mac 512K, Plus, SE, and II ability to print directly to HP LaserJet series and HP-PCL–compatible printers. Acts as a QuickDraw driver and works with most Mac applications. Comes with variety of HP downloadable fonts. 512K min. memory. $249. QMS, 205/633-4300.

MacSchematic Library of electronics symbols for schematic diagrams. Symbols snap to grid so external connectors fall on grid points, and lines connect to symbols without having to be manually aligned. Comes with PICT format and MacDraw II libraries. 128K min. memory. $80 plus $5 s/h. Thinking Tools Software, 301/383-6490.

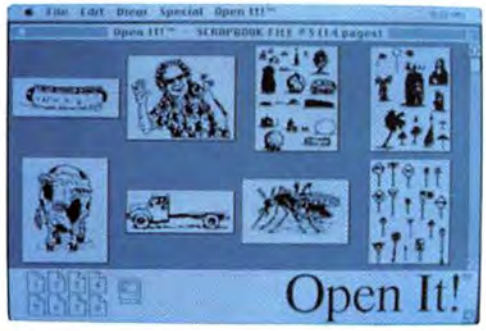
MultiClip Clipboard utility that gives you the ability to have multiple, editable clipboards. Cut, copy, and paste actions can be repeated without losing previously cut or copied information. 512KE min. memory. $69. Olduvai Corporation, 305/665-4665.

NFL Pointspread Analyzer Football information system enables you to search for patterns in NFL games from 1979 to the present. Considers control factors like team, spread range, game number, results of previous games, playing surface, and year. Compares teams and groups of teams. 512K min. memory. $75. Best Bet Software, 415/540-5072.



NFL Pointspread Analyzer

Open It Print-to-disk DA for file sharing, desktop publishing, and telecommunications. Save files from any application in a common format and transfer files without using original applications. View up to eight pages in any file. 512K min. memory. $89.95. TenPoint0, 415/329-0500.



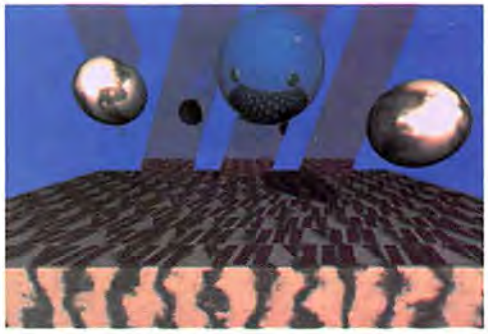
Open It

PC MacTerm/Network Remote computing software that connects Macs and PCs on the same AppleTalk network. Includes PCprograms, MS-DOS, peripherals, and internal boards. 512K min. memory. $395. Dynamic Microprocessor Associates, 212/687-7115.

These two drives are identical.

But there are five differences.

RayTrace Dimensions Ray tracer that supports realistic shadows, reflective (metal or mirror) objects, and refractive objects such as glass balls. Supports unlimited numbers of objects, light sources, and viewer positions. 1MB min. memory. $1495. Visual Information, 818/918-8834.



RayTrace Dimensions

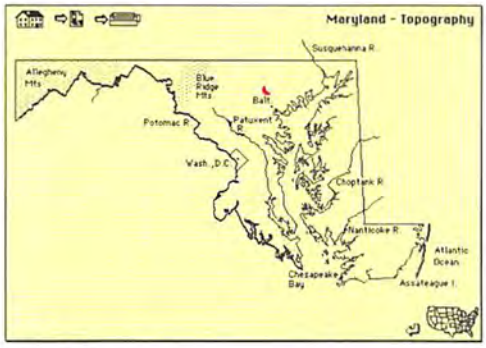
A point-and-shoot video recorder that captures screen activity from the Mac using QuickDraw calls. You can play back screen-recorder tapes in HyperCard; add sound using MacRecorder. 1MB min. memory. $195. Farallon Computing, 415/849-2331.

SportSeries Encyclopedia Volume 1: Golf First in a series of HyperCard programs designed for sports league management. Gives rules and regulations of the game, provides handicap regulations, explains calculation methods, and answers questions about the game of golf. Bowling and Softball programs are next volumes in series. 1MB min. memory. $39.95. Excalibur, 716/377-1351.

SQL and dBase III/Plus Toolkit MACYACC Language tool kit that allows SQL and dBase III/Plus languages to be embedded in software applications. Runs in conjunction with Abraxas Software's existing MACYACC products, which generate source code for query languages. 1MB min. memory. $395. Abraxas Software, 503/244-5253.

Stack Starter Collection of scripts, icons, sounds, XCMDs, and XFCNs designed to create stacks. You can extend the catalog by adding new components. Works with all versions of HyperCard. 1MB min. memory. $5. ComputerWare, 800/235-1155, 800/323-1133 in California.

State-Smart United States geography clip-art package containing three sets of bit-mappedart scaled to fit the small screen. Includes outline maps of each of the 50 states; nearly 1200 city locations; and every major lake, river, reservoir, and mountain range. 1MB min. memory. $49; $59.95 HyperCard stack. HyPerFormance, 503/758-3429.



State-Smart

Top Honors Certificate program that produces custom text, and graphics that give the appearance of a watermark. Select bor-

(continues)

The hard drive with the Apple label is a Quantum ProDrive™, shipped by Apple Computer.

The other is ours, also a Quantum ProDrive™, but with a Maxcess label.

Two identical drives.

Five big differences:

1. Maxcess is 50% less expensive. Compare buying a Mac II and adding Maxcess, to buying a Mac II stock with Apple's drive.
2. Our warranty is 2-years; Apple's is 90-days.
3. We have a toll-free technical support line; Apple has dealer support.
4. Maxcess can be mounted in the SE while keeping both floppy drives; Apple's drive mounts by replacing a floppy.
5. We add FWB's Hard Disk Partition™ and Hard Disk Deadbolt™ software; Apple uses system software common to all Macs.

Identical drives have never been so different.

Tech Spec: 19ms avg.access-time, 4-mb/sec. transfer-rate, 50,000 MTBF, auto-head park.

Maxcess-40 **$647**
Maxcess-80 **$977**
30-day money-back guarantee

MAXCESS
3440 Market Street
Philadelphia, PA 19104
(800) 356-2892
(215) 386-2208

ProDrive is a trademark of Quantum Corporation. Apple is a registered trademark of Apple Computer, Inc. Hard Disk Partition and Hard Disk Deadbolt are trademarks of FWB, Inc. Maxcess is a division of Hardware House, Inc.

Circle 387 on reader service card

der patterns, fonts, and size and alignment of text; specify up to four different signature lines; also specify seals and variety of graphical elements. 1MB min. memory. $99.95. Springboard Software, 612/944-3915.

Trainer's Kit for Microsoft Excel Includes transparencies and illustrations. Teaches how to create a spreadsheet, perform statistical calculations, manage data, and work with sales ledgers and macros. Comes with Instructor's Guidebook, Student Guide and Practice Disk. 512KE min. memory for version 1.5; 512K for earlier versions. $490. Tutorland Corporation, 408/973-0472.

TypeStyler Tool that gives control over typefaces and produces special effects with display type. Prints styled text with smooth edges using PostScript printer. 1MB min. memory. $149.95; $20 for registered owners of PosterMaker Plus. Brøderbund Software, 415/492-3200.

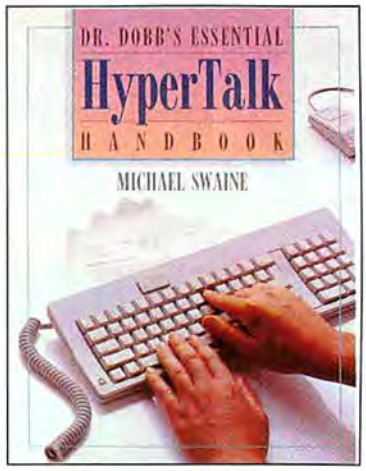
Vantage Using bypass code, this DA opens up to 16 files simultaneously. Has online spell checker, and full macro language capability. 512KE min. memory. $99.95. Preferred Publishers, 901/683-3383.

ACCESSORIES

Command Post Joysticklike accessory that fits over numeric keypad. Works with all keyboards and keyboard-controlled applications and games. Comes with games disk. $11.95. Omni Enhancements, 509/928-3863.

Dr. Dobb's Essential HyperTalk Handbook Written for programmers at all levels. Covers concepts and components of the language, authoring and scripting, programming style, and interfacing to other languages. Technical reference section. $24.95. M&T Publishing, 415/366-3600.

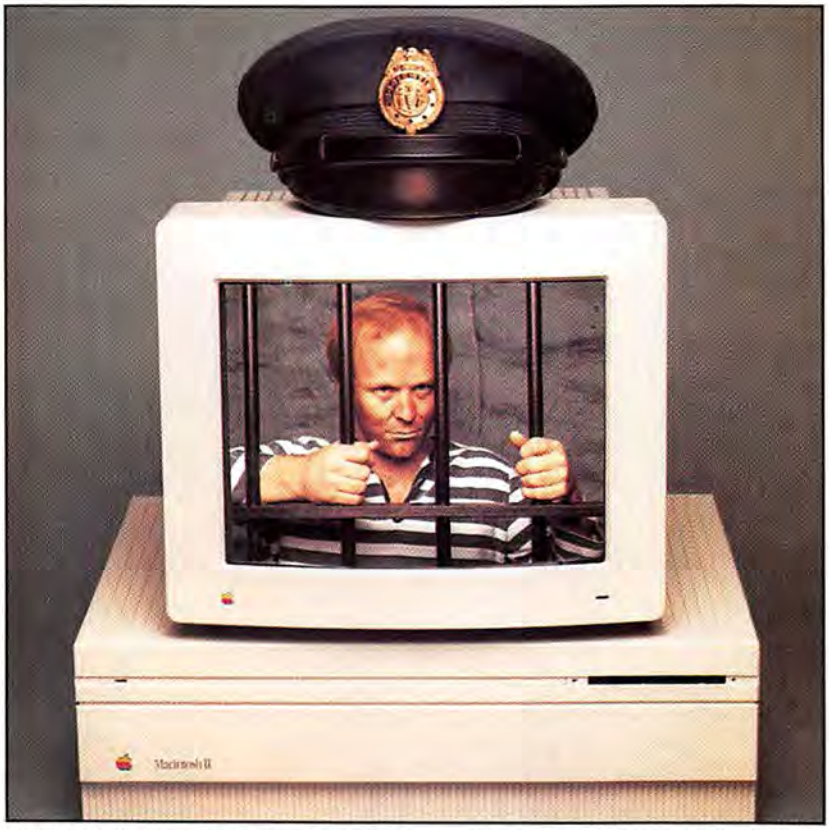
HyperCard Course Training Materials Three modules include fundamental training for accessing and using stacks; describe underlying structure of stacks; and explain added capabilities available at the print, authoring, and scripting levels. Kits include instructor's manual and 12 student data disks.



Dr. Dobb's Essential HyperTalk Handbook

1MB min. memory. Complete set $750. Logical Operations, 800/456-4677.

LifeGuard Computer battery monitor that alerts you with beep and blinking light several weeks before the Mac's battery loses power. $29.95. Advanced Concepts Research, 215/860-1606.



24 BIT
IMAGE
CAPTURE

ColorFreeze24

Computer Friends, Inc.

14250 N.W. Science Park Drive • Portland, Oregon 97229 • (503) 626-2291 • Telex 4949559

Circle 68 on reader service card

The Desk With *Magical* Quality

*E*ven **Houdini** would've been impressed with the new **Manifesto Executive** Desk/Workstation! With the mere press of a button or the turn of a key your computer lifts up, ready for work. Finished? Push the button again and down it goes, desktop flush! Your high quality executive desk transforms itself instantly into a hi-tech work station with your computer (Mac, IBM, or clone) safely inside the automatic pedestal.

Your printer & supplies get plenty of space in their own easy glide drawer...it even accommodates your laser printer!

And here's some more magic...**Quality!** The **Manifesto** is hand-made of oak—not particle board. And each desk is hand-rubbed with a Danish oil finish for long lasting and functional beauty!

Oh yes...lest we forget. There's one MORE bit of magic in our bag of tricks:

FREE SOFTWARE!

Buy a **Manifesto Executive** Desk/Workstation and we'll treat you to $395.00 worth of your favorite software! Just call our toll free number for details.

Free software, free call and a free fact-filled full color brochure! Call today.

$395.00 Software FREE w/purchase

the Manifesto

1-800-446-5991
619-466-5991 (within CA)

Or write: Sunrise Technologies • P.O. Box 1742 • 3715 Corona St., #6 • La Mesa, CA 92041

From $1,995.
Natural, medium and dark walnut, white wash finish.

The Manifesto is a registered trademark of Sunrise Technologies. The Manifesto design patent-pending. Macintosh is a registered trademark of Apple Computer, Inc. IBM is a trademark of International Business Machines. Dealer inquiries are most welcome. Allow 2-4 weeks for delivery.

Circle 389 on reader service card

FOCAL POINT II

"I got caught—underdressed for success. Missed a meeting with the boss, lost a million-dollar contract, forgot our anniversary. Don't get caught—without Focal Point II."

Don't go to work without it!

Focal Point II will manage your time, tasks and contacts. So you can keep your eye on the big picture.

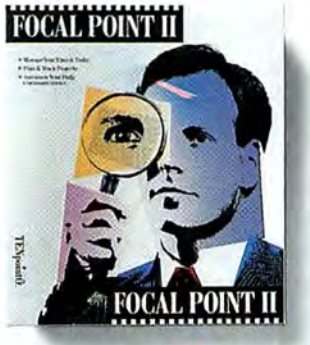
Save Time By Managing Your Time. With the linked daily and monthly calendars and To-Do list, you'll never miss a meeting or forget a "must-do." You won't just track your priorities, *you'll get them done*—and if you don't, Focal Point II will carry them over to tomorrow's list, automatically.

Plan, Execute, And Track Projects with ease and efficiency. Milestones, budgets, clients, and vendors are at your fingertips, ensuring on-time, under-budget, and successful projects.

Strengthen Your Network With Prompt Communications. Instant form letters, auto-dialed phone calls, and LAN support for electronic messaging and task delegation, improve your network of contacts and associates. Get dressed for success with Focal Point II. Then roll up your sleeves and get down to business.

Switch instantly to any Mac application, then automatically return to Focal Point II where you left off.

Put it all in your briefcase. Focal Point II's customized reports fit popular personal organizers such as DAY-TIMER™ and Time/Design®



TENpointŌ

Upgrade Now, Save up to $160

Upgrade from *Focal Point* to *Focal Point II* (a $199.95 value) for just $39.95 before 1/31/89 ($89.95 thereafter). Send the first page of your *Focal Point* manual (originals only) along with your check or money order (add $4.50 shipping and handling) to: *Focal Point II Upgrade,* P.O. Box 8123, San Francisco, CA 94128.

© 1988 TENpoint0 P.O. Box 3048, Menlo Park, CA 94025. Distributed by MEDIAGENIC.

Circle 271 on reader service card

The Macintosh Bible: Stax Edition
HyperCard version of the Macintosh Bible. Comes on three 800K disks, and includes softcover edition of the book, and reference card called Hints, Tips, and Shortcuts for the Macintosh. $79.95. Stax, 512/467-4563, 800/622-7829.

The Mac II Workstation Adjustable workstation that suspends the Mac II or SE off your desk. Processor Shelf is raised above monitor. Hydraulic-powered radial arm and tilt/swivel assembly adjust monitor height and position. Holds CRTs from 12 to 19 inches. 30 inches wide $540; 20-inches wide $530. Ergotron, 612/452-8135, 800/888-8458.

The Mac II Workstation

Perma-Charts Macintosh Shortcuts I & II, Zapf Font Guide, and Introduction to HyperCard laminated reference cards. Notebook size $2.95; wallet size $2.35. Papertech, 416/856-2577.

QuikNet Cabling system connects computers and peripheral devices in a network. Converts signals for data transmission and exchange over modular cables. Can extend more than 3000 feet without data loss. May be used with existing phone system wiring. $59. Belkin Components, 213/515-7585.

Trim Trak Hand-held margin trimmer for tractor-fed printer paper. Trims edges off up to eighteen sheets of paper at once depending on thickness. $12.95. Lund Company, Ltd., 415/543-7356.

Word Power: The Complete Guide to Microsoft Word for the Macintosh Offers a support system for beginning to intermediate Word 3.0 users. Readers can ask the author questions through the electronic bulletin board set up specifically for that purpose. Step-by-step diagrams, and tips and techniques chapter. $19.95. Scott, Foresman and Company, 312/729-3000. □

Trim Trak

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. We reserve the right to edit press releases.*

AnthroBench™

The workbench that is incredibly strong. Designed with a space saving arm. Cable management track. Height adjustment. Options to add.

Call us: 800-325-3841

5 YEAR WARRANTY

Made in U.S.A.
Holds up to 600 lbs.
60" wide x 36" deep.

Circle 306 on reader service card

ANTHRO

Anthro® Corporation
Technology Furniture
3221 N.W. Yeon St.
Portland, OR 97210
503-241-7113

Anthro Corporation is a subsidiary of Tektronix, Inc..
Anthro is a registered trademark of Anthro Corporation.

CMO Icon Review's Prices Are Made To Order

Two Great Buys

MacDIRECTOR

...At Last A Power Director That Fits A Mac

$139

The one and only MacDirector designed to perfectly fit a Mac in size, color, ergonomics, and aesthetics while providing maximum protection from AC line and modem line surges, spikes, and EMI/RFI noise. The MacDirector puts all the on/off power control of up to five pieces of equipment at your finger tips, while elevating your Mac to a better desk height, storing your diskettes, and even providing a home for your mouse.

IR2777

We stock over 4,000 products! Call today to find out about them!

In U.S.A.

800/228-8910

Other Areas call: 717-327-9575, Fax: 717-327-1217
We welcome orders from Educational, Governmental and Corporate Organizations
CMO Icon Review, 101 Reighard Ave., Dept.: N1, Williamsport, PA 17701

Icon Review by CMO: Your clear choice in the Macintosh marketplace

Over 400,000 SATISFIED CUSTOMERS • MAJOR CREDIT CARDS ACCEPTED

POLICY: Add 3% ($3.00 minimum, 2.00 for C.O.D.) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery, use your credit card or send cashier's check or bank money order. Credit cards are not charged until we ship. Pennsylvania and Maryland residents add appropriate sales tax. All prices are U.S.A. prices and are subject to change. All items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee. We are not responsible for typographic or photographic errors.

MEMBER MMC MICROCOMPUTER MARKETING COUNCIL of the Direct Marketing Association Inc

MAGNAVOX Analog Color MAC Display

... works better and costs less

$519

The new Magnavox Analog Color (MAC) Display was specifically designed and engineered to compliment the Macintosh II system. The 14'' display is equipped with 0.29mm dot pitch CRT for superb resolution and polished dark glass for crystal clear images. An integrated tilt-base provides the ultimate in user comfort.

NAP080

CMO Icon Review

Macintosh is a trademark of Apple Computer, Inc.

Quick Tips

Answers to your questions

by Lon Poole

Malignant tumors, benign tumors, or vital organs—which do the Mac's surrogate function keys (F-keys) most closely resemble? Five years ago the original Mac development team debated that question and decided to keep the ten F-keys that come with the Mac Operating System. Typing ⌘-Shift-1, for instance, ejects the disk in the internal drive. You should be able to save screen snapshots as MacPaint files with ⌘-Shift-3, but it doesn't work with large or color screens or with screen-extender software. And it won't work if you're already pressing the mouse button. To capture a color image, a large screen image, or any screen image with a menu pulled down, you must replace or augment the standard ⌘-Shift-3 with Screen Dump II or Capture.

Capture is a commercial program ($59.95 from Mainstay, 818/991-6540). It copies any part of the screen image to the Clipboard, from which you can paste it into any document, or it saves the image as a standard PICT II document. (For more information, see "The Chartreuse Scroll Bar," *Reviews, Macworld,* June 1988.)

Screen Dump II is a shareware package of three screen-snapshot F-keys. One F-key saves any part of the screen image as a MacPaint document. Another F-key saves a color screen as a PixelPaint, GIFF, GrayView, or Startup Screen document. Screen Dump II's third F-key sends any part of the screen image to an ImageWriter or a LaserWriter to print. Screen Dump II is available from online information services (CompuServe's Macintosh Personal Productivity forum, Data Library 4, file SD) and from user groups (the Macintosh User Group of the Boston Computer Society, 617/625-7080). If you keep it, send the author $12. You can also get Screen Dump II directly from the author, Mike Wittingham (send $12, a disk, and a self-addressed, stamped envelope to 215 Thayer Pond Rd., Wilton, CT 06897).

Color Snapshot
To take a snapshot of a color screen or a big screen, replace the standard ⌘-Shift-3 F-key with Capture or Screen Dump II.

Text Format Changes

Making identical changes to attributes such as font, size, and style of text fragments scattered throughout a document is easier with some applications than with others. ReadySetGo and FullWrite Professional, for instance, let you define custom styles (also called style sheets) for individual characters. For example, you might define a custom style for book titles. By changing a custom style's specifications, you automatically change all text to which you have applied that custom style in the document.

In contrast, Microsoft Word does not let you define custom styles at the character level—only at the paragraph level. However, you can use Word's Find Formats command (⌘-Option-R) and its Find Again command (⌘-Option-A) to change text attributes semiautomatically.

First, select some text that has the attributes you want to change. Before changing the attributes, press ⌘-Option-R to find and select the next instance of the same attributes. Change the selected text's attributes using menu commands or keyboard shortcuts. To change underlining to italics, for example, press ⌘-Shift-U to remove underlining and then press ⌘-Shift-I to apply italics. After changing the text attributes, press ⌘-Option-A to find the next instance of text with the same attributes as your original selection. (If you press ⌘-Option-R again, Word finds the next instance of text having the same attributes as the current selection, which you just changed.) Note: The Find Formats command ignores font, size, superscript, subscript, expanded characters, and condensed characters if your original selection varies from Plain Text style in more than one attribute.

To further automate changing text attributes in Word, use a macro utility such as Apple's MacroMaker, CE Software's QuicKeys, or Affinity's Tempo II. Using MacroMaker, for example, you can record a

(continues)

Lon Poole answers readers' questions and offers advice in his monthly Macworld *column. Many of the tips he's compiled can be found in his book* Mac Insights *(Microsoft Press, 1987).*

macro that with one keystroke changes the attributes of the current text selection and activates ⌘-Shift-A to find and select the next text to be changed.

Q Editing HyperCard Patterns

I recently tried to alter some of the predefined HyperCard paint patterns. Using ResEdit, I changed a few patterns in HyperCard's PAT# resource and saved changes. I anxiously restarted HyperCard, but much to my chagrin, my personal patterns did not appear on the Pattern menu. Upon returning to ResEdit, I verified that the PAT# resource had been changed. Why don't the changes appear on the Pattern menu?

Jeffrey R. Smeenge
Ann Arbor, Michigan

A HyperCard uses its PAT# resource to set up the initial Pattern menu of a new stack only if you deselect the Copy Current Background option in the New Stack dialog box. A new stack created with that option selected gets its initial Pattern menu from the stack whose background it inherits. Existing stacks have their own Pattern menus, which are independent of the PAT# resource, and you can customize them by using the Edit Pattern command in the Option menu.

You can copy custom patterns from stack to stack. Draw samples of the custom patterns from another stack and copy the samples to the stack whose Pattern menu you want to change. Tear off that Pattern menu. Double-click on a pattern in the menu to bring up the pattern-editing dialog box, and click on one of the sample patterns outside the dialog box to pick it up; repeat for each pattern you want to pick up. The script in "Pattern Menu Copier" relieves some of the tedium.

Unfortunately, you cannot copy an entire Pattern menu by copying a PAT# resource using ResEdit. For reasons known only to members of the Acme Dot Company bowling team, a stack's Pattern menu is not kept in a PAT# resource in the stack document.

Q AppleWorks on Mac

I recently purchased a Mac SE after owning an Apple IIe for several years. I would like to sell the Apple IIe, but don't want to reenter a number of AppleWorks spreadsheet and database files. How can I transfer my files? Also, I am interested in software that would allow my Mac SE to emulate an Apple IIe, so that I can keep using some IIe programs.

William Bartel
Anchorage, Alaska

A You can transfer files between Apple II ProDOS disks and Mac disks using the Apple File Exchange (AFE) application on your Macintosh. AFE reads 3½-inch ProDOS disks you insert in the Macintosh disk drive. If your AppleWorks files are on 5¼-inch disks, you must copy them to 3½-inch disks using an Apple II. Unless you want to copy only plain text, you'll also need a special translator file for AFE, such as Works-Works Transporter, which enables AFE to convert AppleWorks files—word processor, spreadsheet, and database—to Microsoft Works files on the Mac. When you open the converted files in Microsoft Works, they contain all the data of the AppleWorks originals and as much of the formatting as possible.

AFE is probably on one of the disks that came with your Mac. If not, you can get it with the latest System software update disks from your local Apple dealer for less than $50. Works-Works Transporter is available on CompuServe (file name WKSAFE.SIT in Data Library 4 of the Macintosh Personal Productivity forum) for the cost of downloading.

You can run Apple II software on a Macintosh by using the Apple IIe emulator II in a Mac ($149.95 from Computer:applications, 919/846-1411). On a standard Mac 512K, Plus, or SE, Apple II software runs at 40 to 50 percent of normal speed, which may not be satisfactory for games.

Pattern Menu Copier

This button script helps you copy the patterns from the current stack's Pattern menu to the Pattern menu in any other stack.

```
on mouseUp
  set cursor to 4 --watch
  doMenu "New Card"
  --1st, draw samples of all patterns in this stack
  choose rectangle tool
  set filled to true
  repeat with n = 1 to 40
    set pattern to n
    put ((n-1) div 10) * 36 + 300 into h
    put ((n-1) mod 10) * 26 into v
    drag from h,v to h + 36, v + 26
  end repeat
  --2nd, copy the samples
  choose select tool
  drag from 300,0 to 444,260
  doMenu "Copy Picture"
  doMenu "Delete Card"
  --3rd, paste into the destination stack
  go to "the destination stack"
  if the result is not empty then exit mouseUp
  doMenu "New Card"
  doMenu "Paste Picture"
  --4th, pick up patterns one at a time
  show pattern window at 0,0
  put "Click a sample to replace this pattern, and then click OK"
  repeat with n = 1 to 40
    hide message
    show message at 20, 290
    set pattern to n
    doMenu "Edit Pattern..."
  end repeat
  doMenu "Delete Card"
  choose browse tool
end mouseUp
```

Q A PICT Is...

What is PICT used for? SuperPaint offers it as an option for saving a document.

Moki Goyal
Sudbury, Massachusetts

A PICT is a standard, general-purpose Macintosh graphics format. Many graphics, desktop publishing, and word processing applications can open and display, with full fidelity, documents saved in PICT format. The Clipboard and the Scrapbook use PICT format for all graphic images. In contrast, very few, if any, applications besides SuperPaint can open and display documents saved in its specialized private format.

The PICT format defines a graphic image, or picture, using the QuickDraw graphics imaging language built into the ROM (read-only memory) of every Macin-

(continues)

Special Anniversary Offer

5 YEARS STRONG

We're celebrating our fifth year anniversary. Join us for incredible savings on every issue of Macworld.

Discover Macworld with a Special Anniversary Savings Rate!

12 ISSUES JUST $24

MACWORLD

POWERFUL

Each issue is packed with powerful techniques, straight-shooting reviews, tips and how-tos.

☐ YES, send me one year (12 issues) for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Even bigger savings! Send me two years (24 issues) for just $37.90.

Name _____

Company _____ ☐ Please Bill Me

Address _____ ☐ Payment Enclosed

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

4AAD5

INTUITIVE

Develop an understanding of the Macintosh with thought-provoking articles and insightful features.

☐ YES, send me one year (12 issues) for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Even bigger savings! Send me two years (24 issues) for just $37.90.

Name _____

Company _____ ☐ Please Bill Me

Address _____ ☐ Payment Enclosed

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

4AAE2

FRIENDLY

User-friendly hints and applications to make using the Mac more fun and productive than ever before.

☐ YES, please send a one year subscription (12 issues) to my associate or friend listed below for only $24.00. That's almost 50% off the annual cover price of $47.40.

☐ Please Bill Me Later.

Send Gift To:

Name _____

Company _____

Address _____

City/State/Zip _____

Send Gift From:

Name _____

Company _____

Address _____

City/State/Zip _____

This rate limited to the USA and its possessions. Basic subscription price is $30 for 12 issues. The annual cover price is $3.95 per issue, $47.40 for 12 issues. Please allow 6 weeks for delivery of the first issue.

MACWORLD

2AKR5

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD
Subscription Department
P.O. Box 51666
Boulder, CO 80321-1666

SAVE NEARLY 50%

When You Subscribe Today!

No other magazine helps you like Macworld. Powerful, Intuitive and Friendly. Macworld is a wealth of information which keeps you up to date on the latest products, news, tips and tactics. Dedicated exclusively to the Mac II, SE and Plus.

We look out for your interests. We tell you what's new for the Mac. What it does. Who it's for. Compare similar products–and name names! Discuss pros and cons. Assess value for money for both hardware and software.

Macworld helps you make the most of your Mac.

MAIL THE ATTACHED CARD TODAY!

One Drive Fits All.

Only Tecmar Can Back Up All Three With One Tape System.

It's what you told us you need. A single tape backup system to work with your PS/2s,™ your classic-bus PCs and – here's the clincher – your Macintosh® IIs. Three very different architectures supported by one high-speed, high-capacity tape system.

Tecmar's not only done it, we've made it easy! Any external Tecmar QualityTape™ drive from 60-to-150MB capacity, including the ones you may already own, can now be shared between PCs, PS/2s and Mac IIs. The QT drives easily connect to a Tecmar host adapter board inside the computer – including the brand-new NuLink™ Host Adapter for Mac II. If you have more than one architecture, then this is the solution that makes sense! And only Tecmar has it.

More companies choose Tecmar tape systems than any others – for our speed, reliability and support. And now, one drive fits all. For more information, call Tecmar at (216) 349-1009 or (800) 624-8560. Or write Tecmar, Inc., 6225 Cochran Road, Solon, Ohio 44139-3377.

TECMAR

A REXON COMPANY

©Copyright Tecmar, Inc., a subsidiary of Rexon, Inc., 1988. All rights reserved.
All Tecmar products are trademarks or registered trademarks of Tecmar, Inc. Other brand and product names are trademarks or registered trademarks of their respective companies.

Circle 321 on reader service card

tosh. A PICT image consists of objects such as lines, rectangles, ovals, arcs, and minimally formatted text. Individual objects can be edited—resized, filled with any pattern, text-edited, and so on—any time after they are initially drawn. By contrast, bitmapped graphics created by MacPaint or the paint layer of SuperPaint define a picture as a pattern of dots that can only be altered dot by dot.

Q Mini-Circular 8

I want to make a cable to connect my Mac Plus and my AT&T PC6310 as described in *The Well Connected Macintosh* (Harcourt Brace Jovanovich, 1987) by Tony Bove and Cheryl Rhodes. However, I can't find the requisite mini-circular 8 connector.

Anthony Tuorto
Fort Salonga, New York

A If your local electronics parts store can't help you, you can order the connectors from Electronics Plus in San Rafael, California (800/321-4524). If you have steady hands and good eyes for close work, you may be able to work with the $3 solder-type connectors (PAGMD-8P). For a more rewarding cable-fabricating experience, splurge on the $17 connector that comes prewired to a 6-foot cable (PAGCA-508).

Q MacSssh

I have an Apple HD20SC. It's strong, but not so silent. Is there a solution to the loud fan of the HD20SC or of the Mac II, for that matter?

John E. Herzenberg
Ann Arbor, Michigan

A Early HD20SC hard disk drives did have noisy fans, but for the last two years or so the chief noisemaker has been the hard disk drive mechanism itself. If the noise you loathe steadily gets louder for the first 8 to 10 seconds after switching on the drive, you're hearing the drive mechanism. If you have an early HD20SC with a fan that drowns out the disk mechanism, get a replacement fan from an obliging authorized Apple dealer who sells service parts separately.

The standard fan inside the Mac II power supply is a Matsushita Panaflo DC fan measuring 3 inches square by 1 inch deep, drawing 0.45 amps, and blowing 31 cubic feet of air per minute. Two companies make Mac II power supplies—Aztec and Sony—but both use the same fan. You can replace it with a much quieter fan, such as Radio Shack catalog number 273-243A, a DC brushless ball-bearing unit that draws 0.16 amps and blows 27 cubic feet per minute. To swap fans, you need sundry tools and supplies including screwdrivers, soldering iron, pliers, wire cutters, heat-shrink tubing, and wire ties. You can find a parts list and instructions for the Aztec-built power supply on CompuServe (file MACFAN.SIT in DL11 of the MACPRO forum).

Warning: Replacing the fan will void the manufacturer's 90-day warranty and may void your AppleCare agreement, if you have one. Because the Radio Shack fan outputs about 10 percent less air than the standard fan, you shouldn't use it in a Mac with more than five NuBus cards or in a Mac operated in a hot environment. Replace the fan entirely at your own risk.

Circle 26 on reader service card

Add Bibliographic Power to Microsoft® Word

EndNote Automates Bibliographies!

- Keeps a database of up to 32,000 references.
- Automatically adds a bibliography to the end of your document.
- Formats the bibliography and in-text citations according to the bibliographic style you need.
- Also works with MacWrite® and WriteNow.®
- Desk Accessory allows access to the database from within your word processor.
- Suggested retail price- $129. Demo Disk- $5.

EndNote™

A REFERENCE DATABASE AND BIBLIOGRAPHY MAKER

Niles & Associates, 2200 Powell, Suite 765D
Emeryville, CA 94608 (415) 655-6666

Circle 399 on reader service card

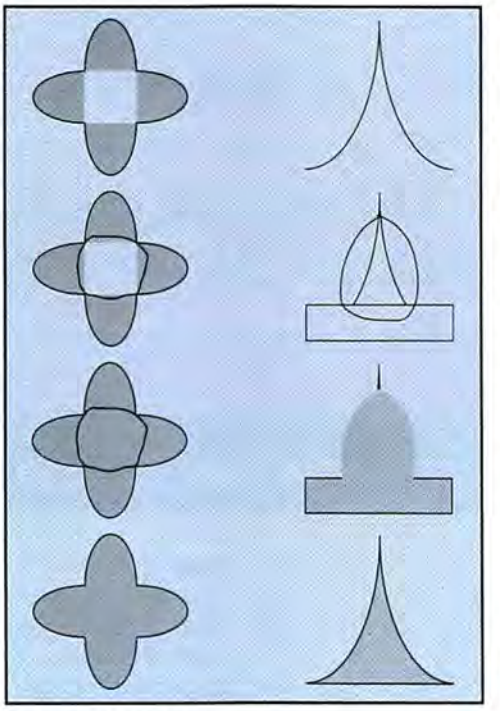
Filling Odd Shapes

Tip: MacDraw often will not completely fill a shape constructed from a grouped collection of arcs and lines. You could trace the shape with the polygon tool to create a similar shape that can be filled. But in most cases I've found that drawing patches with the Freehand and Rectangle tools is faster and easier (see "Pattern Patching").

Henry RD Simpson
Bath, Maine

Typesetting Service Bureaus

Tip: A number of applications including ReadySetGo, MacDraw, and QuarkXpress don't always print the same on your LaserWriter as they do on a service bureau's Linotronic high-resolution printer. To work around this, the service bureau may ask you to send your System file, which it uses to start its Mac before printing your document. But sending a PostScript derivation of the document is faster and cheaper. Because you make the PostScript derivation using your System and screen fonts, it should print perfectly on the service bureau's Linotronic.



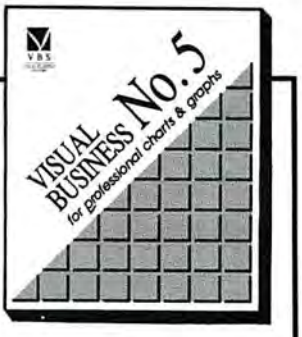
Pattern Patching
To fill a void in a MacDraw shape, draw a patch to cover, make its fill pattern the same as the shape around it, and select None as its border pattern. For a concave shape, use a pattern for the patch fill, but use white for the fill of the arcs.

To create a PostScript derivation from most applications, press ⌘-F within one second after clicking on OK in the Print dialog box. For the best results, temporarily remove from your System Folder any downloadable printer fonts (not screen fonts) that the service bureau already has on its System. Look in the application's folder for the PostScript file (named PostScript and followed by a numeral).

To create a PostScript derivation using PageMaker 3.0, select the Aldus driver and the Linotronic 100/300 printer type (or other type as appropriate) in the Print dialog and then press the Option key while clicking on OK for specific PostScript print options advice.

Louis Peddicord
Timonium, Maryland

We pay from $25 to $100 for tips published here. Send tips or questions (include your address and phone number) to Quick Tips, Macworld, *501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702) or MCI Mail (addressed to* Macworld*). All published submissions become the property of* Macworld. □



SEE IT NOW –It's VISUAL BUSINESS NO. 5 *Charts and Graphics Software for the MAC II*

Send for your **Free** Demo Disk today. It will show you how this new MAC II Charts and Graphics professional package will revolutionize your full color presentation graphics. It's quick, easy-to-use. It has a built-in rasterizer—which makes it device independent. With Visual Business No. 5, you can produce your own 35mm color slides and color hard copies at your own pace and save money, too. Send for your **Free Demo Disk today.**

Visual Business Systems, Inc.
700 Lake Street, Suite H
Ramsey, NJ 07446
(201) 327-2526

Circle 408 on reader service card

THE FINEST NAME IN SIMM (Memory Modules) for MAC PLUS, SE, II

- 1,2,4, or 8 Megabytes
- Top Quality
- Surface Mount CMOS
- Easy to Install
- Guaranteed
- Static Protected

Expand your Mac memory by 1 to 8 megabytes economically. Diamond-Pac® SIMM's are 100% tested, state-of-the-art CMOS DRAM expansion modules manufactured in the USA by Logictron. Each Diamond-Pac® module is shipped with "fail safe" installation instructions, complete testing documentation, full antistatic protection, and a 2 year guarantee. To ensure the best possible price, call for a quote today. Delivery usually within a few working days. Available only from...

AMERICAN MICRO DISTRIBUTORS
16897-D Algonquin, Huntington Beach, CA 92649
714/840-5560 FAX:**714-846-0570**
MC VISA AMEX DISCOVERY
® MAC is a trademark of Apple Computers Corp., Diamond Pac is a trademark of Logictron, Inc.

Circle 403 on reader service card

telemart

Doing Business Since 1980 A Division of CW Marketing, Inc.

The Acknowledged Leader in the Computer Mail Order Industry.

Call About the Availability of Other Products Not Listed.

FREE
AIR EXPRESS SHIPPING
You Pay The Ground Shipping
We Pay The Air Difference

HARDWARE

ACCESSORIES

CURTIS MANUFACTURING
Curtis Ruby $46

EMS
Mac + to Hayes Modem Cable ... Call

FARALLON
Mac Recorder Sound System 118

KALMAR DESIGNS
Micro Cabinet 13
Double Micro Cabinet 18
Triple Micro Cabinet 26

KENSINGTON
A/B Box 57
Appletalk Cable Clips 11
Appletalk Connectors 11
Disk Drive Cleaning Kit 18
Macintosh II Stand 17
MasterPiece 400
Monitor Cable Mac II Ext. Kit 28
Mouse Cleaning Kit w/Pocket 14
Polorizing Filter 30
Printer Muffler 80 40
System Saver Mac (platinum) 48
Tilt/Swivel 18
Turbo Mouse ADB **NEW** 105
Xtra Long ADB Keyboard Cable 23

KRAFT
3 Button Quick Stick 29

ORANGE MICRO
Grappler C/Mac/GS 70
Grappler L/Q 82

SOFTSTYLE
Mac Enhancer 145

SONY
3.5" DS/DD 19
3.5" SS/DD 19

TOPS
Teleconnector DIN-8 35

DIGITIZER

Mac Vision $195

DISK DRIVES MEMORY UPGRADES

AMERICAN MICRO
3.5" 800K Ext. Floppy Drive $182

AST RESEARCH
AST 86 Co-Processor (Mac SE) ... 390
Mac 286 Co-Processor (Mac II) 1,042

BERNOULLI
A220 20 MB Dual 1,765

CMS
Mac Stack 20 MB 509
Mac Stack 60 MB 757
Pro 80 SCSI 80MB 1,025
SD 60 MB SCSI 757
Tape Stack 60 MB Tape Back up ... 675

DOVE COMPUTER CORP
MacSnap 524 199
MacSnap 524E 284
MacSnap 524S 369
MacSnap 548 415
MacSnap 548E 532
MacSnap 548S 586
MacSnap Plus 2 429
MacSnap 2S 428
MacSnap 4S or 4H 913
SCSI Interface/Port 119
MacSnap Toolkit 15

EVEREX
EMAC 20D ..... Call
EMAC 40D ..... Call
EMAC 60T Tape Backup ..... Call

GENERAL COMPUTER CORP
FX-20 Platinum 20 MB 592

IOMEGA
Bernoulli Dual 10 MB 1,520
Bernoulli Dual 20, 5.25 MB 1,765

RODIME
Rodime 20 Plus 585
Rodime 45 Plus 874
Rodime 60 Plus EXT 989
Rodime 140 Plus EXT 1,245
Rodime 450 RX 768
Rodime 1000 RX INT 975
Rodime 1400 RX INT 1,085

TECMAR
Mac 40 MB Tape Back Up 909

INPUT/OUTPUT DEVICES

ABATON
ProPoint $85

MOUSE SYSTEMS
A+ Mouse 56
A+ ADB Mouse 73

ORCHID
Color Vue Se 453

SIGMA DESIGNS
LaserView 15" for MAC SE 1,234
LaserView 19" for MAC SE 1,560
LaserView 15" for MAC II 1,299
LaserView 19" for MAC II 1,625

KEYBOARDS

DATADESK
101 Keyboard $110
101-A DB Keyboard 110

LASER PRINTERS

AST RESEARCH
TurboLaser P/S $3,635

MODEMS

ANCHOR
Mac Pac 2400 ..... $139

HAYES
Smartmodem 1200 284
Smartmodem 1200M/w Software 330
Smartmodem 2400 430

MIGENT
Pocket Modem 103

PROMETHUES
Pro Modem 1200 207

US ROBOTICS
1200 171
2400 295

PRINTERS

GENERAL COMPUTING
Personal Laser $1,389

SCANNERS

AST RESEARCH
TurboScan SF $1,107
TurboScan FLBD 1,237

SUMMAGRAPHICS
Mac Bit Pad Plus 299

MasterCard VISA

- **No charge for VISA and MasterCard.**
- **We Do Not Charge Your Card Until Your Order is Shipped.**
- You Pay the Ground Shipping: 1-10 lbs. $6.00, 11-20 lbs. $10.00 (except Alaska and Hawaii). We Pay the Air Difference.
- Free Air applies ONLY to orders up to 10 lbs. & Over $100.
- All products carry only manufacturer's warranties (including DOA's). We do not honor guarantees, rebates, trial period privileges or promotional programs offered by manufacturers.
- No APO, FPO, or international orders, please.
- **Call before submitting P.O.'s. Ask for National Accounts.**
- Personal and Company checks will delay shipping 3 weeks.
- Prices, terms & availability, subject to change without notice.
- Add 5% for C.O.D. orders.
- **We do not guarantee machine compatibility.**

- To place an order: 1-800-MAC-ONLY.
- To follow up on an order: (602) 944-1037.
- Order Line Hours: Monday-Friday 7:00 a.m.-6:00 p.m. Saturday 9:00 a.m.-1:00 p.m.
- Order Processing (602) 944-1037; 10:00a.m.-3:00 p.m. Mon.-Fri.

telemart

Mailing Address: 8804 N. 23rd Ave./Phoenix, AZ 85021

• We also carry an entensive line of MS, DOS and related products. •

ORDER LINE **1-800-537-6752**

SOFTWARE

ACCOUNTING

Business Sense	$262
Chang Labs Inventory Control	220
Chang Labs Professional Billing	220
Chang Labs Rags to Riches 3-Pak	358
In House Accountant	105
MacMoney	57
Peachtree Back to Basics	140
Satori Legal Billing	287
Satori Project Billing	327

BUSINESS SOFTWARE

Cricket Graph	$90
MS Excel	219
MS Works	165
Statview 512+	163
Sum	53
Works Plus Command	53

CAD PRODUCTS

Cricket Draw	$156
MacDraft	133

COMMUNICATIONS

inBox Starter Kit	$185
inBox Personal Connection	66
LapLink	75
Mac Link Plus	140
Mac Serve	117
Quick Mail	139
Smartcom II	79
Tops for Mac	111

CREATIVE SOFTWARE

ConcertWare +	$33
ConcertWare + MIDI	71
Deluxe Music Construction Set	56
Digital Darkroom	139
Studio Session	42

DATABASE

C.A.T.	$219
DBase Mac	285
Double Helix II	302
Geoquery	274
Omnis 3 Plus/Express	269
Overvue	139
4th Dimension	368

DESK ACCESSORIES

Comment	$47
Disk Tools Plus	28
Quick Dex	28
Smart Alarms Multi User	
Multi-User w/Appointment Diary	79
Smart Alarms	26
SmartScrap & The Clipper	33

DESKTOP PUBLISHING

Pagemaker	$355
Ready, Set, Go!	262
Ready, Set, Show	150
SuperGlue	42

EDUCATIONAL

Math Blaster!	$24
Typing Tutor IV	32

FONTS

Fluent Fonts	$23
Fluent Laser Fonts	43
Fontshare	138
Orchestra of Fonts, Vol. 4	23

GRAPHICS

Adobe Illustrator	$262
Canvas	92
Certificate Maker	20
Click Art Business Images	27
Click Art Christian Images	31
Click Art Effects	27
Click Art EPS Illustrations	69
Click Art Holidays	26
Click Art Letters, Vol. 1	26
Click Art Letters, Vol. 2	26
Click Art Personal Graphics	27
Click Art Publications	27
Cricket Paint	103
Crystal Paint	38
The Curator	66
Desk Paint	64
"Draw It Again Sam"	72
Fontographer	194
GraphicWorks	79
Image Studio	262
Images With Impact	48
Japanese Clip Art	53
Laser Paint B/W	261
Laser Paint Color II	314
MacCalligraphy	98
Mac The Ripper	23
Mac 3-D	117
Pict-O-Graph	97
Picture Base	47
PixelPaint	190
Post Art	33
PosterMaker Plus	33
Print Shop	32
Printworks	40
Super 3-D	139
SuperPaint	71
Videoworks 2	106
WetPaint Clip Art 1-2	38
WetPaint Clip Art 3-4	38
World-Class Fonts! 1-2	37
World-Class Fonts! 3-4	37
3-D Graphics	35

LANGUAGES

Lightspeed C	$93
Lightspeed Pascal	65
MS Basic Interpreter	56
Turbo Pascal	57
Z Basic	111

MATH

Calculate Constr. Set	$28
Calculus	54
Data Desk Professional	250
Eureka: the Solver Mac	122
Pre-Calculus	25
True Stat	25

MONEY MANAGEMENT

Dollars & Sense	$79
Tobias Managing Your Money	114

SPELLING & GRAMMAR

Coach	$47
Coach Professional	92
Coach Professional Multi-User	233
Coach Thesaures	28
Doug Clapp's Word Tools	39
Look up	25
Spellswell	39
Thunder!	28
Word Finder	28

SPREADSHEETS

Mac Calc	$73
Mac Sqz!	42
101 Macro for Excel	34
Trapeze	139

UTILITIES

Calendar Maker	$24
Copy II Mac	18
Disk Express	28
Diskfit	47
Disktop	24
Findswell	32
Icon-It!	38
Multi-User	
Super Laser Spool	186
My Disk Labeler w/Color	32
PowerStation	28
QuicKeys	47
Sentinel	139
Sidekick	57
Stepping Out II	46
Suitcase	37
Super Laser Spool	71
SuperSpool	46
Tempo II	71

UTILITIES & HYPERCARD STACKWARE

Bulkmailer	$70
Bulkmailer Plus	165
Business Class	26
City to City	26
Disk Finder	32
Diskquick	25
Fastback Mac	47
Formset Bus. Forms Edit. 1	45
HFS Navigator	32
Hyperbook Maker	30
Hyper DA	33
Hyper Tutor	24
Laserspeed	52
Macinuse	37
Macsafe	70
My Disk Ladder w/Laser Write	32
The Nightwatch	79
Prototyper	59
Read-it	185
Report!	52
Shanghai	12
Smooth Talker	29
Video Works Hyper Card Driver	54
Video Works II Accelerator	106

WORD PROCESSING

Mindwrite	$91
Mindwrite Express	117

WORD PROCESSORS

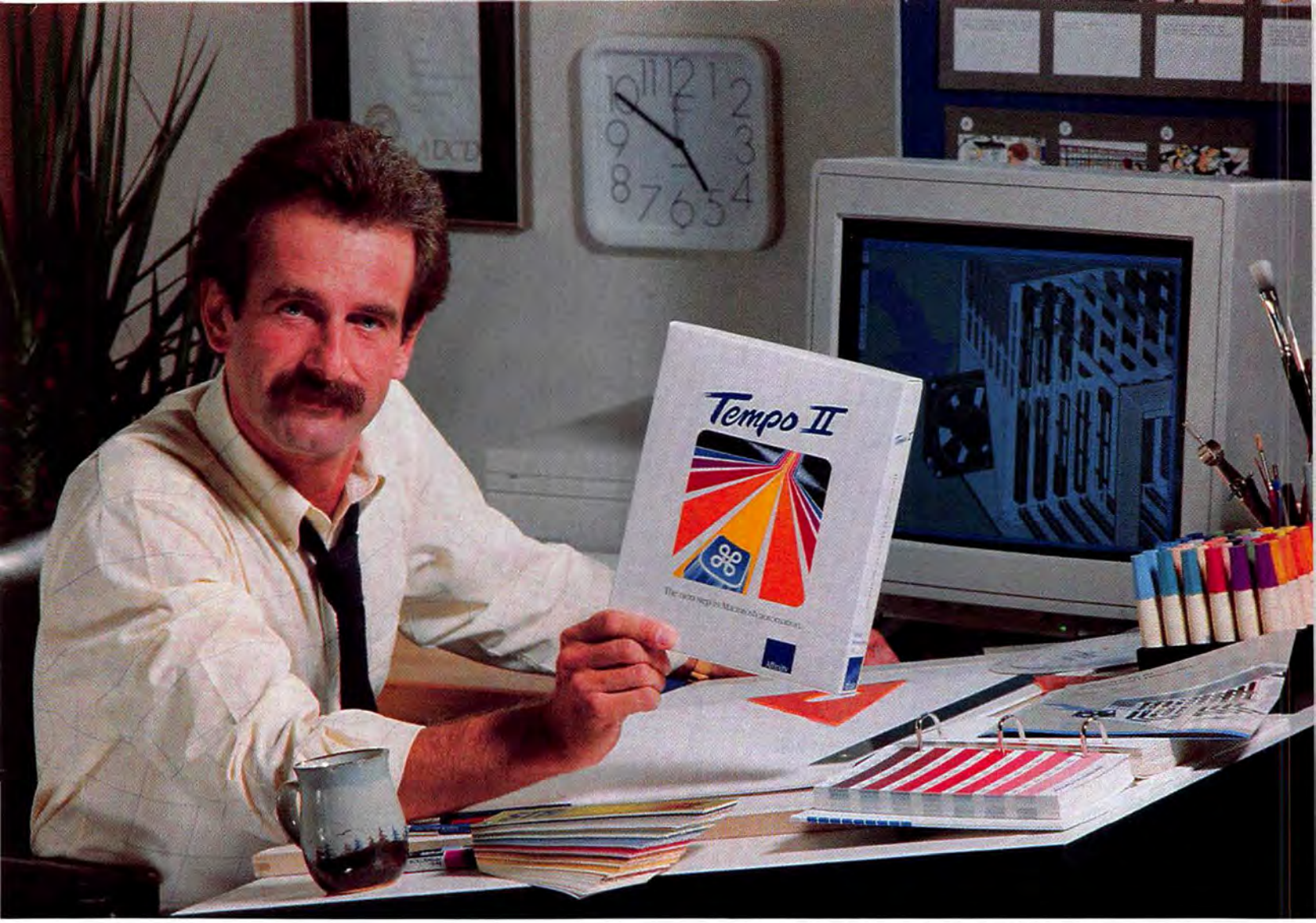
FullWrite Professional	$235
MS Write	77
MS Word	219
Word Perfect	179
Write Now	93

GAMES

Balance of Power	$27
Beyond Dark Castle	24
Chessmaster 2000	27
Dark Castle	24
Déjà Vu	26
Early Games	25
Falcon	29
Ferrari Grand Prix	29
Fokker Tri Plane	29
MS Flight Simulator	28
Patton vs Rommel	23
Shadowgate	28

MEMBER
MMC
MICROCOMPUTER MARKETING COUNCIL
of the Direct Marketing Association, Inc.

Circle 307 on reader service card



"Me and Tempo II™ — Together, we're deadline busters!"

I'm always working under deadline. But with the help of my Mac and Tempo II,™ I get a lot more work done in a lot less time.

I just record any repetitive work once with Tempo II, then I can play it all back as a single command. And that's a macro!

Zap, you're Zapfed

For example, I've got a huge of list of fonts in a long hierarchical menu, but a single keystroke selects Zapf from it. I select a line, hit a key, it's Zapf.

Pow, it's greeked

When I need some text to greek in, a keystroke plays an Autopaste macro that simply pops in my text. It looks good and works fast!

Another example? This odd-sized page layout I'm constantly creating. A Tempo II macro simply sets it up for me–uneven columns, different page size, none of my usual defaults. One keystroke.

1 keystroke = 375 steps

Some jobs are the same thing every week. Like updating a sales map. Tempo II grabs a text file of numbers and pastes each one into its spot on the map. Altogether, that's more than 375 steps. But for me it's one keystroke.

Now that's productivity!

My Mac works, I create

Tempo II can't have my ideas for me. But it can free me from the drudgery, speed up the boring parts, and give me more time for the fun stuff.

That's how Tempo II and I never miss a deadline. Well, hardly ever.

Automate your work!

Simple to use, yet powerful. Tempo II records as you work, so you may replay any number of steps as a single command. Even between applications!

A few features that speed your work:

- Play macros by name or by key code.
- Enter times to repeat "on the fly."
- Transfer between files or applications.
- Return cursor after play.
- "Smart" menu and file selection, window handling, button clicks and more.
- Branch, repeat, pause, conditional statements, Real Time , and many more fantastic options.

90-day money-back guarantee. Call us today at 800-367-6771 for the name of a dealer near you.

Affinity

Affinity Microsystems Ltd.
1050 Walnut St. Suite 425
Boulder, CO 80302
303-442-4840
800-367-6771

Graphic courtesy Hewlett Packard Corporation. Zapf is a registered trademark of ITC. Adobe Illustrator 88 ©1987-88 Adobe Systems Inc. ©1988 Affinity Microsystems Ltd. All rights reserved.

Getting Started with System Update 6.0

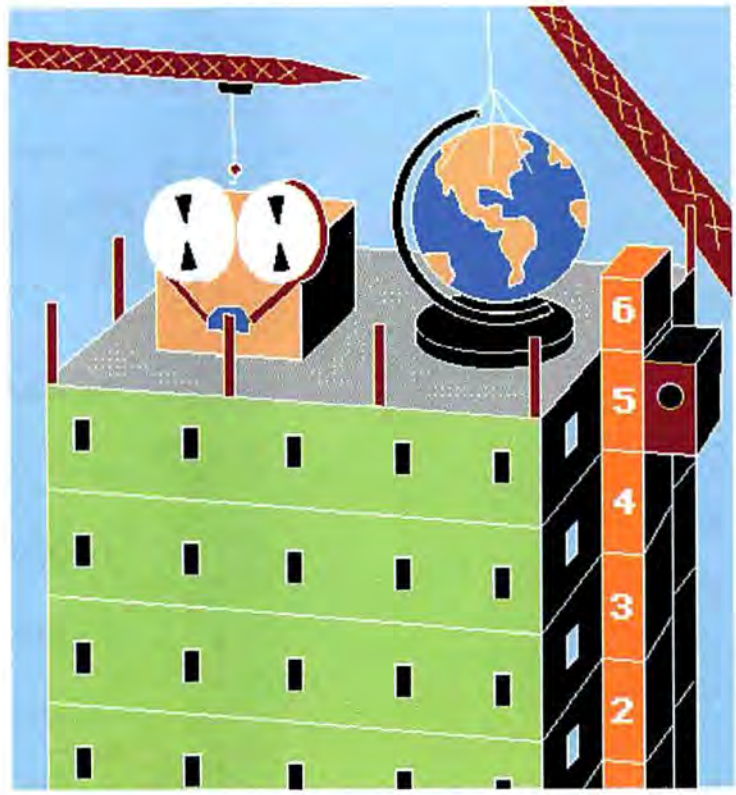
What's new in the System Folder, and the hows and whys of keeping yours up to date

by Jim Heid

Another year, another System. As the Mac matures, Apple continues to improve the System software—the dozen or so System Folder files that make the Mac run. Last January, I examined System Tools 5.0, the release that introduced MultiFinder and the first rays of multitasking, as well as a modular Control Panel, hierarchical menus, and improved printer drivers. (See "Getting Started with the New Mac System," January 1988, and "Getting Started with Multitasking," June 1988.)

This month, we'll tour System Update 6.0 (System 6.0, for short) and examine the goodies—and gotchas—that come with it. Released last April, it is the ninth revision of the Mac's System software in five years.

Check "System Folder Revised" for a list of the icons, purposes, and version numbers of each file in the new System software. Here are a few definitions that will help make the following explanations more clear. An INIT is a small, system-modifying program that resides in the System Folder and loads during start-up. A CDEV (short for Control Panel device) is a file that provides settings for a specific aspect of the Mac's operation. When you click on a CDEV's icon in the Control Panel, the CDEV adds the buttons and controls that are necessary for its operation to the Control Panel window. An F-key (short for function key) is a small program that runs when you press ⌘-Shift and a number. For instance, ⌘-Shift-3 creates a MacPaint file of the current screen image.



SCOTT BALDWIN

Jim Heid is a Macworld *contributing editor who is currently writing an advanced user's guide to the Mac.*

The Tweak Release

Unlike the earthshaking new features added with System Tools 5.0, the improvements in System 6.0 are of the "a tweak here, a new feature there" variety. Big enhancements are promised for System 7.0, which will ship in early 1989. I'll say more about 7.0 later.

The most convenient tweak is MultiFinder 6.0's ability to open a document when you double-click on its icon while the application is already running. Previously, when you tried to open a document this way, MultiFinder displayed an error message telling you to use the application's Open command.

(continues)

System Folder Revised

	File name	Purpose	Current Version
	Finder	Disk, program management	6.1, 4.2 for 128K Macs, 5.3 for 512K Macs
	MultiFinder	Runs multiple applications simultaneously	6.0.1
	System	Holds fonts, desk accessories, operating system	6.0.2, 2.0 for 128K Macs, 3.2 for 512K Macs
	Scrapbook File	Holds contents of Scrapbook	6.0.1
	Note Pad File	Holds contents of Note Pad	n/a
	Clipboard File	Provides auxiliary storage for Clipboard	6.0.1
	MiniFinder	Switches quickly between programs (not for use with MultiFinder)	1.0*
	Backgrounder	Lets printing take place in the background	1.2
	DA Handler	Runs desk accessories under MultiFinder	6.0.1
	Printer Resources		
	ImageWriter	Allows printing to ImageWriters	2.7
	LaserPrep	Prepares PostScript printers for printing	5.2
	LaserWriter	Allows printing to PostScript printers	5.2
	AppleTalk ImageWriter	Allows printing to AppleTalk-equipped ImageWriter II	2.7
	LaserWriter IISC	Allows printing to LaserWriter IISC	1.1
	Print Monitor	Print spooler for PostScript printers	1.2
	LQ ImageWriter	Allows printing to ImageWriter LQ	2.0
	LQ AppleTalk ImageWriter	Allows printing to AppleTalk-equipped ImageWriter LQ	2.0
	Control Panel Resources (CDEVs)		
	Startup Device	Selects start-up hard disk (SE and II)	3.3.1
	Monitors	Select Mac II display options	3.3.1

* available in System 4.1 and earlier versions

	File name	Purpose	Current Version
	Mouse	Adjusts mouse tracking and double-click speed	3.3.1
	Keyboard	Adjusts key-repeat rate and delay-until-repeat rate	3.3.1
	General	Provides basic Control Panel settings	3.3.1
	Sound	Allows selection of system alert sounds	3.3.1
	Color	Allows selected text or icons to appear in color	3.3.1
	Map	Displays world map and adjusts Alarm Clock	1.1
	CloseView	Enlarges screen image	1.0
	Other Files		
	Key Layout	Provides keyboard layout for Key Caps DA	2.3
	Easy Access	Allows issuing of multikey commands sequentially, instead of having to hold down modifier keys	1.0
	MacroMaker	Records and plays back mouse and key sequences	1.0.1
	Macros	Stores macros created by MacroMaker	n/a
	Finder Startup	Stores the results of the Set Startup command	n/a
	Startupscreen	When present, its image replaces "Welcome to Macintosh" start-up message	n/a
	Utilities		
	Font/DA Mover	Installs and removes fonts and desk accessories	3.8
	Installer	Updates System Folder to latest System version	2.6.1
	Apple HD 20 Setup	Tests and initializes Apple SCSI hard disks	2.0
	Disk First Aid	Tests disks and performs minor repairs	1.4.1
	HD Backup	Backs up and restores hard disks	1.1

MultiFinder users will appreciate the Notification Manager, which allows applications performing background tasks—printing, transferring a file over a modem, sorting a huge database—to notify you when the task is complete or an error occurs. This attention-getting process can involve flashing the application's icon over the Apple menu, displaying a dialog box, or both. Print Monitor, MultiFinder's background-printing program, uses the Notification Manager, as does SuperMac Software's Acknowledge telecommunications program. Expect to see more communications programs using the Notification Manager.

In Finder 6.1, the Get Info box displays an additional piece of information: the application's version number. This is possible because of a new type of resource called VERS. A VERS resource usually contains copyright information and the application's version number. The resource is stored in the application itself. If an application lacks a VERS resource (as do most older programs), the Finder displays the contents of the application's *creator resource,* a string of text characters stored within the application that identifies it.

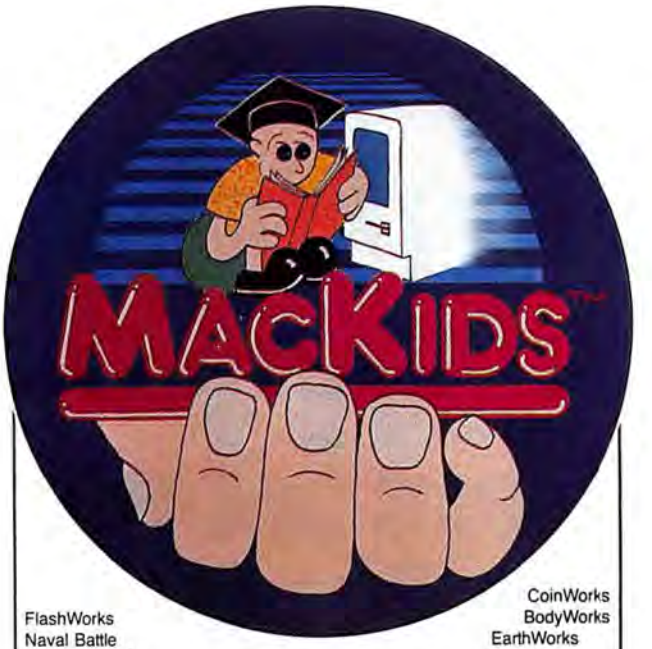
Interestingly, this version-reporting feature can apply to documents, as well. Although no major developers are yet using this potentially valuable Finder feature, future applications will be able to include a VERS resource when they save documents. This would allow you to determine which version of an application created the document—a good thing to know when exchanging files with someone else.

Another sign of evolution appears when you choose the Erase Disk command: a new dialog box gives you another chance to cancel. Also, the File menu's Print Catalog command, which prints a list of the files in the active disk or folder window, now reads Print Directory, which more accurately describes the command's purpose.

Making Macros

Among System 6.0's more noteworthy features is an INIT program called MacroMaker. To create a macro, you record keystrokes and mouse actions, and then assign a key or key combination that can be used to play back the sequence. Using this utility, you can remap your keyboard, store frequently typed text, or assign keystroke shortcuts to commands.

(continues)



FlashWorks
Naval Battle
Preschool 1
Preschool 2
Lemonade Stand

CoinWorks
BodyWorks
EarthWorks
ClockWorks
Alphabetizer
WordSearch

Introducing NEW
Turbo Math Facts

When learning is fun, kids learn more.

Make learning fun with MacKids - a complete series of 12 educational programs for the MacIntosh™, designed to be fun and entertaining. Just $39.95 each.

To order Software or a free brochure, call or write:

Toll free:
800-228-0417

In Nebraska:
402-466-6502

Nordic Software
3939 North 48th
Lincoln, NE 68504

Circle 362 on reader service card

Prevent Macintosh Theft!

MacKablit System

Heavy duty 10' steel cable (7 x 19) secures and locks computer, printer, other equipment, up to 4 components. The unique MacKablit system incudes 2 brackets that snap into existing slots on the Macintosh keyboard and computer. Additional hardware included for other Mac peripherals (disk drive, printers). The unique MacKablit system utilizes existing security slots on the keyboard and computer and existing screws in other peripheral equipment. The system includes 2 brackets for the security slots plus unique Kablit fasteners for peripherals. Cable passes through Kablit fasteners, preventing removal of screws.

EXCLUSIVE!
Proprietary components (Pat. Pend.) permit only your key to release MacKablit. When ordering multiple units, specify locks to be keyed differently or alike. Specify Mac, Mac Plus SE, or Mac II.

Other Kablit systems for IBM, Apple, others.

$39.95 + $3.00 shipping/handling
Quantity pricing also available for multiple purchases from schools, institutions, businesses, industrials, etc. Send P.O.

Money back if returned in 30 days.
Phone or send check.

Secure-It, Inc.
18 Maple Court
East Longmeadow, MA 01028
800-451-7592 413-525-7039
Dealer Inquiries Invited

Circle 239 on reader service card

Why this publication and more than 1,400 others let us go over their books

---

once a year.

Some publications, we're sorry to say, keep their readers undercover. They steadfastly refuse to let BPA (Business Publications Audit of Circulation, Inc.) or any other independent, not-for-profit organization audit their circulation records.

On the other hand, over 1,400 publications (like this one) belong to BPA. Once a year, BPA auditors examine and verify the accuracy of our circulation records.

The audit makes sure you are who we say you are. The information helps advertisers to determine if they are saying the right thing to the right people in the right place.

It also helps somebody else important: you. Because the more a publication and its advertisers know about you, the better they can provide you with articles and advertisements that meet your information needs.

BPA. For readers it stands for meaningful information. For advertisers it stands for meaningful readers. Business Publications Audit of Circulation, Inc. 360 Park Ave. So., New York, NY 10010.

FROM THE DUBL-CLiCK COLLECTION

MacUser gave WetPaint 5 mice (Sept. 1987) saying "...the WetPaint art is almost a must for clip art users; the ArtRoundup desk accessory is a neccessity." Volumes marked with ✳ were previously released as "MacMemories."

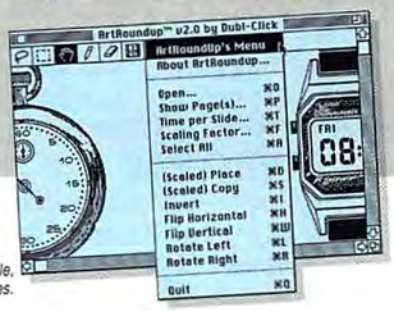
WETPAINT™

NOW 8 VOLUMES!

Each **WetPaint** volume contains an extensive collection of useful pictures, icons, borders, maps and patterns—in a wide variety of styles, designed for both home and business use.

WetPaint files can be read read by painting programs (like FullPaint™, MacPaint™, SuperPaint™) and applications like PageMaker™. WetPaint is also available in **PictureBase™ format** at an additional $30 per volume.

Even if you don't own a painting program, you can still copy pictures directly from WetPaint files using our **ArtRoundup™** desk accessory—included **Free** with every Wetpaint volume! And ArtRoundup's new **Slideshow** tool is a great way to scan hundreds of images in minutes.



ArtRoundup comes free with WetPaint, and can Scale, Invert, Flip and Rotate the largest of paint-style images.

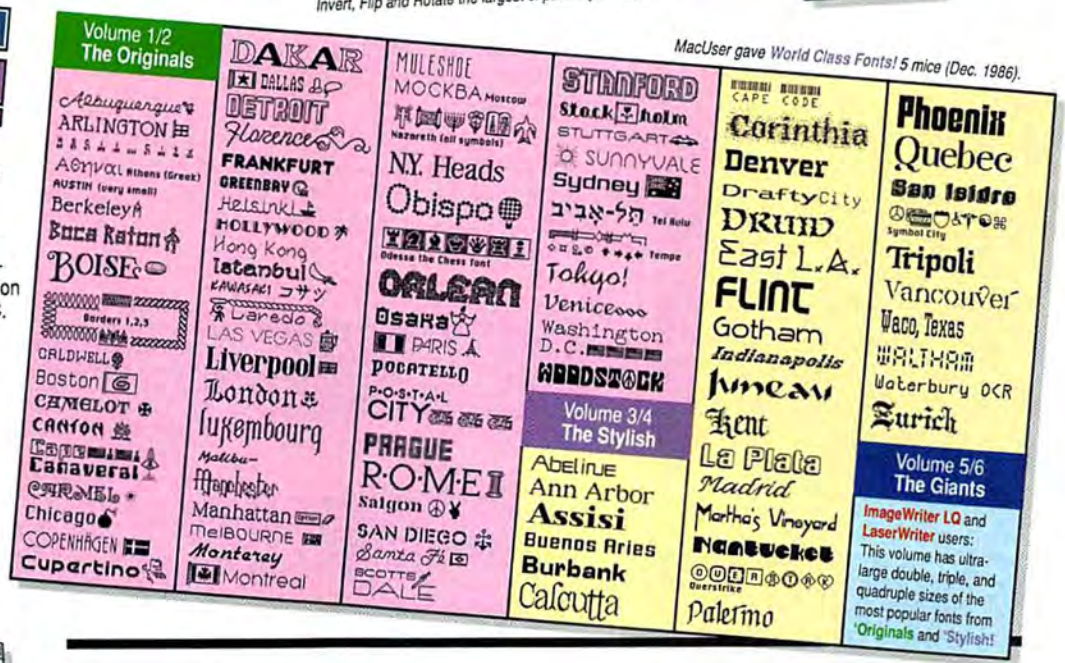
WORLD-CLASS FONTS!™

Each volume is chocked full of what MacUser magazine describes as "the Best collection of ImageWriter fonts available." **We just made the Best even Better!** All World Class Fonts volumes have now been redesigned to achieve even better results on the ImageWriter LQ and LaserWriter SC.

The Originals & **The Stylish** volumes range from practical text and symbol fonts to striking display faces. **The Giants** are ultra-large sizes ideally suited for high-resolution printing and creating desktop presentations.

Our fonts install easily using the Font/DA Mover, included along with our handy **BigCaps™** desk accessory which replaces Apple's Keycaps and can display any font in any size or style—even uninstalled fonts!

MacUser gave World Class Fonts! 5 mice (Dec. 1986).



Each volume is three 800K disks.
$79.95 suggested retail.

DUBL-CLICK

©1988 Dubl-Click Software, Inc. ♦ 9316 Deering Avenue Chatsworth, CA 91311 (818) 700-9525 Pacific Std. Time

Circle 155 on reader service card

MacMAIL

NATIONS LOWEST PRICES

HARD DRIVES

20mb.SE INT. LIST 700. NOW 448.
20mb. EXT. LIST 700. NOW 488.
32mb. EXT. LIST 900. NOW 598.
46mb. INT. LIST 1000. NOW 698.
46mb. EXT. LIST 1100. NOW 748.

FAST QUICKOR DRIVES
40mb.INT. LIST 1100. NOW 888.
80mb.INT. LIST 1600. NOW 1188.
12 MS ACCESS TIME SPEEDS UP OPERATIONS 3 TO 5 TIMES FASTER THAN "CONVENTIONAL OLD TYPE" HARD DRIVES. WHY PAY FOR A FAST COMPUTER, THEN INSTALL A SLOW HARD DRIVE.. INSTALL THE 'QUICKEST' DRIVES AVAILABLE

42- REMOVABLE LIST 1800. NOW 1198.
60-TAPE BACK UP LIST 1100. NOW 748.
CALL FOR INFO. ON HARD DRIVES & OTHER SIZES

MAC MONITORS

SE FULL PAGE B/W LIST 1200. NOW 948.
SONY 13 COLOR. LIST 800. NOW 598.
E-MACHINE B/W LIST 1600. NOW 1298.
E-MACHINE 16 COLOR NOW 1998.
SUPERMac 19 COLOR NOW 3488.
CALL FOR INFO. ON MONITORS & OTHER MAKES

PRINTERS

SEIKOSHA DOT LIST 400. NOW 228.
OLYMPIA DOT LIST 500. NOW 388.
NEW "PostScript" LASERS PRINTERS
PLP LASER+ LIST 2000. NOW 1698.
BLP LASER LIST 4200. NOW 3198.

ACCESSORIES

DATADesk 101 LIST 200. NOW 148.
2400 BD. Modem LIST 250. NOW 168.
ACCELERATORS - UPGRADES - BOARDS - MEMORY CALL

CALL FOR. . . . QUOTE ON NEW
Macintosh™
FULL SYSTEM PACKAGES
COMPLETE COMPUTER SYSTEMS DESIGNED FOR YOUR SPECIFIC NEEDS. CONFIGURED WITH THE LATEST. . . "State Of The Art" COMPONENTS & PERIPHERALS.
No shipping charges or SalesTax Call now for prices
The Countrys Lowest "Mac" Prices

WE SELL ALL MAJOR BRAND NAMES...
CMS - Mass MICRO - E-MACHINE - SONY- AST
RASTER OPS - Dove - SEAGATE - SUPERMac

COD's OK - ONE DAY RUSH Delirevy - No TAX

100 NEW MAC PRODUCTS
800 622-8804
CALL TODAY FOR ITEMS NOT LISTED
FAST ORDER LINES

WE'LL BEAT EVERY PRICE, CALL US LAST!

Mac - Macintosh TM Apple Computer Inc.

Circle 354 on reader service card

MacroMaker lets you create *global macros,* available in all applications; *Finder macros,* on tap when the Finder is active; and *application-specific macros,* which work only when the application you used to create them is active. MacroMaker loads into memory during start-up and adds a menu (a cassette-tape icon) to the menu bar. To record a macro, choose Start Recording from MacroMaker's menu, then perform the tasks you want to record. The cassette icon flashes while you're recording. When you've finished, choose Stop Recording from MacroMaker's menu, and MacroMaker's window appears (see "Macro Making").

When you save a macro, the name you choose for it appears in MacroMaker's menu. You can use the name or the assigned keystrokes to summon the macro. If you choose ⌘-key sequences, however, you risk disabling a program's built-in shortcuts. For example, if you record the text *Sincerely,* from within your word processor, and assign the ⌘-S key sequence to the macro, you'll disable the keyboard shortcut for your word processor's Save command.

The SE's and the II's Control key makes a good surrogate ⌘ key. If you use the Apple extended keyboard—the 105-key beast—you can assign macros to its 15 function keys. For the Mac Plus keyboard, which lacks Control and function keys, use the ⌘ key along with the Shift or Option keys. Or just examine your program's menus before assigning a key sequence to be sure that sequence won't override an existing one.

MacroMaker does have limitations. You can't stop recording when a modal dialog box (one you can't click outside of) is open. Thus, you can't record a macro whose last act is to issue an Open command—you can't tell MacroMaker to stop recording without pulling down its menu, and you can't get to its menu without canceling the dialog box. Also, MacroMaker can't record a pause, so you can't use it to automate a telecommunications session or other activities that involve waiting between two tasks. Two commercial macro packages—CE Software's QuicKeys and Affinity's Tempo II—don't have these shortcomings. If you become addicted to macros, you might graduate to one of these. But MacroMaker is ideal for automating simple tasks and putting the extended keyboard's function keys to work. And the price is right.

Are They Awake in Ankara?

I recently read of a Gallup poll in which three out of four Americans couldn't locate the Persian Gulf on a map. Perhaps System 6.0 will change that. Its new Map feature adds a world map to the Control Panel and offers options for finding cities and determining the distances and time differences between locations (see "The Mac's Map").

Besides being useful and educational, the Map CDEV illustrates Apple's intent to make the Mac a truly international computer. When you use the Set button to specify your location, Map stores the location in the Mac's parameter RAM—that battery-powered area of memory that holds the time, date, and other Control Panel settings. Take your Mac to a different time zone, and you can use the Set button to adjust the Alarm Clock accordingly.

Apple's goals for dealing with the time issue go far beyond making it easier to reset the Alarm Clock. More businesses are linking remote Macs with modems and

Macro Making
MacroMaker's cassette recorder window lets you name, store, and retrieve macros. Here, a global macro (one available in any application) named Chooser has been loaded.

Buy with

Confidence

In an effort to make your telephone purchasing a more successful and pleasurable activity, The Microcomputer Marketing Council of the Direct Marketing Association, Inc. offers this advice, "A knowledgeable buyer will be a successful buyer." These are specific facts you should know about the prospective seller before placing an order:

Ask These Important Questions

- *How long has the company been in business?*
- *Does the company offer technical assistance?*
- *Is there a service facility?*
- *Are manufacturer's warranties handled through the company?*
- *Does the seller have formal return and refund policies?*
- *Is there an additional charge for use of credit cards?*
- *Are credit card charges held until time of shipment?*
- *What are shipping costs for items ordered?*

Reputable computer dealers will answer all these questions to your satisfaction. Don't settle for less when buying your computer hardware, software, peripherals and supplies.

Purchasing Guidelines

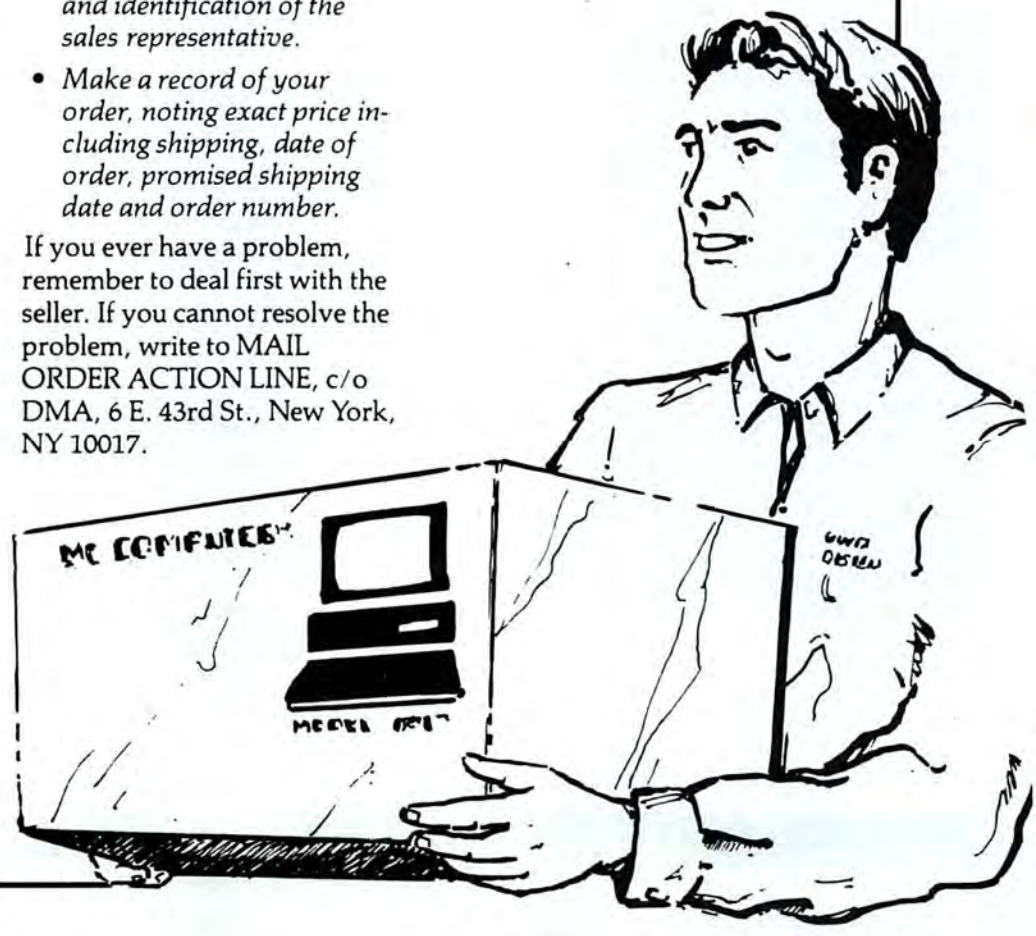
- *State as completely and accurately as you can what merchandise you want including brand name, model number, catalog number.*
- *Establish that the item is in stock and confirm shipping date.*
- *Confirm that the price is as advertised.*
- *Obtain an order number and identification of the sales representative.*
- *Make a record of your order, noting exact price including shipping, date of order, promised shipping date and order number.*

If you ever have a problem, remember to deal first with the seller. If you cannot resolve the problem, write to MAIL ORDER ACTION LINE, c/o DMA, 6 E. 43rd St., New York, NY 10017.

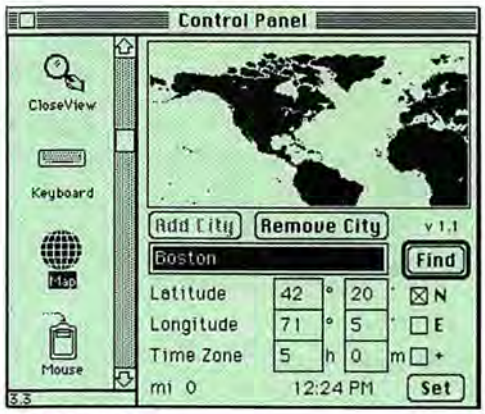
This message is brought to you by:

the MICROCOMPUTER MARKETING COUNCIL of the Direct Marketing Association, Inc.
6 E. 43rd St.,
New York, NY 10017

MMC
MICROCOMPUTER MARKETING COUNCIL
of the Direct Marketing Association, Inc.



© Direct Marketing Association, Inc. 1988



The Mac's Map

The Map CDEV is available from the Control Panel. It displays a world map that lets you determine the distance and time difference between cities. To find the shortest distance between two points, Map performs a great circle *calculation, which involves placing an imaginary plane through the center of a sphere so that it touches both points, then drawing and measuring an arc between the points.*

even satellite links and, as they say on "Star Trek," that disrupts the space-time continuum. For example, if you create a file at 9:00 a.m. in Boston and then transmit it to San Francisco, it arrives three hours before it was created—at least according to the Mac's current file-dating mechanism. Future versions of the Mac system will be better able to deal with multiple time zones. (While you're at it, Apple, give Map the ability to find countries, and—please—make the Control Panel window larger.)

Joining the Map feature is another new CDEV, CloseView, which lets you enlarge the screen image up to 16 times its normal size. CloseView is an INIT *and* a CDEV; when you start your Mac, CloseView loads into memory, ready to be summoned from the Control Panel. It's intended to make the Mac's screen easier for visually impaired users to read, but it's also handy for precise drawing or positioning.

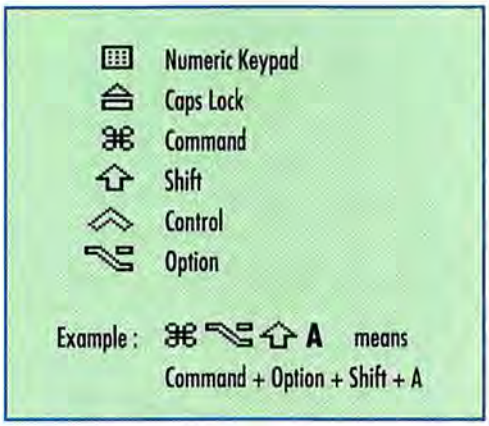
Incidentally, in both CloseView and MacroMaker, you'll notice new icons representing the Option and Control keys (see "Key Icons"). Learn these icons now, because you're going to see them appearing in more applications. Microsoft Word 4.0 uses them already.

Changes Under the Hood

I've mentioned a few of System 6.0's technical improvements, but there are others. System 6.0 gives a Mac Plus or an SE the same sound capabilities—actually, the same Sound Manager—as a Mac II. This lets SE and Plus users enjoy the same digitized alert sounds—the monkey, boing, and clink-clank—that II users guffaw over. There's a bigger advantage, of course. By allowing the Plus and the SE to sound off like a II, Apple has made it easier for developers to write programs that can use the digitized sounds for all three machines.

Speaking of Mac IIs, with System 6.0 the II can display color graphics more quickly. The system code that allows this, a set of graphics routines called QuickerGraf, was created outside Apple by former Mac team member Andy Hertzfeld. He wrote QuickerGraf as an INIT and distributed it through information services and user groups. It became so popular that Apple licensed it and made it part of the Mac II's System file.

The new system also offers LaserWriters and other PostScript printers more printing power. The new LaserWriter driver supports tabloid (11-by-17-inch) pages, allowing all Mac applications to tap tabloid printers such as Varityper's VT-600W and Dataproducts' LZR-2665. Previously, an application needed its own PostScript driver to print tabloid pages. The new Text Smoothing option in the Page Setup dialog box smooths the jagged edges of bitmapped fonts—non-PostScript fonts such as Geneva and New York. In the LaserWriter Options dialog box, the new Unlimited Downloadable Fonts option lets you use as many downloadable fonts in a document as you like, but it also lengthens printing times.



Key Icons

A total of six icons now represent the Mac's numeric keypad and its keyboard modifier keys. MacroMaker and CloseView use several of these icons, as do applications such as Microsoft Word 4.0.

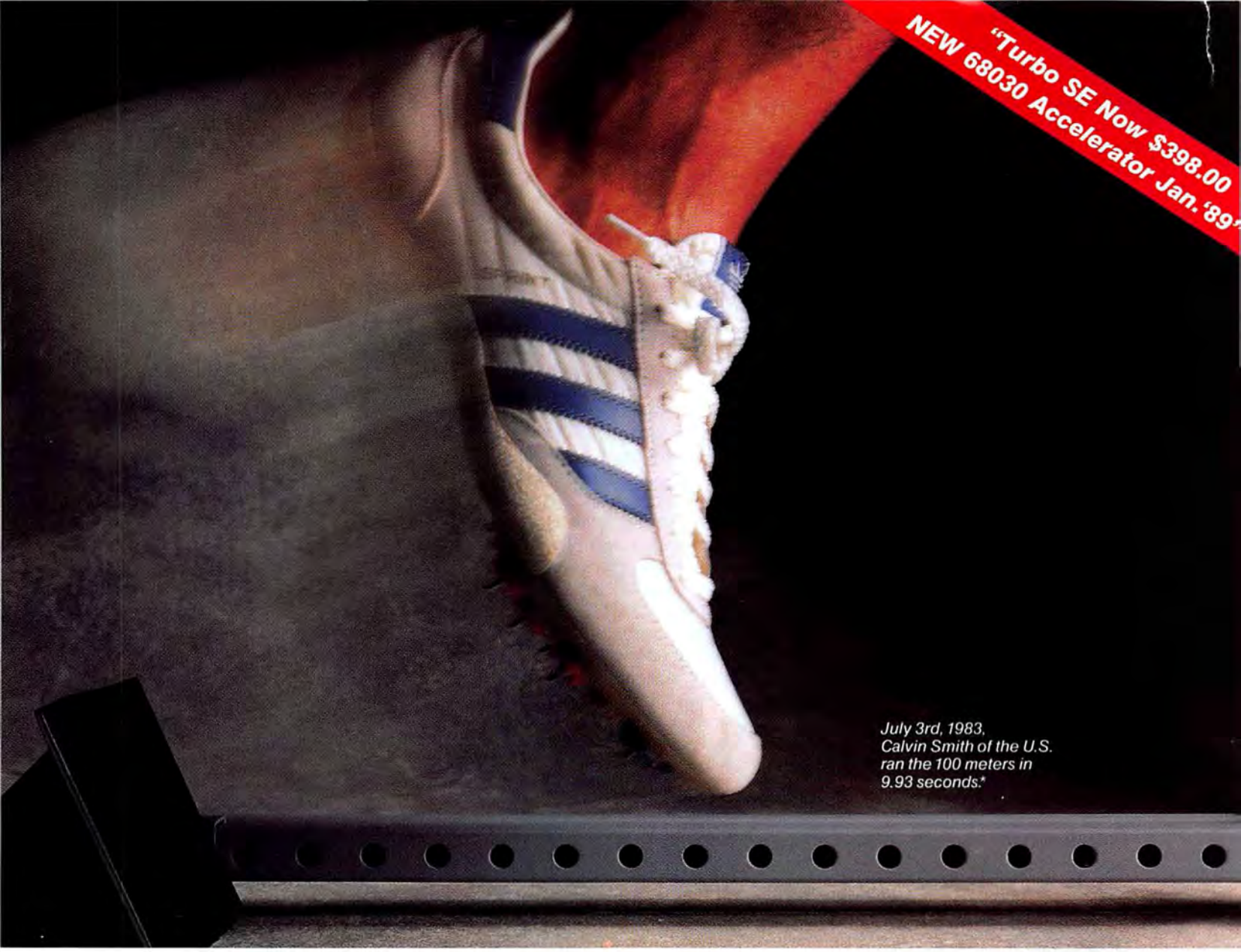
And in the little-things-mean-a-lot department, several of the Mac's desk accessories—the Chooser, Calculator, Find File, Alarm Clock, and Scrapbook—now remember their window positions when you close them, and appear in the same place when reopened. And if the date display and clock icons are visible when you close the Alarm Clock, they will both be there when you reopen it, rather than only the digital time display.

Utilitarian Improvements

The new Font/DA Mover, version 3.8, allows the System file to hold thousands of fonts instead of only 255 (disk space permitting, of course). The secret to the Mac's enlarged type drawer lies in a new kind of font resource called NFNT—short for new font-numbering table. Fonts stored in NFNT format can be grouped according to font families. For example, the Times family contains four fonts: Times, Times Italic, Times Bold, and Times Bold Italic. With the Mac's original font format, called FONT, each of these family members is considered a separate font. In the NFNT format, however, the entire family is considered one font with four members. This approach lets the Mac start many applications faster because it decreases the time required to create a Font menu.

At this writing, however, not all applications support NFNT fonts. And few NFNT fonts are available. But we've seen it before—changes in the Mac system send software makers back to the drawing board to update their wares. By the time you read this, NFNT fonts will probably be in control of the Mac's type foundry. And you'll be able to convert FONT-format fonts into NFNT fonts using Icom Simulation's MacKern, a font utility scheduled to ship this fall. Apple also reports that a future version of the Font/DA Mover may be able to convert FONTs into NFNTs.

(continues)



GREAT MOMENTS IN ACCELERATION.

Some people are born overachievers.

Seeing things as they are and saying, "Why not faster and better?"

Like the people at SiCLONE,™ where increasing your Mac®'s performance with solid, innovative products is what we're all about.

Take our ***Turbo SE,***™ for example. Powered by a hard-charging 16MHz 68000 microprocessor, ***Turbo SE*** doubles the speed of your standard Macintosh® SE, while ensuring compatibility with your favorite applications.

So instead of jogging, you fly through PageMaker.® And push Hypercard™ to new dimensions of performance.

Turbo SE™ *power users can add up to 4MB of optional* ***MultiSIMMs,***™ *plus our 16MHz 68881 coprocessor.*

If number crunching's your game, our optional 16MHz 68881 math coprocessor will help you zip through Excel spreadsheets up to 40 times faster.

We didn't forget all you forerunners, either. SiCLONE's ***MacAdapt***™ lets you install ***Turbo SE*** into any "classic" Macintosh 512KE or Macintosh Plus to enjoy the same boost of speed and performance. We even included a SCSI port with hardware handshaking for smooth data transfer.

Both ***Turbo SE*** and ***MacAdapt*** come with a full-year limited warranty, and can be installed in minutes by your SiCLONE dealer. For the location nearest you, call **1-800-862-2636 ext. 130;** in California, **(408) 734-9151 ext. 130.**

Turbo SE by SiCLONE. Designed to make every minute on your Mac a great moment.

SiCLONE

SiCLONE SALES & ENGINEERING CORPORATION
1169 BORREGAS AVENUE, SUNNYVALE CA 94089

SiCLONE, Turbo SE, MacAdapt and MultiSIMMs are trademarks of SiCLONE Sales & Engineering Corporation. Macintosh and Mac are reg stered trademarks and Hypercard is a trademark of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corporation. The photograph of the track shoe pictured above is used with the permission of adidas USA, Inc. *Photo is a dramatization only.

Circle 349 on reader service card

Here's How to Order

You can get the System 6.0 update from user groups, by downloading its files from CompuServe or other information services, or from an Apple dealer. The System Update 6.0 package sells for $49 and includes excellent manuals. Many dealers will also let you copy their System 6.0 disks if you supply your own disks.

The System 6.0 package includes a program called Installer that updates the System Folder on your hard disk or on start-up floppies. Installer uses special documents called *scripts,* each tailored to a particular model of the Mac. You choose the script for your Mac, and Installer reads it to determine which modifications to make to your System Folder. (Tip: To ensure that your system is updated properly, start up with the System 6.0 disk. Apple reports that several problems can occur if you start up under an older system and then run Installer.)

Like many of us, the Mac system has put on weight over time. System 6.0 barely fits on one double-sided floppy. For that reason, the System 6.0 package includes several *minimum scripts* that create scaled-down System Folders. The minimum Mac SE script, for example, creates a system containing only the Control Panel and Chooser desk accessories, just a few fonts, and no printer drivers. Clearly, a hard disk isn't a luxury anymore.

Caution Advised

System 6.0 offers some distinct advantages over 5.0, but before you update your system, verify that your applications are compatible with it. Initially, many programs didn't get along with System 6.0. In some cases, compatibility problems were caused by bugs in System 6.0; in others, they surfaced because developers bent Apple's programming rules, and changes in System 6.0 caused their shortcuts to backfire. In still others, problems emerged because Apple had not previously spelled out exactly how a given task should be performed. These things happen with an extremely complex operating system. Happily, most developers have fixed the problems they caused, and by the time you read this, Apple should have released System 6.0.2 and the Mac's system should have settled down again.

But by then, System 7.0 will be on the horizon. System 7.0 will be a significant step forward for the Mac system. Among its enhancements will be a mechanism for interapplication communication—so that programs can automatically exchange data with each other under MultiFinder. Also, look for improved color capabilities. Apple is reworking Color QuickDraw, the Mac II's graphics routines, to support video hardware that can display color images with photographic realism.

System 7.0's debut will undoubtedly cause another round of incompatibilities and software revisions, but that's the price you pay for progress. The Mac is still making the transition from a slow, expensive toy to a powerful, expensive business machine. Thanks to Apple's talented software designers and programmers, the transition isn't at the expense of the Mac's approachable operating style.

If only they could do something about the price. □

COMPUTEREYES™

Capture Video Images: $249.95!

Capture real-world images on your Mac 512E, Mac Plus, SE, or Mac II from any standard video source (video camera, VCR).

On the screen...

ComputerEyes includes several options for images display, and edit options such as shrink, expand, scroll, and more.

Behind the scenes...

ComputerEyes acquires larger-than-screen images with 256 gray levels for desktop publishing and image processing.

On paper...

ComputerEyes saves images on disk in several file formats including TIFF, MacPaint, PICT, RIFF, and EPS for use with PageMaker, Hypercard, MacPaint—virtually all the popular graphics programs.

Think of the possibilities!

ComputerEyes is backed by a one year warranty and the success of over 20,000 systems sold. See your dealer or order direct. For more information, example images, or Demo Disk ($3), call (617) 329-5400.

To order call 800-346-0090
VISA, M/C. COD accepted.
Digital Vision Inc.
66 Eastern Ave.
Dedham, MA 02026

DIGITAL VISION

Circle 242 on reader service card

Affordable Large Format Plotting

Made in USA

C–D
$1695
(Sugg. ret. $2295)

A–D
$2295
(Sugg. ret. $2695)

A–E
$2695
(Sugg. ret. $2995)

Features that say value...

Economical: $1,000 less than other large format plotters.

Compatible: Operates with all popular CAD software supporting DM/PL.™

Multiple Media Sizes as small as 8½" x 11" or as large as 36" x 48" eliminates the need for a second plotter.

Practical speed you can really use: 10" per second assures good drawing throughput while optimizing the speed at which most plotter pens can draw without skipping.

Repeatability and Resolution: .004 assures quality suitable for the most demanding applications including PCB artwork.

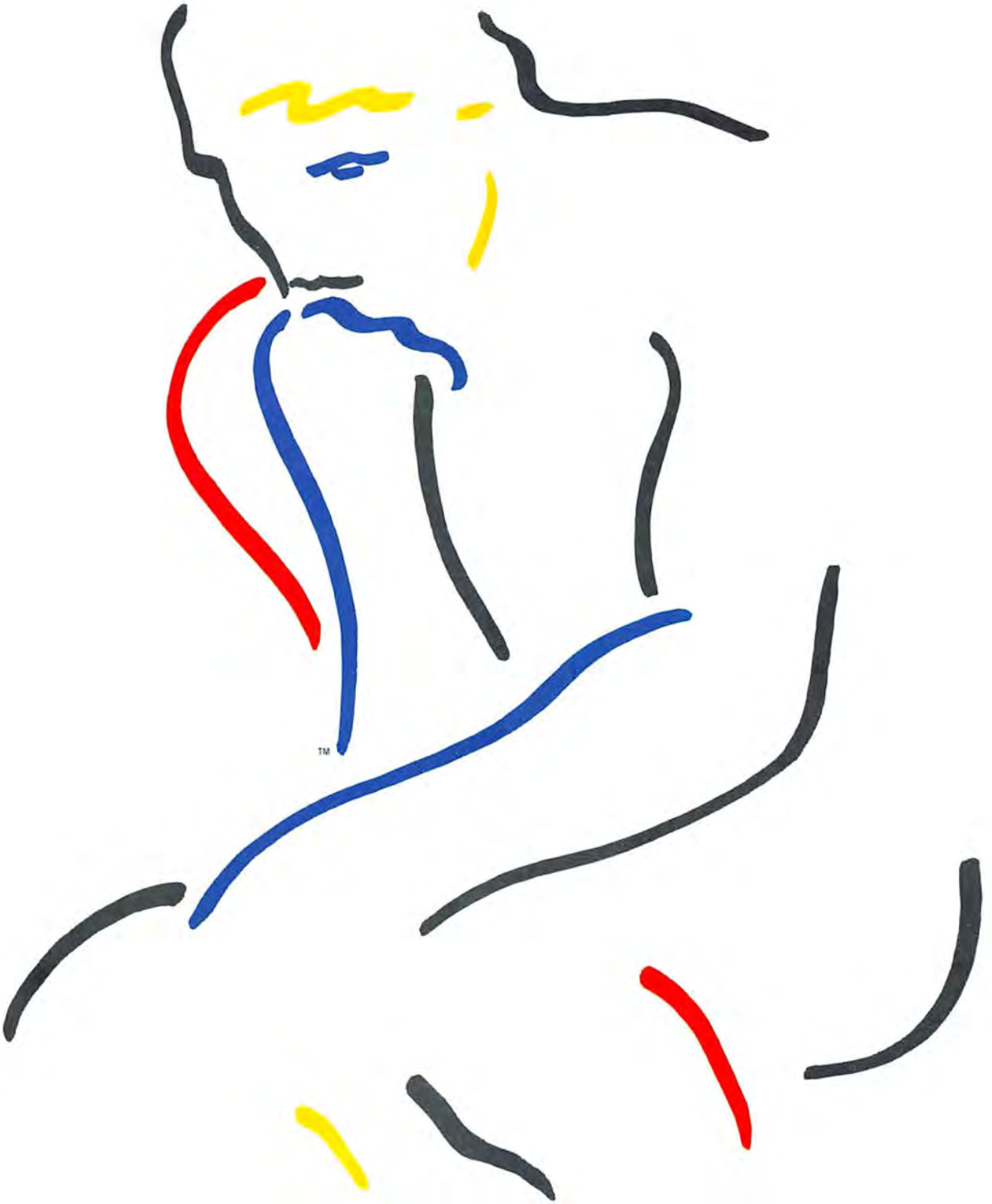
Vacuum Paper Hold Down guarantees perfect registration.

CALL NOW AND WE'LL SEND YOU A FREE SAMPLE PLOT.
(415) 490-8380
Dealer inquiries invited.

ZERICON
40491 Encyclopedia Circle, Fremont, Ca 94538

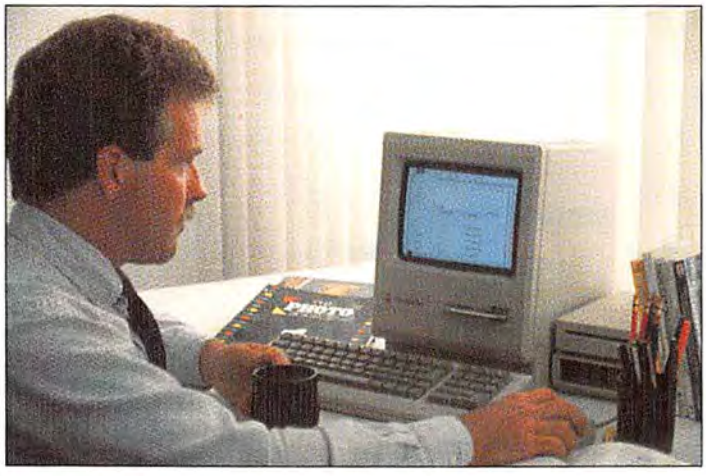
DM/PL is a trademark of Houston Instrument

Circle 267 on reader service card



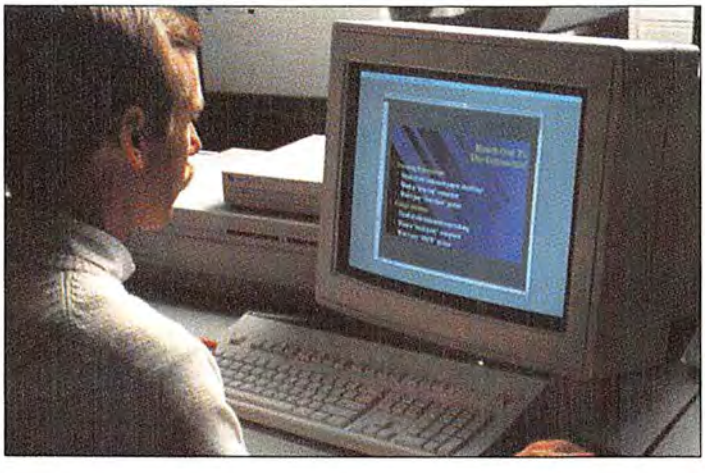
SOMAK SOFTWARE, INC.

Quality Software • Superior Technical Support • Fast Delivery • Low Prices



If you're looking for software to assist you with your business activities , or to help manage your home budgeting, Somak Software has the programs you need.

If you're looking for educational software, for almost any scholastic level from preschool to higher education, Somak Software has the programs you need.



If you're looking for clip art, typefaces, and other graphic tools for your desktop publishing projects, Somak Software has the programs you need. And we have a whole lot more...

Contents

Introduction 4
Shareware information 5

Software descriptions

Business software 6
Stand-alone business programs, and worksheets for Multiplan and Excel.
Home management 7
Programs to help with shopping, checkbook management, auto expenses, and more!
Educational software 8
Stars and planets education, preschool software, and beginning math.
Games 10
Arcade action games, puzzles and strategy games, and adventure games.
Clip art graphics 12
Animal clip art, planes, trains, and automobiles, miscellaneous art, and laser art.
ImageWriter™ fonts 14
Near-letter-quality fonts and display fonts for your ImageWriter printer.
LaserWriter™ fonts 15
High-quality downloadable PostScript fonts for your LaserWriter or LaserWriter II.

Ordering information

Ordering, shipping, and payment information 16
Order form and pricing 17

Utility software 19
Screen savers, clock utilities, program menus, anti-viral software, and more!
Desk accessories 21
Calculators, appointment calendars, note pads, text editors, and other "DAs."
Sound effects 23
Make your Mac speak to you and play amazing digital sound effects as you use it!
HyperCard™ stacks 24
XCMDs and XFCNs, clip art stacks, MIDI stacks, preschooler stacks, and more.
Networking software 29
Utilities for AppleTalk/LocalTalk network users, and an amazing multi-player game!
Software for Macintosh II 30
Color pictures, image processing software, graphics demos and utilities.

Copyright information

This catalog, it's text, layout and format, and it's disk compilations are copyright ©1988 by Somak Software, Inc. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of Somak Software, Inc. Prices subject to change without notice. Somak Software shall not be held liable for any direct or indirect loss or damages resulting from the use or misuse of these products.

LaserWriter, ImageWriter, AppleTalk, LocalTalk, and HyperCard are registered trademarks and Macintosh, MacPaint, and MacDraw are trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc. All other brand and product names referred to in this catalog are trademarks or registered trademarks of their respective holders.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

Introduction

What does Somak do?

If you could have your wish when it came to buying software, what would it be? Well, you would want quality software. And you would want the assurance of qualified technical assistance when you needed help. And, of course, you would want the software to be inexpensive. Maybe you want all of these things?

Somak Software offers you these benefits. We distribute high-quality software for business, education, entertainment, desktop publishing, design, and many other uses. We select and distribute only the finest programs in each category, to insure you the maximum value for your dollar. And we stand behind our software. Every program on our disks has been tested with the latest Macintosh hardware, and is guaranteed to work as described, or we'll exchange it for you.

How much does it cost?

You pay Somak Software a small service charge for each disk that you order. This service charge covers research, duplication, technical assistance, and other related expenses. Service charges start at only $8.99 per disk, and when you order more disks, the price goes down. For complete pricing information, see the order form on page 17. Postage and handling charges of $4.00 are added to each order shipped within the continental US and Canada. Shipping charges to other areas are higher; please call for details.

What else do I need?

Our software is provided on double-sided disks, so you'll need a Mac equipped with an 800K drive. All programs have been tested on the Macintosh Plus, Macintosh SE, and Macintosh II for compatibility, and unless otherwise indicated, run on all three machines.

Some software categories have specific requirements. The LaserWriter fonts described on page 15 require a LaserWriter, LaserWriter Plus, LaserWriter II or LaserWriter II NTX. These fonts do not work on the LaserWriter II SC. The Hypercard stacks described on pages 24 through 28 require Apple's HyperCard software. If your Macintosh did not come with a copy of HyperCard, contact your local dealer to purchase one.

The networking software described on page 29 requires two or more Macintoshes equipped with an AppleTalk/LocalTalk network. The Macintosh II software described on pages 30 and 31 requires a Macintosh II with 8-bit video card and monochrome or color monitor. Any other program requirements or incompatibilities will be explained in that specific program's description.

OK, now what?

Please read the information about "shareware" software distribution on the next page. Then, begin reading the software descriptions on page 6. We're confident that you'll find software that interests you. Write down the disk numbers you want to order as you go. You'll find an order form in the center of the catalog that you can fill out, and then give us a call or mail in your order. You'll be pleasantly surprised! Software really can be all the things you want it to be...

About shareware...

What is it?

Our software comes in two flavors – shareware programs and non-shareware programs. It's a very important distinction, so we've indicated next to the name of each program whether it is or isn't shareware. But you're still asking, what is shareware software, anyway?

Shareware is a method of software distribution that cuts out the middleman; the software author doesn't have to pay for packaging, advertising, and other marketing expenses, and the customer gets to do something very rare in the software marketplace – try out the programs at home, on their machine, before deciding whether the programs are worth paying for.

Shareware programs contain a notice, either in the program itself, or in the accompanying instructions, asking the user to try out the software, decide if they like it, and pay a registration fee directly to the author if they decide to keep it. Sometimes this registration fee also entitles the user to upgrades or enhanced versions, or perhaps expanded documentation.

Somak Software strongly encourages our customers to pay the registration fee for shareware software that they decide to keep and use. Usually this fee is very low; between $2 and $20 dollars. If the authors are not rewarded for their efforts, they may decide it's not worth it, and we would lose their talents forever. Here's a parable that graphically illustrates everyone's shareware obligation...

Once upon a time...

"After conquering a local tyrant, a village decided to put on a big shindig to celebrate their new freedom. Every villager agreed to bring two skins of their best wine, which would all be poured into a great vat to symbolize the unity with which they fought. One villager (every village has at least one) was the stingy sort who decided he would put water in his skins instead of wine, calculating that the dilution would go unnoticed. He made sure no one discovered his plot as the entire village stood in line, emptying their skins of wine into the vat.

Finally came the evening of the great shindig. As the villagers gathered with their tankards around the vat, the newly appointed leader gave a speech that inspired one and all. Finally, the villagers suggested that the leader be first to fill his tankard from the vat, and the leader happily agreed.

When the leader placed his tankard under the vat and turned forth the flow of wine, he was surprised to find that his glass was filled with clear water."

You can see that it really is everyone's responsibility to be honest when it comes to shareware software. If you don't use a program, don't register for it. But if you do use it, and want to thank the author for the opportunity to try it out before you pay, please register and keep the shareware system alive. Now, on to the software descriptions!

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

Business software

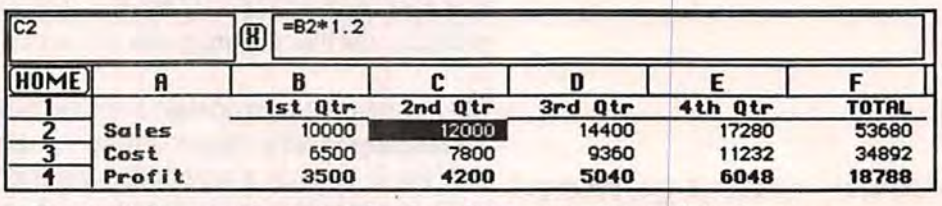
101 BusinessWare Volume 1

Six powerful programs for your small business, from payroll and amortization to a full-featured spreadsheet!

The BiPlane spreadsheet package includes a desk accessory that gives you access to your worksheets within other applications.

Amortize 2.4 (shareware) – A loan amortization calculator.
Calculate loan amortization schedules quickly and easily with this excellent program. Schedules can be printed directly or saved as text files for use in other applications.

BiPlane 1.02 (shareware) – A full-featured spreadsheet in a desk accessory.
Enjoy the benefits of a very capable spreadsheet program anytime, within any other application! BiPlane has a number of features not found in other spreadsheets, like individual cell formatting. Also includes a stand-alone version with additional functions, larger worksheet size, and other enhancements.



C2 | =B2*1.2

HOME	A	B	C	D	E	F
1		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	TOTAL
2	Sales	10000	12000	14400	17280	53680
3	Cost	6500	7800	9360	11232	34892
4	Profit	3500	4200	5040	6048	18788

ExChequer (shareware) – A payroll accounting system for small business.
Managing your payroll is a snap with ExChequer. It calculates state, federal, and FICA taxes and prints a multitude of payroll reports. You'll receive the limited version, capable of handling up to five employees. After registering ExChequer with the author, you'll receive an enhanced version that manages the payroll records for 100 employees.

Financial Calc (shareware) – A versatile money calculator with six functions.
Calculate the time value of money with compound amount, present worth, sinking fund, series compound amount, capital recovery, and series present worth formulas.

Ledger d'Main – A simple cash accounting program.
Even though Ledger d'Main isn't going to replace the functionality of expensive commercial accounting software, you may find that it suits your needs. Checks are entered into the database, and reports can then be calculated and printed. NOTE: Ledger d'Main does not work with the LaserWriter printer.

Option Pricer – Value puts and calls in your stock portfolio.
Enter six pieces of information, such as the current stock price, expiration day of the option, etc. and Option Pricer will evaluate the situation and recommend whether to hold or sell the call or put.

102 SoftStart Worksheets

A collection of worksheets for personal finance and business analysis. Requires Microsoft Excel or Microsoft Multiplan.

Personal finance worksheets (shareware)
Included are worksheets and instructions for investment analysis, portfolio management, budgeting, mortgage analysis, and checkbook and credit card management.

Business analysis worksheets (shareware)
This collection of worksheets is designed for small business financial analysis. Includes cash flow budgeting, payables/receivables analysis, break-even analysis, and an integrated set of payroll templates.

Mortgage – Calculate mortgage amortization schedules.
Not a part of the SoftStart package, this bonus worksheet calculates an amortization schedule, and also tracks reduction in principle, cumulative interest, and cumulative deduction. This worksheet works only with Microsoft Excel.

103 Worksheets for Excel

Eighteen worksheets and macros, plus a unique add-on application. This disk requires Microsoft Excel.

Pegboard (shareware) – A bookkeeping system for small business.
A collection of linked worksheets that implement an electronic version of the popular one-write pegboard system.

Car Loan – Calculate payment amounts for auto loans.

Conversion Tables (shareware) – Over 150 unit and currency conversions.

MacDep – A macro to figure straight-line depreciation.

Optima Best Answer (demo) – An optimization add-on for Excel.
Analyze business situations to arrive at the "best answer" with this unique application. Best Answer manipulates data from your Excel worksheets, and uses linear programming techniques to help analyze the numbers.

Fourteen more worksheets and macros are also included:
Bi-Weekly Mortgage, Cellular Phone, Closing Costs, Increments, Loan Schedule, Mortgage Refinance, Interest Calculator, Point-To-Point, Fourier (shareware), MortAmt Macro (shareware), Print Macro, Regression Macro, Schwab (shareware) and Shortcuts.

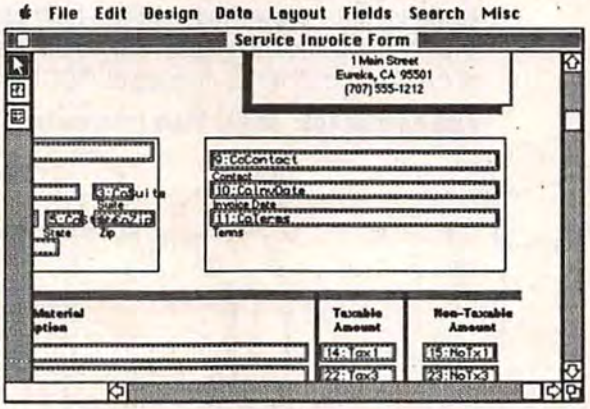
Home management

104 HomeWare Volume 1

Six programs to help make your home life more efficient... and more fun!

Home Inventory (shareware) – Maintain accurate records of your possessions.
Hopefully, you'll never need to replace household items like electronics, furniture, and appliances because of theft or damage, but if you do, accurate records will prove invaluable. This program maintains an inventory of your possessions, including purchase prices, serial numbers, and descriptions.

Form It! (shareware) – A powerful form management system for home or office.
With Form It!, you can make all your data entry tasks faster, easier, and more automated. It will turn any PICT or MacPaint image into a form, and then help you fill in the blanks, storing each record in a data file as you type! It can also print out each form on your ImageWriter or LaserWriter printer. Use it for invoices, party invitations, tax worksheets, certificates, or any time you need to add data to a form, drawing, or picture.



Form It! is the first shareware form management software. Use it to enter, maintain, and calculate data for invoices, certificates, or almost anything!

Household Shopper – Save time at the market with automated shopping lists.
You'll never forget that bottle of ketchup or roll of paper towels again! Mark the things you need from a built-in list of common items. You can also add your own items and categories. Then, print a list and go shopping. Household Shopper will even mark those items that you have coupons for!

continued on next page...

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

Disk 104 (HomeWare) continued...

CK 2.1 (shareware) – A complete checkbook accounting system.
Get your checkbook organized with the help of this easy-to-use checkbook management program. A variety of reports can be generated and the program also includes functions to automatically reconcile the checkbook against a bank statement. Complete on-line help is built into the program.

MacAuto (demo) – A complete gas mileage and repair log for your automobiles.
Track your gas mileage, gas costs, repair costs, and more with MacAuto. Now, all we need is a portable Mac that we can take with us on the road! This demo version does not save or print. Information on ordering the complete version directly from the author is included within the demonstration program.

Mac's Bar (shareware) – Keep track of your favorite bar recipes.
Including over 100 recipes, you may never have to add any recipes to Mac's Bar. But if you do have some favorites, keeping track of them is a snap. Drinks can be located by drink name, or by a particular ingredient.

Education

105 Stars and Planets

Explore the mysteries of the universe, including a faster-than-light journey to the corners of the galaxy!

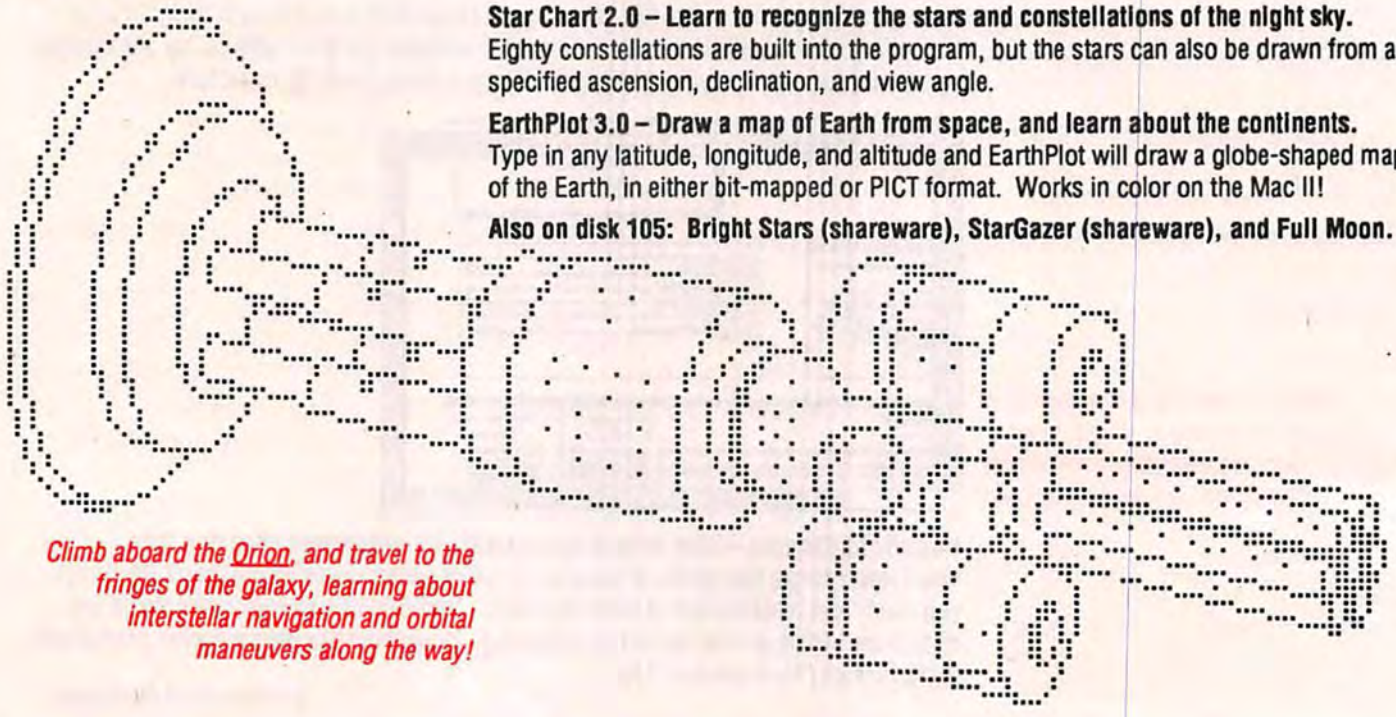
Gravitation 2.5 – The most fun you'll ever have learning about planetary interaction!
Learn about the force of gravity, and how the planets interact with each other. Includes 64 samples illustrating simple orbital motion, pulsars, planetary collisions, and more! Also included are **Orbit**, another planetary simulation, and **Planets 2.0**, a 3-D planetary simulator that works in color on the Mac II!

Orion 1.75 – Fly a spaceship and explore our solar system and nearby stars.
Climb behind the wheel of the Orion starship and reach speeds of several million times the speed of light! Learn about the planets and stars you pass. You can even try to achieve a stable orbit around the heavenly body of your choice!

Star Chart 2.0 – Learn to recognize the stars and constellations of the night sky.
Eighty constellations are built into the program, but the stars can also be drawn from any specified ascension, declination, and view angle.

EarthPlot 3.0 – Draw a map of Earth from space, and learn about the continents.
Type in any latitude, longitude, and altitude and EarthPlot will draw a globe-shaped map of the Earth, in either bit-mapped or PICT format. Works in color on the Mac II!

Also on disk 105: Bright Stars (shareware), StarGazer (shareware), and Full Moon.



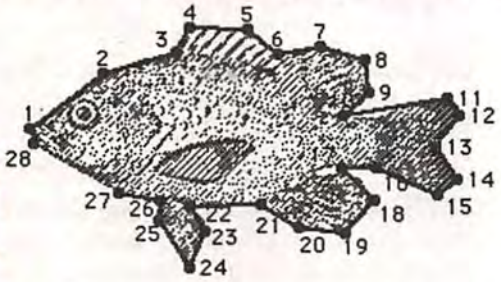
Climb aboard the Orion, and travel to the fringes of the galaxy, learning about interstellar navigation and orbital maneuvers along the way!

106 Preschool Programs

Six activity programs for the youngest Macintosh user. No reading skills are required.

With the Dot-to-Dot Construction Set, parents can create a variety of fun and educational puzzles. As the dots are connected, the picture will emerge!

Dot-to-Dot (shareware) – Help your child learn numbers, letters, and words.
Designed for ages 4 to 8, the Dot-to-Dot Construction Set combines elements of a child's dot-to-dot coloring book with a non-violent hangman game and picture puzzle. Parents can create new puzzles with any MacPaint-compatible drawing program.



Natalia's Dots (shareware) – A traditional dot-to-dot game with 26 puzzles.

Pattern Blocks (shareware) – A simple drawing program using geometric patterns.
Encourage creativity in your child with this simple drawing program. One of twelve different blocks can be dragged into the drawing area to create a picture. Parents can easily customize each of the blocks.

Kieran (demo) – A computer voice helps your child learn to read, count, and tell time.
This demonstration contains only a portion of the original program, but will give you an overview of the complete Kieran program.

Something's Hidden Here! – A picture recognition game for kids.
Click on one of the 38 puzzle buttons, and a picture will flash on the screen for an instant. As the child tries to guess what was in the picture, more and more of the image can be revealed by moving the 'decoder' (also known as a mouse!) across the image.

Halloween Night! (shareware) – Help young children overcome their Halloween fears!
Even the youngest children want to be a part of Halloween. This program helps your kids understand the holiday, with animated characters who come to the door for candy!

107 Beginning Math

Help develop their math skills early with these fun and educational programs for the beginning math student.

MacMath (demo) – A four-part program, including a high-speed math game!
A friendly alien guides your child through the math basics, first by teaching, then by testing the student. After all that hard work, an exciting outer-space game is included in which the student must shoot down the correct answer to each problem!

HeloMath (shareware) – Practice your math skills as you pilot a high-flying copter!
Fly across the mountains, blast the correct answers, and make it back to base in time!

Flashcard – A flashcard builder for repetitive-enforcement learning.
Children have learned with flashcards for years. Now, they can practice their skills on the computer! A set of multiplication cards is included, and parents can create their own.

Math Factory (demo) – A fun, flexible way to learn beginning math skills.
This program tracks a students day-to-day progress, and provides ten adjustable skill levels, to make sure the program grows as the students' skills increase. This demo version teaches only addition, but the complete program includes subtraction, multiplication, division, and fractions.

Hi! My dog Spot and I want to teach your children all about math! At our Math Factory, They'll have so much fun, they won't know they're learning!

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

Games

108 Arcade Action Games

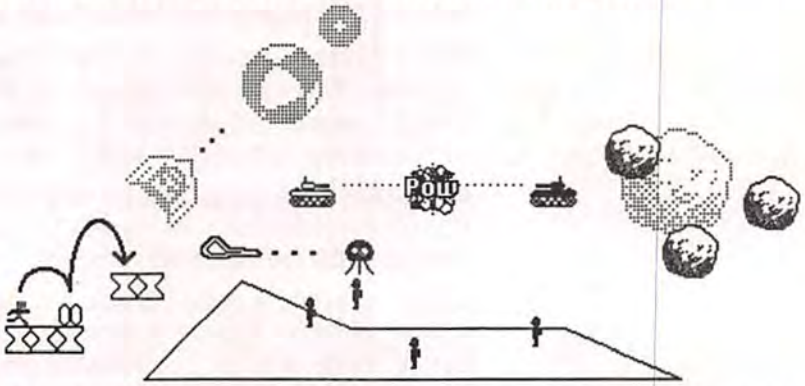
Nine exciting games that bring the arcade action home! Battle killer insects, rescue astronauts, and more!

These are just some of the situations you'll face, with these exciting games that recreate the video arcade experience on your Macintosh!

Centipede – Fight off an insect invasion in this Mac adaptation of the arcade classic!
Become the ultimate pest control service while you fight off deadly mutant centipedes, spiders, fleas, and other nasty creatures. The game includes great digital sound.

Continuum (shareware) – Explore 60 different worlds in your galactic gunship!
Pilot your ship through the solar wind while you blast laser cannons and pick up fuel. The game includes 60 different levels, each with a different map and layout. Plus, with the built-in editor, you can create your own worlds, and modify every game setting!

Iggy Iggopolis – Help Iggy conquer the void by laying down his special fences!
In this high-speed geometric challenge, based on the classic arcade game QIX, you'll have to fence off enough of the void to capture the deadly ZUUL.



Let's Get Tanked! – Go one-on-one with a computer controlled armored tank!

Lunar Lander – You'll need a steady hand to land safely on the lunar surface!
Choose your landing site carefully, because you'll need a steady hand to settle down safely on the uneven surface of the moon. This game does not work on the Mac II.

MacLanding (shareware) – Defend your astronauts from an alien kidnapping ring!
You'll have to keep moving to watch over an entire planet full of careless astronauts, who are being absconded by sneaky aliens as fast as you can rescue them!

MacMissiles (shareware) – A nuclear nightmare come true! Can you save the cities?
You are the controller of the S.D.I. (Star Wars) defense system in this classic missile defense game. How long can you protect six major cities from nuclear destruction?

Megaroids Plus – Battle your way out of the center of an asteroid belt!
You're caught in the middle of a dense asteroid field, with only your wits and your laser to blast your way out! This game does not work on the Mac II.

Spacestation Pheta (shareware) – Climb and jump your way out of the station!
This game will put your dexterity (and your strategy) to the test! Ten increasingly more difficult levels will challenge you, and when you register with the author, you'll receive a code that will "unlock" 70 additional levels for you to play! And, if that weren't enough, the game features a built-in editor, so you can create and play your own levels too!

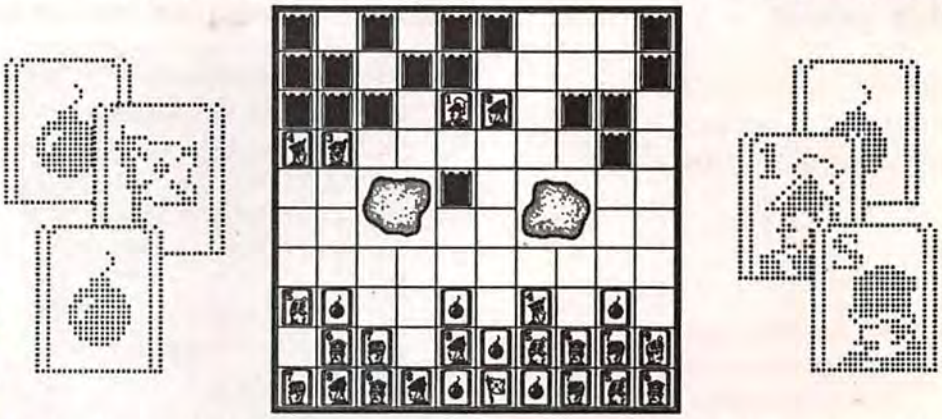
109 Puzzles and Strategy

Over thirty different puzzles and games that will put your strategic abilities to the test!

This Macintosh version of the classic Stratego game includes high-quality graphics and vibrant digital sound effects. Outwit the Mac and find his hidden flag!

Dragon (shareware) – Help save Bosnia from a ruthless fire-breathing dragon.

Stratego® – Find and capture the Mac's flag in this classic strategy board game! Use your marshals, scouts, spies, miners, and other soldiers to find and destroy the enemy flag. But be careful! Hidden bombs will throw you off the track, and destroy your men in the process! Stratego is a registered trademark of the Milton Bradley Company.



MacPuzzle – Fit each piece into the proper place, if you can! 25 puzzles are included.

BlobManager – Sixteen puzzles and games in one program! Yes, the name is strange, but the games and puzzles are great. Play Hangman, Magic Square, Fox-Goose-Grain, Fish Sticks, State Capitals, Coin Swap, and ten more.

MysteryBox (shareware) – Fire rays into the Mystery Box to find the hidden balls.

Enigma (shareware) – If you liked Rubik's cube, you'll love Enigma's locking rings.

PegPuzzlePak (shareware) – Four different puzzles in one! Can you solve them all? These classic puzzles are solved by jumping pegs over each other into empty holes.

Tablut – It's the Muscovites vs. the Swedes in this strategy board game for 2 players.

ThinkAhead Plus (shareware) – You'll need to think ahead to outwit your opponent. Move by choosing numbers on a board; each number subtracts from or adds to your score. Plan your moves carefully, and force your opponent's hand! For 1 or 2 players.

Also included: Towers of Hanoi, 2D and 3D Maze Games, and Hex Puzzle.

---

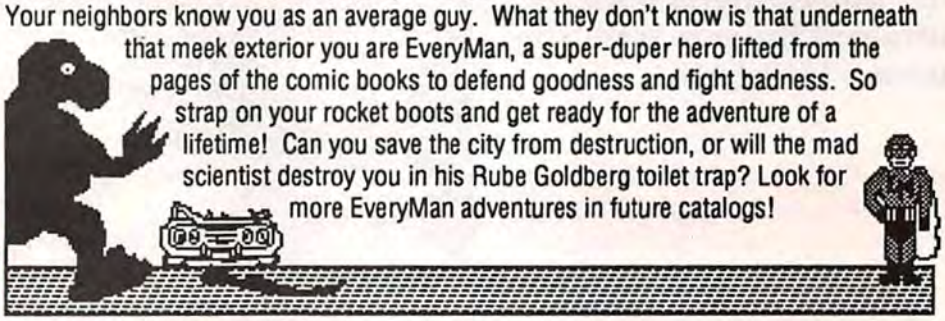
110 Adventure Games

Tired of shoot-em-up games? Put your brain to work with 2 "interactive novels" that make you the main character in an exciting adventure story!

Put on your tights and become EveryMan, protector of truth and justice, in this comic-book adventure. Can you stop the mad scientist and his evil Glob Monster?

The Village (shareware) – A medieval tale of mystic temples and ancient relics. Something's rotten in the village of Darmothe…the priests of the Stone Temple are up to no good and the villagers are helpless! Can you save the village (not to mention your own neck), or will you become another victim?

EveryMan Adventure #1 (shareware) – Go from mild-mannered to major muscle! Your neighbors know you as an average guy. What they don't know is that underneath that meek exterior you are EveryMan, a super-duper hero lifted from the pages of the comic books to defend goodness and fight badness. So strap on your rocket boots and get ready for the adventure of a lifetime! Can you save the city from destruction, or will the mad scientist destroy you in his Rube Goldberg toilet trap? Look for more EveryMan adventures in future catalogs!



Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

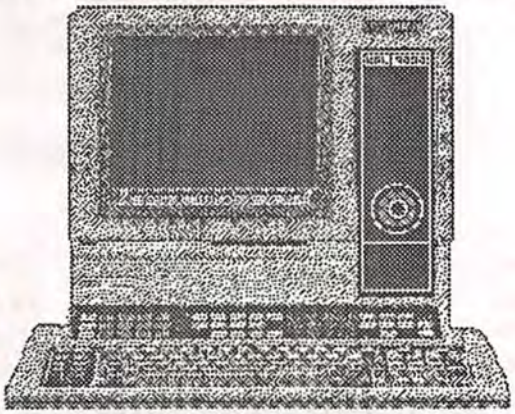
111 The Phoenix – Disk One

If you liked the movies 2001 and 2010, you'll love this game!

Climb aboard the disabled Discovery and attempt to reactivate HAL9000 in The Phoenix, an adventure based on the hit movies 2001 and 2010.

The Phoenix – Return to the Discovery in the year 2066 for a little sci-fi sleuthing. Based on the hit science fiction movies 2001 and 2010, this game features an abundance of digitized scenes and sound effects from the films. For the best results, you'll also want to order disk 112 (below), which contains a huge add-on sound file that provides the voice of the treacherous HAL9000 computer system.

Also included: Colossal Cave Adventure (shareware) and Strange Hotel (shareware).



112 The Phoenix – Disk Two

This companion to disk 111 contains a huge add-on sound file for The Phoenix, and 2 other bonus games!

HAL Files – A companion sound file for The Phoenix adventure game. This file is not required to play The Phoenix (disk 111), but will greatly enhance the game. Place this file in the same folder as the game itself, and the pesky HAL9000 computer will come to life, speaking to you as you play!

The Journey (shareware) – Repair your ship and blast off in this text adventure.

The Venice Project (shareware) – Hack into a mainframe and prevent disaster! In this unique game, you are a young computer "hacker" attempting to break into a large mainframe computer system. But your intentions are good...the world is doomed unless you can defuse the situation through the mainframe.

Clip Art Graphics

113 Animal Clip Art Volume 1

Spice up your newsletters, pamphlets, and publications with 52 different images from the animal kingdom.

You never know when you'll need a picture of a bullfrog or giant sloth to add life to a newsletter, flyer, or other publication.

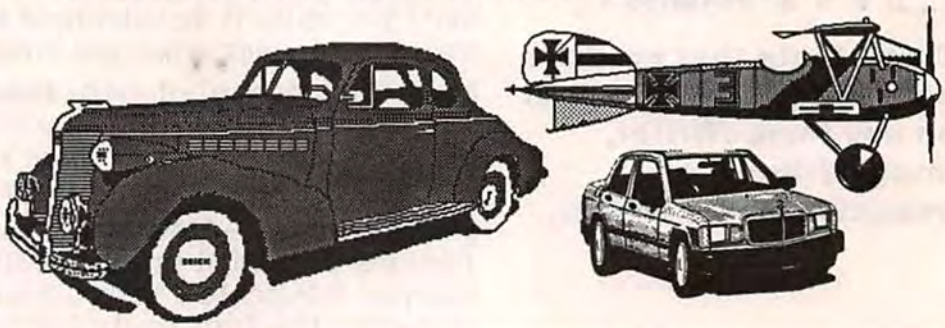
This disk contains a collection of bit-mapped images that can be easily incorporated into almost any publication. The pictures are stored as MacPaint files, which can be opened or imported by most graphics applications, such as PageMaker, Ready-Set-Go, MacDraw, SuperPaint, and many others. The images include birds, cats, forest mammals, monkeys, farm animals, reptiles, whales, insects, amphibians, and more!

114 Planes, Trains, & Automobiles

Add these images to your flyers, posters, and other desktop publishing projects.

This disk is filled with excellent hand-drawn and digitized images in a variety of sizes. you'll find both classic and modern cars, airplanes, boats, and other vehicles.

This disk includes over 75 images of cars, trains, airplanes and motorcycles. A number of auto manufacturer and railway logos are also included, as well as a "construction set" of drawings that assist you in drawing '64-'68 model year Mustangs yourself. All images are in bit-mapped MacPaint format for use in a wide variety of drawing programs.



115 Misc. Clip Art Volume 1

100 different images, including holiday pictures, foods, famous places, and more!

On disk 115, you'll find a wide selection of quality digitized and hand-drawn images to add character to almost any project.

The pictures on this disk don't fall into one specific category, but cover a range of topics and are drawn in both realistic and cartoon styles. Most pictures are samples from commercially available clip art collections, and contain information for ordering more images directly from their creators. All images are in bit-mapped MacPaint format.

116 Laser Art Volume 1

LaserWriter art that prints at the highest quality, even after stretching and resizing!

These are just a few of the high-resolution images you'll receive on disk 116. Since the images are in Encapsulated Postscript format, they can be scaled, rotated, and stretched without distortion.

The artwork on this disk requires a LaserWriter or other postscript-compatible printer. The art can be used with any desktop publishing program that can use the Encapsulated Postscript Format (EPSF), such as PageMaker, Ready-Set-Go, Quark Xpress, and others. The images can also be opened by Adobe Illustrator, or imported into Aldus Freehand, for further editing and modification.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

ImageWriter Fonts

117 Near LQ Fonts Volume 1

Three fonts that produce near letter quality output on any ImageWriter, ImageWriter II or ImageWriter LQ printer.

Alexis – Includes serif and sans serif versions, and a variety of bullets and symbols. Designed by a professional printer, Alexis is one of the most legible fonts available. It includes light and medium faces, point sizes from 8 to 48, rules, boxes and other special characters.

Beverly Hills (shareware) – One of the all-time classic high quality serif fonts. The Beverly Hills font family was designed to be a formal, highly readable font that doesn't look computerized. It comes in 9-48 point, and is one of the most popular fonts ever.

Palencia (shareware) – A hot serif font from Andrew Welch, "Mr. Shareware!" Besides beautiful print quality, Palencia includes a unique integrated instruction manual that offers tips on using the font to its full potential. Character reference charts are also included. You'll love it!

118 Near LQ Fonts Volume 2

Three high-quality fonts for your ImageWriter. Get both disks 117 and 118 for a complete set!

Alderney (shareware) – Another quality font from Andrew Welch, creator of Palencia. Alderney is a beautiful sans serif font that comes in 9 to 48 point sizes. Though it is perfectly usable alone, pair it with Palencia, from disk 117, and you'll have two of the best fonts ever produced for the ImageWriter.

Clairvaux (shareware) – A serif font with elements of Palatino & PostMedieval Light. Clairvaux comes in ten different sizes from 9 to 48 point, and also includes ClairvauxCaps, a special-purpose font for creating initial caps. It is a dense and angled font, with straight serifs, and looks great on screen and on paper.

Neshota (shareware) – This sans serif font will become one of your favorites! Neshota is one of the largest font families available anywhere! It comes in a whopping 22 different sizes, from 8 to 72 point. Because so many sizes are included, it will work well with the ImageWriter LQ's triple-quality mode.

119 Display Fonts Volume 1

This disk contains 56 ImageWriter fonts in large sizes, perfect for headlines, letterheads, and posters.

On this disk you'll find 56 individual fonts, in a variety of sizes, for any ImageWriter printer. They are typically large and stylized, perfect for posters, headlines, flyers, and other special-purpose uses. The fonts are free, with no shareware fees required.

These are just some of the fonts from disk 119. They can add a special touch of personality to all your publications.

LaserWriter Fonts

120 LaserFonts Volume 1

Eleven quality downloadable fonts for the LaserWriter and other postscript-compatible printers.

Alison – An elegant font perfect for invitations, awards, and other formal purposes.
Alison ABCDEFGH abcdefgh 123456 !@%&

D. Ross Font Demos (shareware) – Sample versions of three oustanding fonts.
These three font samples are missing some vowels, but we think you'll like them enough to pay the shareware fee and receive the complete versions from the author.
ARCHITECT SAMPLE DRAFTSMAN DEMO SKETCH abc 123

Bill's Dingbats (shareware) – An extensive collection of arrows, bullets and symbols.

Canaith (shareware) – A striking text or display font with an Arabian influence.
Canaith Canaith Canaith ABCDEF abcdef 1234567 !e$%&

ChiTown – This typeface resembles the standard Chicago font.
ChiTown ABCDEFGHIJKLMNOP abcdefghijklmnop 1234 !@&

Helvetica Fractions (shareware) – Fraction symbols with horizontal separators.
Create custom fractions! 1/123 111/456 111/789 223/234 253/567 320/891 453/987 440/753

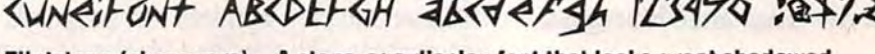
OCR – An Optical Character Recognition font developed for the U.S. Navy.
This font mimics the standard IBM type ball used in many military applications.
OPTICAL CHARACTER RECOG ABCDEFGHIJK 12345 $%&[]J

Rodchenko (shareware) – A bold sans serif face perfect for posters, mastheads, etc.
Rodchenko Rodchenko Rodchenko 12345 !$%&

Sans Serif (shareware) – A multi-purpose font that's great for body copy or headlines.
Sans Serif ABCDEFG abcdefg 12345 !@$&

121 LaserFonts Volume 2

Ten more downloadable PostScript fonts for your LaserWriter printer.

CuneiFont (shareware) – A bizarre display font with a new-wave pop appeal.


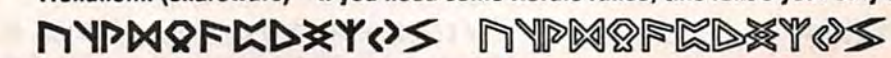
Flintstone (shareware) – A stone-age display font that looks great shadowed.
FLINTSTONE FLINTSTONE 1234567 1234567

Kathlita (shareware) – An unusual face with both formal and informal characteristics!
Kathlita ABCDEFGHIJKLMNOPQR abcdefghijklmnopqr 12345 !@$%&

Louisville (demo) – Similar to the classic Los Angeles font. Missing the "b" and "j".
Louisville ACDEFGHIKLMOPRST abcdefghiklmnopqrst 12345

ModernPrint Bold (shareware) – A narrow font that resembles fine hand printing.
ModernPrint Bold ABCDEFGHIJKLMNOPQ abcdefghijklmnopq 12345 !@$%&

Thomas – A classic serif font based on Caxton, with bold strokes and a stately look.
Thomas ABCDEFGHIJKLMNOP abcdefghijklmnop 123456 !@$%&

Trondheim (shareware) – If you need some Nordic runes, this font's your only hope!


Also included: Chezstar, IBM Klone, **and Chicago Symbols** ⌘✓◆●.

Disk descriptions continued on page 19...

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

How to order

Placing your order

The easiest way to place your order is by telephone. Call us toll-free at (800) 842-5020, and have your disk numbers and credit card information ready for our operators. If you prefer, you can also place your order by mail. Tear out or photocopy the order form on the next page, and mail it to: Somak Software, 535 Encinitas Boulevard, Suite 113, Encinitas, California 92024.

Business hours

Somak Software is open from 8:00 AM PST to 5:00 PM PST Monday through Friday, and from 10:00 AM PST to 4:00 PM on Saturday. Our technical support staff is available Monday through Friday only.

Payment methods

Orders placed through the mail must include payment with Visa, Mastercard, personal or company check, money order, or bank draft. Telephone orders must be paid by Visa or Mastercard. A minimum purchase of $20 is required for credit card orders. Written purchase orders will be accepted from major institutions such as universities and major corporations. California customers please add the correct sales tax for your county (6.5% or 7%). Foreign orders must be paid by Visa, Mastercard, international money order, or a check in U.S. dollars drawn on a U.S. bank. No C.O.D. orders will be accepted.

Shipping

Please allow one to two weeks for delivery. Orders within the continental United States and Canada pay $4.00 postage and handling. Foreign orders please add 15% of the total order amount to the standard $4.00 charge. Federal Express service is available on most orders placed by telephone. Please call for details, delivery schedules and pricing.

Returns and exchanges

Somak Software warrants that programs will perform as described and are compatible with specified Macintosh configurations. If a disk does not perform as described, we will exchange that disk for another one of your choice. Defective disks, disks damaged in shipping, and disks duplicated incorrectly will be replaced with the same title. No refunds will be issued for software products.

Service charges

A service charge is paid for each disk ordered. This service charge covers Somak Software's costs for research, organization, duplication, advertising, technical support, and other related expenses. This charge does not release the purchaser from any shareware fees requested by a program author (see page five). Please pay the shareware fees requested for any shareware programs that you keep and use. This will insure that the shareware distribution system remains a viable marketing alternative.

Copyrights

The compilations and collective contents, and other proprietary software and instructional materials contained on each disk are copyrighted by Somak Software. Any other copyrights claimed on any other program or data file are retained by the respective copyright holder. Somak Software's disk compilations may not be duplicated except for personal archival purposes.

SOMAK SOFTWARE, INC. ◦ 535 Encinitas Boulevard, Suite 113
Encinitas, California 92024 ◦ Telephone 619/942-2556

Order form

1. Select your disks

Please circle the disk number of each disk you would like to order below.
Disks start at $8.99 each, with discounts available for multiple-disk orders. Count the total number of disks in your order, and use the table at the left to determine your price per disk. For example, 3 disks would cost $8.99 each, and 20 disks $7.99 each.

Qty.	Price Ea.
1-5	$8.99
6-15	$8.49
16-25	$7.99
26 up	$7.49

101	106	111	116	121	126	131	136	141	146
102	107	112	117	122	127	132	137	142	147
103	108	113	118	123	128	133	138	143	148
104	109	114	119	124	129	134	139	144	149
105	110	115	120	125	130	135	140	145	150

2. Calculate your subtotal

Multiply the total number of disks you selected by the price per disk you looked up with the pricing table above, and write your numbers below. For example, if you selected 2 disks, multiply 2 times $8.99. Your subtotal would be $17.98. If you selected 10 disks, multiply 10 times $8.49. Your subtotal would be $84.90.

Number of disks _____ X price ea. _____ = Subtotal $_____

3. Splashes?

If you would like to order either of the *Splashes* clip art packages described on page 18, please indicate which ones you want by checking off the boxes below. Each *Splashes* package contains three disks of quality art, and sells for $39.95.

❑ **Yes, I'd like _____ Splashes #1 – Assorted Art @ $39.95 each.**

❑ **Yes, I'd like _____ Splashes #2 – "Top Gun" @ 39.95 each.**

4. Add it up!

Subtotal from section 2 above .....$ _____

Splashes subtotal from section 3 .....$ _____

Sales tax (CA residents only, add 6.5% or 7%) .....$ _____

Postage and handling .....$ 4.00

Foreign postage charges (if any) .....$ _____

GRAND TOTAL .....$ _____

Method of payment:

❑ **Payment enclosed.**

❑ **Bill my Visa/Mastercard.**

Card Number:

_____

Expiration Date: _____

Name _____

Company _____

Address _____

City _____ **State** _____ **Zip** _____ **Country** _____

Daytime phone _____

Signature _____

Software developers! Somak Software want's you!

If you're a Macintosh programmer, and are interested in having a piece of software you've already written or a new project you're working on marketed commercially, we're interested too. Or, if you would just like your public domain or shareware software added to our next catalog, let us know.

We reach over 500,000 Macintosh customers annually, in the United States and worldwide. Your product will receive the maximum possible exposure.

If you are interested in having Somak Software market your products, please call us at (619) 942-2556 and ask for Robert.

Sincerely,

Robert Eberhardt
President

Volume 1
ASSORTED
CLIP-ART
SUBJECTS

Splashes

INTRODUCES
Volume 2
"TOPGUN"
Clip-Art

A CLIP-ART COLLECTION

- **Hand Drawn**
- **Original**
- **Professional**

$39.95

3 Disks in Each Volume
Each Volume **ONLY**

Splashes
A CLIP ART COLLECTION
is published by
The MAC Group

Utility software

122 Startup INIT Utilities

22 programs that add power and function to every session in front of your Macintosh!

Place an INIT utility into your System Folder, and each time you turn on your Mac an icon will be displayed to let you know that the utility is being installed.

AutoIdle – An automatic screen saver utility that prolongs the life of your monitor. After long periods of inactivity, your screen may develop "burn-in," or a retention of screen images. This utility will automatically blank your screen after a specified period of inactivity, and prolong the life of your screen!

Backdrop – Kick the gray habit! Use any MacPaint picture as a background pattern. Three samples are included. Backdrop does not work on the Macintosh II.

BigScreen (shareware) – A simulated big screen display for MacPlus owners. This turns your screen into a "window" on a larger page area, simulating the performance of a big-screen Mac. BigScreen does not work on the Mac SE or Mac II.

Curly Quotes – Two different programs that provide printers' quotes as you type. Straight quotation marks are easy to type, but don't look as good as the curly marks when printed. These programs will make the switch for you automatically.

F1-F4 (shareware) – Make your extended keyboard do what it was meant to do! If you have the extended keyboard with function keys, this will make the first four (F1-F4) actually perform the functions they are labeled for (undo, cut, copy and paste).

Fontsie (shareware) – Use fonts on the fly any time you want, without installing them! If you use certain fonts infrequently, why should you have to install them? Well, with Fontsie you don't! Keep those fonts in a special folder, and any time you need them, they can be temporarily installed by pressing the Caps Lock key while a program opens.

MFMenu Plus – Use MultiFinder? You'll love this! Switch between programs easily. Do you find yourself dragging down to the bottom of your Apple menu constantly to switch between programs in MultiFinder? MFMenuPlus creates a pop-up menu with a list of your open applications, and also serves as a demo for OnCue™.

SelText – Patches the dialog box routines to automatically select a default text item.

SFVol (shareware) – Select volumes directly, and create new folders instantly! This one is hot! Instead of clicking the Drive button repeatedly to select the disk you want to work with, use SFVol's pop-up menu to select that disk directly! New folders can be created, and the amount of free space is displayed in all Open and Save dialogs.

TattleTale (shareware) – This one keeps tabs on your other INITs & logs their activity!

Welcome2 – Turn on your Mac, and it will greet you with a spoken message.

PopIt! and PopUp (shareware) – Select any menu item from anywhere on the screen!

INIT Manager Demo – Let's you keep your INITs in any folder and log their activity. This demo doesn't actually do anything, but explains in detail how INIT Manager can make dealing with a lot of INIT utilities much easier. The actual program lets you keep your INIT utilities in separate folders, and also keep a log file of their activity.

Seven more INIT utilities are also included: Insure, MacWait, AutoCursor, Reverse Screen, CrashSaver, Enchanted Menus, and CursorWrap.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

123 Control Panel CDEV Utilities

These great utilities are configurable from your control panel desk accessory.

ApFont (shareware) – Choose the default font that will be used by your applications.

ApplicationMenu – Switch between programs in MultiFinder from a pop-up menu.

Fortune – A fortune, quote, or joke will greet you each time you start up your Mac! Turning your Mac on will be a new, fresh experience every day with Fortune! One of hundreds of different quotes, jokes, sayings, and fortunes will be randomly selected and displayed each time you power up, or just once each day.

Front & Center (shareware) – The ultimate utility for the truly lazy mouse operator. This one causes all dialog and alert boxes to be centered over wherever your mouse cursor is at the moment. This can save you a lot of time, especially with a big-screen.

Møire – A fully configurable screen saver that draws beautiful animated patterns.

Port-Master – View and change the default settings of your serial ports.

SCSI Parker (shareware) – Automatically parks hard disk drives when you shut down. If your hard disk requires you to run a special program to park the heads, then you need SCSI Parker It will park the heads when you select Shut Down from the Finder.

SCSI Tools (shareware) – View the IDs of all SCSI devices, mount any off-line drives!

SuperClock – A time and date display that doesn't get in the way of your other work. It's a bird... It's a plane... no, it's just the greatest menu bar clock utility of all time, SuperClock! It will display the time in the upper right corner of your menu bar, and is completely adjustable. You can even choose what font/style to display the clock with!

Who's Who – Find out just what that Macintosh of yours has under the hood. This displays 10 different pieces of info about your Mac configuration: System version, processor, QuickDraw type, keyboard type, AppleTalk driver version, and more.

Two CDEVs for the Mac II are also included: ScreenMaster (shareware), and Toggle-Cache. See page 30 for descriptions of these two utilities.

124 Virus Fighters and Vaccines

Protect your valuable data from destructive computer viruses and "Trojan Horse" programs!

It was bound to happen sooner or later. In 1988 the first Macintosh computer virus was unleashed on the world. The "Peace Virus" turned out to be relatively harmless, but was followed by Scores, nVir, and a host of others with malevolent intentions. This disk includes informational files and utility programs designed to educate you about computer viruses and help you protect your data from contamination. You'll receive:

Vaccine – This CDEV from CE Software prevents unauthorized changes to your files.

GuardDog (shareware) – Protect your files from being renamed, moved, or copied.

Interferon (shareware) – Searches for multiple virus types and blows them away!

Virus Detective (shareware) – A desk accessory to scan for infection and remove it.

Also included are Ferret, Virus Rx (©Apple), Agar, and VCheck .

125 StuffIt and StuffIt Utilities

The most powerful data compression utility ever, plus some great stuff to go with it!

StuffIt (shareware) – The industry standard for data compression and transmission. Do you have files and programs you use very infrequently, but can't bear to throw away? Well, with StuffIt you can reclaim up to 90% of that used disk space, and not lose a thing! It can compress any file, making it occupy as little as 10% of the original space on disk. Passwords and DES encryption can also be added for data security.

StuffIt Utilities (shareware) – A collection of companion utilities and accessories. Includes UnStuffIt, AutoUnStuffIt Shell, two "DAs", and the SFVol Init (see page 19).

StuffIt Cataloger (shareware) – A HyperCard stack to catalog your StuffIt archives. This stack will "look" into any StuffIt archive and create a directory of the contents.

Desk Accessories

126 Desk Accessories Volume 1

Desk accessories are installed and listed beneath your Apple menu. Use them any time!

With the Remember DA, you'll never miss another appointment! The Casio clock DA features 9 time zones, 10 alarms, and 10 timers! The SunClock DA creates a world map showing where the sun is shining! Our SunClock demo is limited to one time zone.

Remember (shareware) – The ultimate personal secretary who never forgets!
Do you have trouble remembering appointments, birthdays, and other occasions? You won't any more, if you have Remember! Enter descriptions of important occasions, and this combination desk accessory/INIT utility will automatically remind you of impending events when you turn on or reset your Mac! Occasions can be one-time events, like dentist appointments, or periodic, like birthdays and anniversaries. You'll love it!

Calculators – Eight calculators for scientific, financial, and other specialty uses.
Included are the dCad Scientific (shareware), the RPN-C calculator, a Feet/ Inches/ Fractions computer (shareware), an abacus, a Roman numeral calculator, and 3 more!

Convert (shareware) – The ultimate Metric-to-English and back again convertor!
Not only will Convert move numbers from the English system to Metric, but it also does unit conversions in linear, square or cubic measurements, supports all standard multiples and submultiples (deca-, milli-, etc.), and is even a four-function calculator!

Unit Conversions (shareware) – Unit conversions for area, acceleration, mass, etc.

Note Pad II (shareware) – A great note-pad replacement with pop-up topic index.
When you need to jot something down, do you still reach for a scrap of paper? Well, you won't if you have Note Pad II installed on your Mac! It provides a multi-page scratch pad, and has an innovative pop-up menu that keeps your notes categorized.

New Scrapbook (shareware) – Store your pictures and text with greater flexibility.
This text and graphics scrapbook functions much like the original one, except that specific portions of any text or graphic pasted into it can be copied separately. Large pictures can be reduced to fit inside the scrapbook window without distorting the image, and long text entries can be scrolled to view areas that are outside of the main window.

Clocks – The time can be fun with these wild, wacky and useful replacement clocks!
You'll receive eight new clock accessories to replace the old alarm clock. Choose from Casio (shareware), which features nine programmable time zones, ten countdown timers, ten elapsed timers, and ten nameable alarms, a reproduction of London's Big Ben, the infamous "Two Sheds" Jackson clock, and five more!

Sunrise...Sunset – Displays the sunrise and sunset times for any location.
Enter your latitude and longitude, and this DA will display an accurate sunrise and sunset time for either your standard time or daylight savings time.

SunClock (demo) – A fascinating display of the relationship between Earth and Sun.
SunClock draws an accurate world map showing the areas of light and darkness.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

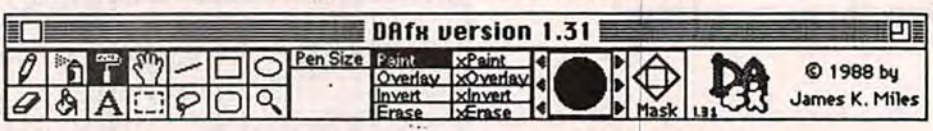
127 Graphics Desk Accessories

A collection of outstanding accessories for drawing, painting, and other graphic work.

Scribbler 3.0 (shareware) – A full-featured object oriented drawing program in a DA!
If you need to scratch out a quick illustration, or touch up a picture before pasting it into another program, you'll find Scribbler handy indeed!

DAfx 1.31 (Keyware) – A powerful painting program that you can use any time!
This is one of the most full-featured paint programs around, with almost all of the tools that MacPaint had, and some of the special features of newer programs like FullPaint and SuperPaint! And to top that all off, because it's a desk accessory, you can use it any time you want, without quitting your current program. Some of the features of DAfx are disabled until you register with the program's author. You will then receive a software "key" that will unlock your copy of DAfx and make it fully functional.

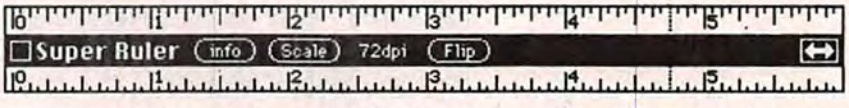
DAfx is a painting desk accessory with most of the features of MacPaint, and some unique tools of it's own for special effects.



Artisto Plus (shareware) – Open, view, and copy any MacPaint or PICT image.
You'll like the quick and easy operation when you use Artisto Plus to open paint or PICT images, preview them, and paste all or part of those images into another document.

SuperRuler 1.1 (shareware) – Measure on-screen images for precision alignment.
You probably wish all programs had rulers the way MacWrite and PageMaker do. Well, now they can! The SuperRuler can be flipped for horizontal or vertical measuring.

With SuperRuler, you can overlay a ruler on top of any on-screen document for precise alignment and measurement.



AppleDraw (shareware) – A mini MacDraw, accessible within your other programs!

Show DA (demo) – This DA will open MacPaint images and create a slide show!
The Show accessory will open MacPaint pictures, and flip through them automatically in a "slide show." This demo is missing some features, such as time delay, but is useful on its own. Information is included for ordering the complete version from the author.

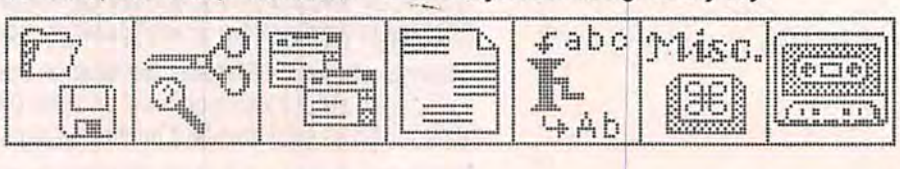
Bezier – This painting accessory is a specialist in smooth Bezier curves!
With multiple ink modes and a special Bezier tool, you can produce professional curves in no time at all! Use Bezier in conjunction with another program or the scrapbook, and you can copy and paste the curve directly into another document.

128 Text Editing Accessories

Sometimes you don't need all the features of a word processor. Use one of these great editors!

McSink 6.2a (shareware) – Everything but the sink is in this amazing text tweaker!
It started as a humble utility with character stripping and word counting capabilities. Now, it's one of the most feature-packed programs in existence! It also serves as a demonstration of it's commercially-available big brother, Vantage™. McSink can edit the contents of your clipboard, add and remove prefix and suffix strings to every line of text, sort text three different ways, change spaces to tabs and back again, strip control characters such as linefeeds from your text, edit multiple documents, add or remove line numbers, and much, much more! You'll find yourself using it every day!

McSink features an innovative icon bar that offers an alternative to it's pull-down menus. All the functions are quickly and easily accessible from these icons.



continued on next page...

Disk 128 (Text Editing Acc's) continued...

MiniWriter (shareware) – This text editor is optimized for the ImageWriter owner. If you need to quickly edit a text-only document, and print it out on your ImageWriter, you'll like MiniWriter. It comes with a special font that mimics the draft printing characters of your ImageWriter, for 100% WYSIWYG operation. And if you own a LaserWriter, you can use MiniWriter to send Postscript commands to your printer!

SigmaEdit – This text-only editor works with documents larger than 32K!

MyWord (shareware) – Is it a text editor or a word processor? Well, a little of both... Most text editing accessories allow you to select a font for the entire document to be displayed in. MyWord lets you specify individual fonts, styles, and sizes for every character! And, it uses familiar on-screen rulers for margin settings.

Word Counters – Three accessories to count the number of words in your text files.

Afterthought (demo) – A disk-based editor designed for the power programmer! This desk accessory editor is modeled after MDS Edit, the standard in text editing since the early days of the Mac. Since it is disk based, it can edit documents as long as 8,000,000 characters, and can open two files simultaneously. This demo version can't save or print your files, but includes ordering information for the complete package.

PowerEdit (shareware) – Another editor designed for the C or Pascal programmer. PowerEdit includes features that programmers will love, like block shifts, search and replace, auto indentation, automatic save, and even bracket matching!

JoliWrite (shareware) – Beautify your files before transmitting them with a modem. Some communications services need files to include a carriage return at the end of each line, and need spaces instead of tab characters within the text. JoliWrite automatically does most of this formatting for you before you upload your text to another system.

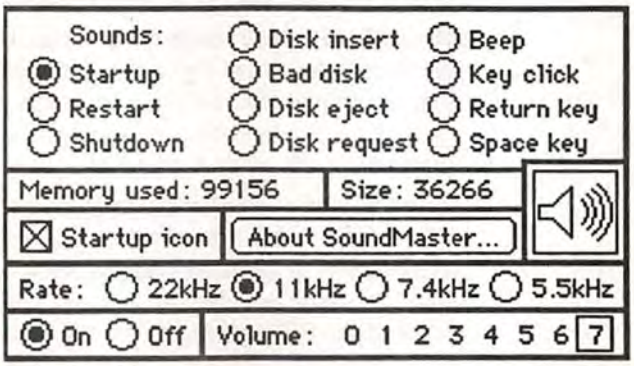
Sound effects

129 SoundMaster Volume 1

With these incredible digital sound effects, your Mac will take on a whole new personality!

SoundMaster (shareware) is a small utility that you place inside your System Folder. It will play sound effects during specific Mac operations, such as inserting a disk or shutting down. Think of your co-workers amazement when your Mac greets you in a human voice and asks what you would like to work on! Or, create a high-tech environment with our robotic effects that make your Macintosh sound like a deadly killer android! We've included five different sound "environments" for you to choose from.

NOTE: Digital sound effects can use substantial amounts of memory. This disk will work on Macs with the standard one megabyte of RAM, but will work more efficiently if your Macintosh has two or more megabytes installed.



The SoundMaster control panel lets you select different sound effects to accompany eleven different Mac operations.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

HyperCard Stacks

The programs in this section require the HyperCard application from Apple.

130 Utility Stacks Volume 1

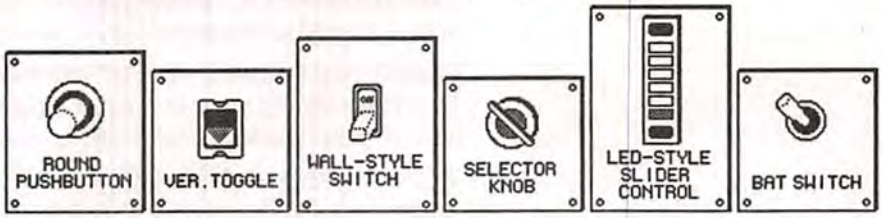
Do you use Apple's HyperCard to create your own stacks? You'll love these external functions and script examples!

About XCMD – Now your stacks can have a custom "About this stack..." menu.
Most Macintosh programs include a credit line under the Apple menu. Now your HyperCard stacks can too! This external command adds one or two lines under the menu that you can link into any card or script.

FileName – Access the standard file dialog routines from your HyperTalk scripts.
Nobody likes to type in pathnames like "HardDisk:HyperCard:My Stacks:Test1" when they can just point and click! Well, this external function lets your stacks use the standard file dialog boxes for opening and saving files.

Clicky Buttons – Seventeen whimsical animated buttons to add life to your stacks.
The wizards at the Acme Dot Co. have come up with a collection of buttons that move when you click them, in a variety of visually interesting ways. Use them in your stacks, and you'll achieve a unique look and feel that everyone will enjoy.

Are you tired of the standard button shapes that came with HyperCard? The Acme Dot Company has produced two sets of "Clicky Buttons" that move when you push them!



PopAlert (shareware) – Access the standard alert dialog boxes with their icons.

ResCopy – If you use XCMDs, XFCNs, or any other resources, you need ResCopy!
This external command, which is copyrighted by Apple, is one of the most useful HyperCard utilities ever created. It facilitates the movement of resources to and from any stack, with commands to copy, rename, renumber, and remove resources. It can also play sounds and display icons and cursors. You'll never want to be without it!

DragRect – Create "draggable" windows with this external function.

StackEditor Demo – Edit scripts from different objects or stacks simultaneously!
HyperCard's standard script editing environment is somewhat restrictive, since you can't easily edit scripts from a number of different objects. Cutting and pasting between scripts can be a real chore, too. With the StackEditor, your scripts from stacks, fields, buttons, cards, and backgrounds are all accessible with a scrolling field.

ZoomRect – This XCMD animates a zooming rectangle to provide visual cues.

ZipCheck – An XFCN to check the validity of 5- and 9-digit zip codes.
Enter a zip code, and ZipCheck will return the two-letter state abbreviation if it's valid.

Menu XCMDs – Add standard pull-down and pop-up menus to your stacks!
We've collected five of the best HyperCard menu bar utilities available, and put them together on one disk. Now you can create standard pull-down menus, pop-up menus, hierarchical pop-ups and pull-downs, and even a pop-up menu bar (this function is a shareware item). With all these routines, you'll never need another one!

Windoid – Six newsletter stacks packed with helpful info, scripts, and ideas.
These stacks, transcripts of the first six newsletters from Apple's HyperCard User Group, include some of the best utilities available for streamlining your stacks and making them more functional and efficient. Find out how to group and move buttons and fields, create "sticky buttons," import text files, and much more!

131 Utility Stacks Volume 2

This disk is filled with 33 external commands, functions, and scripts to enhance your stacks.

BarButton – An innovative and flexible control button similar to a scroll bar.
Sometimes you need a variable control, but a scroll bar just isn't right. When you move the mouse over a BarButton, a black area in the button will move with the mouse to indicate a selection. BarButtons can be placed horizontally or vertically.

ChangeCursor – This XCMD will change the cursor independent of any handler.
HyperTalk's commands to change the cursor work only within one handler. This XCMD lets you change the cursor on the fly, and it will stay that way until you change it again.

Clipboard – This pair of XCMDs will send and receive text to and from the clipboard.

Crunch – An XFCN that removes extra spaces between the lines of a text field.

DispPict – Display paint pictures, PICT images, or color images with HyperCard.
This external command will open a graphic image, either from a separate file, or from a PICT resource stored within your stack, and display it over the top of the current card. On a Mac II, the image can be displayed in color.

FormatNumber – This will format numbers by adding commas and decimal point.

FormatPhoneNumber – Converts 7 or 10 digit numbers to phone number format.
This will automatically convert a "raw" number like 6199422556 to (619) 942-2556.

Highlight – Automatically highlight any button as the mouse passes over it!
This stack was designed to help computer neophytes grasp the concept that buttons are meant to be clicked on to initiate actions. Buttons can automatically and selectively be highlighted when the mouse cursor is pointing to them.

Mac II Stacks – Three stacks to control color and 68020 data cache on the Mac II.

HyperTools – A collection of eight different external commands and functions.
This stack includes 8 functions: **StripIt** returns the width of a string in pixels. **ZoomRect** will create a zooming rectangle from one point to another. **DragRect** simulates a moving window outline as you drag a field. **CopyBits** will copy any bit image from one point to another, scaling it if necessary. **RGB Backcolor** and **RGBForecolor** will set the background and drawing colors on a Mac II. **GetPicture** can retrieve and draw PICT images, and **ListCatalog** will read the contents of a disk or folder into a field, showing each file name, it's size, and it's type and creator information.

PaintView (shareware) – Preview MacPaint pictures before importing them.

Power Tools – Toggle instantly between tools, without wasting time with the menu!
Normally to select a new tool, you have to move the mouse up to the tools menu, select your tool, and go back to your work. After installing PowerTools, you can hit the Enter key, and you'll toggle between the browse, button and field tools. Hit Shift-Enter, and you can quickly move through the other painting tools! It'll save you a lot of time!

StringCase (shareware) – These XFCNs convert text between upper and lower case.

StripDelim – An XFCN that pre-processes text by stripping unwanted characters.

StripIt – A function to strip selected characters from text. Includes pascal source.

ThumbButton (shareware) – Create control bars with indicators inside the "thumb."
Similar to a scroll bar, the ThumbButton can be placed horizontally or vertically. The white control box, or thumb, can contain a number indicating the selected value.

TitleBar – This will show or hide the title bar of HyperCard's main window.

UserLevel5 – Force your user level to stay at 5, even if pesky stacks try to change it.

XPict – Draw PICT images at any size, anywhere on the screen, in 8 different modes!

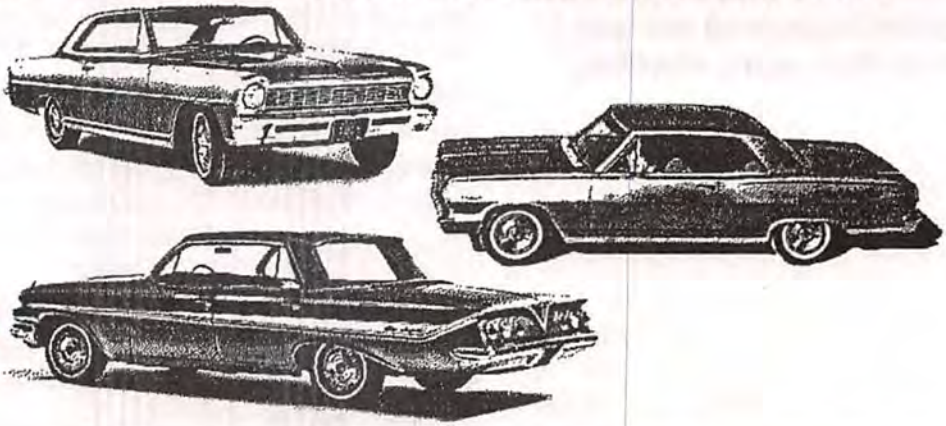
Also included: NewFolder, ShutDown, Flasher, and Effects stacks.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

132 Chevy Super Sport Stack

The serious car buff will love this stack, filled with info and pictures for 1961 to 1976 Chevrolet cars.

Because of its size, this stack requires a hard disk drive! It contains statistics, emblems, tables, charts, production specifications, and other information for 53 different models of Chevrolet Impala, Chevelle, Camaro, Nova, and Malibu cars. There is a high-quality digitized picture of almost every car, as well as images of engine insignia. If you're a car collector, car lover, or even if you just need some automotive clip art, you'll like this!



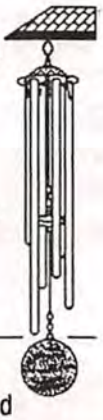
The digitized images included in the Chevrolet SuperSport stack are of the highest quality.

133 CWC³ Wind Chime Stack

This stack describes the products of Celestial Wind Carillons. It's an excellent example of HyperCard as an advertising medium.

Are you thinking about producing a HyperCard-based training disk, or an information stack about your company? Or, are you looking for a wonderful musical gift for yourself or someone else? Either way, you'll get something out of this stack! It's a great example of how to use HyperCard as an educational tool, to tell people about your company or your products.

And, it contains pictures, descriptions, and sound samples of some of the most beautiful wind chimes available, too! Six different models of chimes are previewed in the stack. The chimes are available directly from the manufacturer, and ordering instructions are included.



134 Animation Stacks

Explore the power of animated graphics with these informative and hilarious stacks!

American Gothic – A hilarious take-off on Grant Wood's famous painting! You've always wanted to know what the old couple was saying to each other, and now you can find out! Includes sound effects from a classic sci-fi film.

Rocky's Dream – Rocket J. Squirrel was never like this when you were a kid!

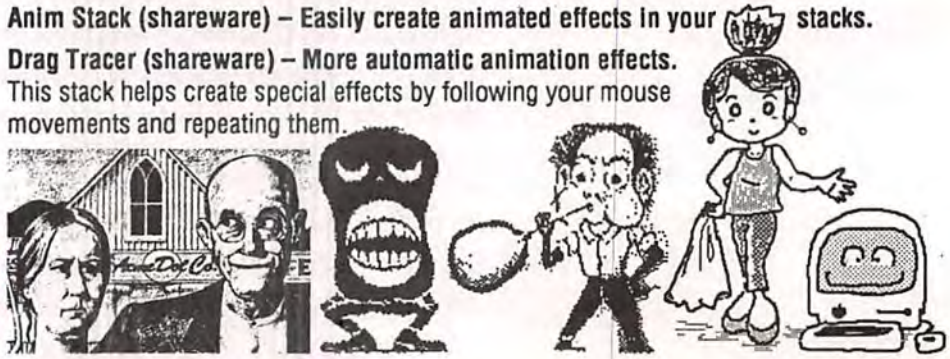
A Funny Day – A cute cartoon with a trick ending, done in the Japanese style.

HyperZoetropes – Six examples of historic animation from the late 19th century.

HyperMutoscopes – Two more old-time flicks, including a Chaplin short!

Anim Stack (shareware) – Easily create animated effects in your stacks.

Drag Tracer (shareware) – More automatic animation effects. This stack helps create special effects by following your mouse movements and repeating them.



These are some of the outrageous characters that will show off HyperCard's animation capabilities to you in this entertaining cartoon collection.

135 Bill's Clip Art Stack

Five hundred different images in one HyperCard stack, indexed for easy location and selection!

This enormous stack contains five hundred different cards, each with a high-quality digitized image. Categories include people, animals, famous places, tools, home appliances, old-fashioned cars, holiday images, borders, ornamental scrolls, and even pre-Columbian pottery! Most of the images have keywords associated with them, so that by searching for the word "animal," all pictures of animals could be quickly located. The pictures can be used with any program that works with MacPaint style graphics, such as PageMaker, Ready-Set-Go, SuperPaint, MacDraw, and many others.

It's easy to find the image you want with Bill's clip art stack. Type "witch" & you've got a picture of one. Type "Easter" and a suitable image appears. It's that simple!

136 Magazine Index Stacks

Quickly find articles of interest in MacWorld, MacUser, and NibbleMac Magazines.

If you're lucky enough to have a full set of back-issues, or if you have access to them, you can find almost any article of interest quickly and easily with these stacks. This disk contains 3 separate sets of stacks that index articles from the major Macintosh magazines MacWorld, MacUser, and NibbleMac. Article subject, title, issue date, and page number are all included.

The MacWorld index contains articles from the premier issue in 1984 through September of 1987. The MacUser index includes articles between 1986 and 1987. The NibbleMac index features articles from the premier issue in 1985 through December of 1987, and also includes digitized reproductions of the cover art from each issue.

137 Game Stacks for Kids

Some games are too hard for kids... but these aren't; they were created especially for kids.

Dragonsword – Escape the cave, kill the dragon, and rescue the beautiful damsel!
Written by 12 year old Nat Ingalls, with Andy Ingalls helping out in the art department.

K'Kai Adventure – Explore a magical castle under the sea, and make new friends!
The second grade class of Kaunakakai Elementary in Hawaii created this adventure.

Knight Adventure (shareware) – Even kids that can't read yet will like this game!
Ten year old Marshall Ward made this crazy adventure. There's danger at every turn unless you make the right decisions.

Animals (shareware) – Think of an animal, and the Mac will try to guess it!
This is the HyperCard version of one of the oldest computer games. The Mac tries to guess your animal, asking yes or no questions, and can learn new animals as you play!

Mr. Potato Head – Roll the dice, and see how fast you can complete your potato man!

The graphics might not be the best in the world, but the games are fun! All were designed to be easy enough for the youngest children to enjoy.

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

138 KidStacks Collection

An integrated collection of stacks for preschool age children that actually talk as they teach!

The KidStacks collection consists of eight integrated stacks that teach youngsters the basics of the alphabet, numbers, simple math, shape recognition, counting, money, and telling time. All of the stacks are accompanied by a synthesized voice that talks to the child as they learn. Recommended for ages 3 and up.

Money – This teaches the relationships between different coins and paper money.

ABC's – This stack teaches how to draw each letter, number, and basic shape.

Time – Your child will learn how to tell time from a friendly clock person!

Math – Simple addition and subtraction problems are presented here.

This great collection of stacks for preschool kids teaches them about the alphabet and numbers, how to tell time, how to count money, and even lets them drive a car!

Lessons in Spelling – A picture and pronunciation will help reinforce each word.

People – For the older child... Learn to recognize policemen, firemen, and others.

Laura's Letters – This uses a digital human voice to teach the alphabet and numbers!

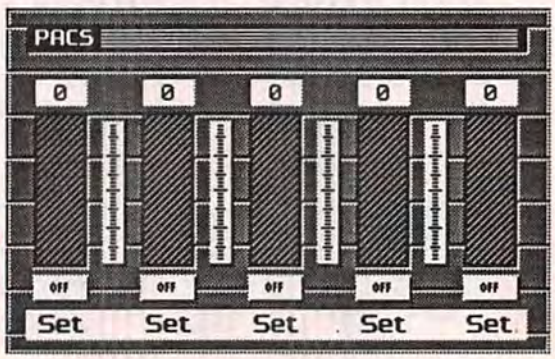
Map – Let your child explore a house, move from room to room, even take a drive! After all that learning, it's time for a little fun! This stack presents an overhead map of a house, and simply by moving the mouse, your child can move between rooms. Clicking on the names of pieces of furniture and other fixtures will display and speak their names. Once they've found their way outside, the child can actually get into the family car and take a drive in the country! They'll get a real kick out of it!

139 MIDI Stacks for Musicians

If you have a MIDI instrument and interface connected to your Mac, you need this disk!

HyperMIDI Toolkit (shareware) – Customize & program your MIDI studio in HyperTalk! This stack contains a collection of sophisticated external commands, functions, and routines that give you almost unlimited control over any MIDI device in your studio. You can set up MIDI macros to automatically send patches or change parameters, create custom sequencers, and much more. Included in the stack are a data analyzer, MIDI filter, step sequencer, Roland D-50 librarian, Yamaha DX-7 envelope creator, and more!

Benson – Retrieve and send MIDI bulk dump data to and from your instruments. With Benson, you can read in any data from your MIDI devices, examine it, manipulate it, and send it back to your MIDI network. For example, you could use Benson as a patch librarian for any MIDI instrument. Includes a 38-page instruction manual and two individual versions of Benson, one for HyperCard 1.1, and one for version 1.2 and up.



Benson's graphic interface gives you control over your MIDI data. The stack includes built-in settings for over 40 of the most common keyboards, and you can create custom settings for other devices.

Network software

140 AppleTalk Utilities

Are you part of a multiple-computer AppleTalk/ LocalTalk network? Check out this disk!

ATView (shareware) – This desk accessory displays info about each node on the net. Displays the node ID, user name, node type, and socket number for each node.

Broadcast – Send messages to and from any users on the network, with the Chooser! Now you can transfer messages between users on the network, in the background! Just select the network user who should receive your message (or select all users), type the message, and it will appear on the screens regardless of what they're doing at the time!

ClockSynch – Remember when they used to say "synchronize your watches?" It's annoying when the Macs on a network have their clocks set to a slightly different time. ClockSynch fixes that by synchronizing the clocks on all connected Macs!

Dopplemaker (shareware) – Protect files on your server from unauthorized copying. You want your network users to be able to access the applications they need, but you don't want them to pirate those programs! Well, Dopplemaker will create "phantom" programs that work just like the originals, but are useless if they are copied!

FolderShare (shareware) – Flexibly assign folder access privileges with AppleShare. This utility works only with AppleShare networks, and allows folder access privileges to be granted to not only the folder creator, but any other user or work group as well.

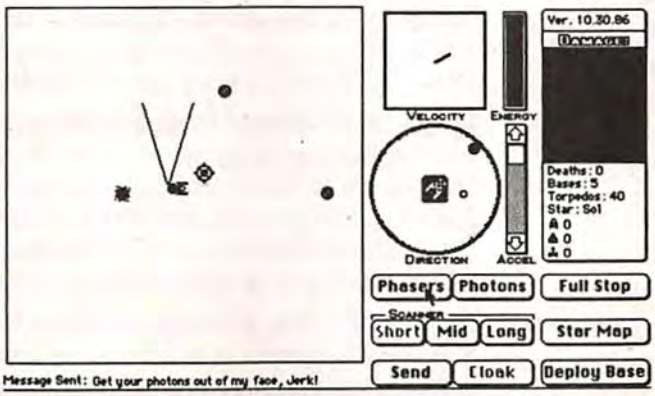
HyperCom™ Promo (demo) – Design and program network functions with HyperCard.

Apple-Jam (shareware) – A teleconferencing program for up to twenty users. Up to 20 people can chat simultaneously with Apple-Jam. Just type your message, and it will be sent to any or all of the other participants. Great for a network staff meeting!

JamPaint (shareware) – Share sketches and drawings over the network in real time! Open JamPaint on one or more networked machines, and when a user draws something on one Mac, their drawing will appear simultaneously on the other Macs. This is great when you want to "rough out" some art ideas with other workers.

SetNode – A control panel device (CDEV) to set the node hints in parameter RAM.

NetTrek (shareware) – Battle for control of the universe in this multi-player game! After the serious work is over, it's time for some serious play! NetTrek is an incredible outer-space combat simulation based on the popular Star Trek television series. Up to 5 players can compete simultaneously, selecting either a Terran, Klingon, or Romulan vessel. You must explore the known galaxy, deploying a base and staking your claim to each of the 8 star clusters. But your opponents might decide to throw a phaser blast or photon torpedo in your way! Unfortunately, this program does not work on the Mac II.



NetTrek is a strategic, stellar conquest game for two to five players. All players compete simultaneously over their AppleTalk/LocalTalk network. You can even send harassing messages to each other!

Place your order today! Call (800) 842-5020
This number is for orders only. For other information, please call (619) 942-2556.

Mac II Software

141 Misc. Mac II Stuff

A grab-bag of fun and useful graphics and utilities. These programs require a color monitor.

DeskPict – Tired of a gray background? Use a color picture as your desktop pattern!

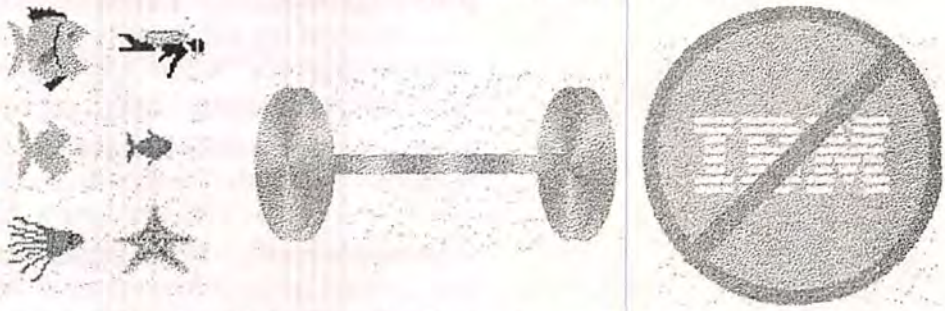
No IBM! – Let your true sentiments be known with this flashy startup gag!

ScreenMaster (shareware) – Improve software compatibility & startup screen colors. Some programs run into compatibility problems because of the Mac II's larger screen size. This CDEV utility allows you to choose between your standard screen size and the smaller MacPlus/SE screen, which allows some programs to work properly. It also forces startup screens to retain their original CLUT color tables, making them look better.

ColorCursor – This changes your mouse pointer to a rainbow-colored arrow!

Fish! (shareware) – Watch crazed and colorful fish swim around on your desktop! This CDEV utility is one of the wackiest programs for the Mac to date! It installs a number of animated swimming fish that cavort through your background pattern, swimming around behind your icons! The fish are completely editable, so you could conceivably add mermaids, submarines, and other characters to the cast!

The author of the kooky Fish! CDEV says it's his goal to have "a fish on every desktop!" Spectra produces incredible animated color wheels. The "No IBM!" program will let the world know how you feel about the competition.



Toggle Cache – Turn the 68020 instruction cache on and off for greater compatibility.

Graphics Demos – A collection of fourteen spectacular color graphics demonstrations! These graphics programs demonstrate the incredible color capabilities of the Mac II in a variety of interesting ways, and are guaranteed to blow away any of your unbelieving coworkers and friends.

142 Image Processing

Three programs for color image conversion, image processing, and color separation production.

VisionLab (demo) – Convert images between 6 popular Macintosh graphics formats. VisionLab's primary function is to convert color images between several standard formats. Images can be translated between PICT data files, PICT resources, Thunderscan documents, MacPaint files, PixelPaint documents, and GIF, a highly compressed storage format that can reduce the size of color images by up to 90%! Color images can also be dithered in six different ways, producing images compatible with black-and-white Macs. This demo has some features disabled, such as printing and TIFF compatibility.

Image – A full-featured image processing, enhancement, and colorizing utility. This program was designed to enhance, analyze, edit, animate, print, and colorize gray-scale images on the Macintosh II. It can produce density histograms, do digital filtering, perform contrast enhancement, and much more. It also supports image capture with the Data Translation QuickCapture frame grabber card. The program requires a Macintosh II with at least two megabytes of memory, and works best with five or more megabytes.

Separator – A color separation processor for PixelPaint documents. If you need to produce color separations from a PixelPaint file, this makes it easy! It produces four separate files that can then be printed on a Linotronic typesetter.

143 Mac II Fantasy Images

Seven spectacular full-color images of dragons, sorcerers, and other fantasy themes.

Our Mac II image disks contain some of the finest color pictures availabe. Each disk includes the Giffer utility, which lets you view the images and save them as PICT files for use as startup screens, backdrops (with DeskPict from disk 141), and other purposes.

144 Mac II Auto Images

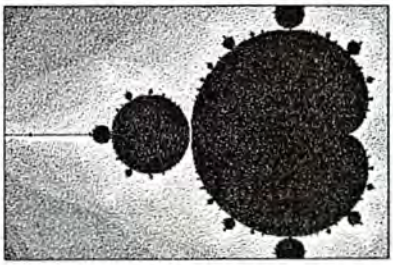
You'll love these color pictures of some of the world's most powerful driving machines!

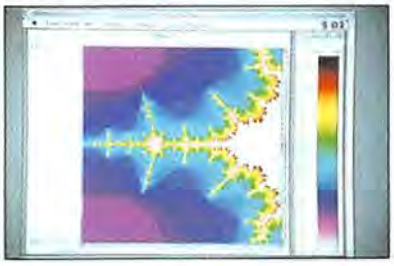
If you're a car buff, you won't believe the pictures on this disk! You'll get incredible color images of a Z-28, 944 Turbo, Lambourghini Countach, Maserati Bora, and more!

145 Color Fractal Graphics

Explore the fantastic world of the Mandelbrot set with these fractal graphic generators.

Fractal graphics are mathematically calculated plots of a specifc set of numbers called the Mandelbrot set. These calculations create infinite and beautiful recursive designs, and are used in many various applications today. This disk contains ten different programs that generate fractal images in dazzling colors.





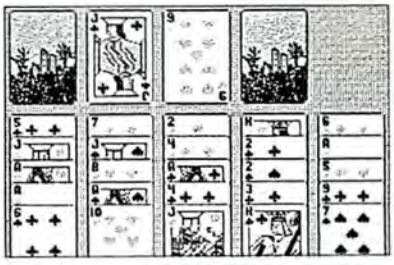
146 Color Mac II Games

Time for a little fun and games – in color! Play solitaire card games, or play Hangman against the Macintosh!

Seahaven Towers™ (shareware) – An original and addictive solitaire card game.

Canfield (shareware) – A color variation of a more traditional solitaire game.

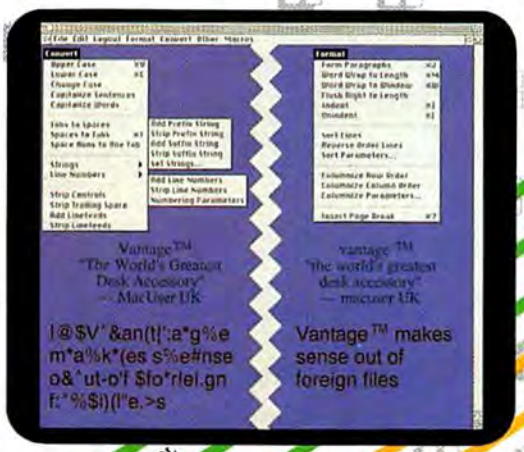
Hangman Plus (shareware) – Can you guess the computers word before you hang?



The Preferred Solutions Series™

VANTAGE™

The Finest Turbo Text Tool & Spell Checker for Word Processing, Page Layout & Databases



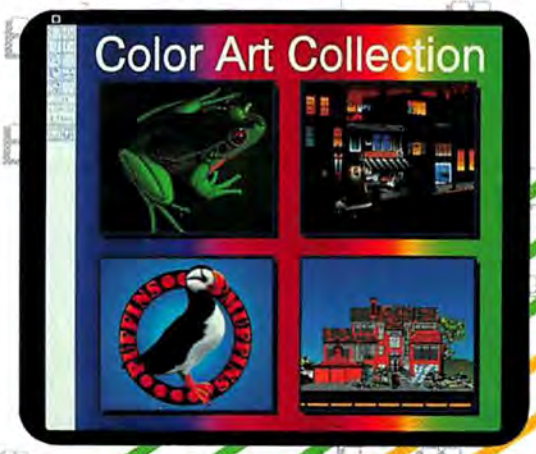
- Full Color Control
- Adds or Removes Line Feeds
- Opens Up To 16 Simultaneous Windows
- Windows Can Contain A Different WP Format
- Sorts Lines Backwards & Forwards
- Complete Automated Macro System for Greater Productivity
- Comprehensive Batch, Look-up, & Phonetic Spell Checker
- Re-organizes Imported Text From Mainframes, PC's, & Unix Systems
- No Limit On Document Size
- Re-organizes & Sorts Sentences, Paragraphs, & Columns
- Adds Alpha/Numeric Markers To Each Line Of A Document
- Converts Multiple Spaces To Tabs & Vice Versa
- Capitalizes Sentences & Words
- Strips & Adds Carriage Returns
- Creates Lists Of All Files And Folders On Disk
- Works With Mac™ 512+, System 4+, & Multifinder™
- Works With Color Display & Multiple Screens

Preferred Publishers, Inc.
5100 Poplar Ave. • Suite 706
Memphis, TN • 38137
(800) 446-6393 • (901) 683-3383

© 1988 Preferred Publishers, Inc.
All Referenced Trademarks are property of their respective holders

DAtabase™

The First Full Featured Desk Accessory Database for Text, Color Images, and Graphics



- On-Line Help
- Up To 50 Fields Per Record
- Complete Telephone Dialing
- Check Boxes & Pop-Up Fields
- Sophisticated Art Grabber For ALL Picture Formats
- Unique MiniFinder Interface For Frequently Used Files
- Variable Window Sizes & Color For ALL Types Of Files
- Calculation Fields For Form Generation
- Time & Date Stamp On Each Record
- Unique Converter For Merging Your Frequently Used Files
- Detailed Reporting On Multiple Rule Searches
- Extensive Importing/Exporting Functions
- Works With Mac™ 512E+, Color Displays, & Multifinder™
- Multiple Picture Fields Per Page
- Password Protection For Each File
- Auto Copy Complete Records
- Global Or Field Specific Find
- Marking On Selected Records
- Extensive Printing Options

Preferred Publishers, Inc.
5100 Poplar Ave. • Suite 706
Memphis, TN • 38137
(800) 446-6393 • (901) 683-3383

© 1988 Preferred Publishers, Inc.
All Referenced Trademarks are property of their respective holders

Updates

This list brings you the highlights of software updates recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

AppleShare File Server version 2.0 has CD ROM volume support that allows AppleShare users to share information on CD ROM drives. Foreground server administration lets you add users to the server group while the server remains available. Users can change their own passwords. With the Super User option, the network administrator can perform routine server maintenance while the server is active. Includes folder lock feature and copy protection setting for applications. Also supports enhanced Apple IIe and IIGS computers. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010. Free to registered owners who purchased after March 1, 1988, otherwise $50; $799 new.

Canvas version 2.0 has autotrace, unlimited multipoint bezier curves and smooth polygons, unlimited layers, choice of 16.7 million colors, gray scales in 1-degree increments. Can zoom from 3 to 3200 percent of original. Deneba Software, 7855 N.W. 12th St., #202, Miami, FL 33126; 305/594-6965. Free; $299.95 new.

Falcon version 2.0 lets two players simulate head-to-head combat via built-in communications software. Makes dogfights possible with direct-connect, 1200-baud modem, or AppleTalk network. Also includes realistic changes to the HUDs (head-up displays) and radar modes. Falcon's F-16 can be set to automatically fly to a selected target, and MIGs have been given a limited armament but made tougher. Digitized voice warns the pilot of potentially dangerous situations. Sphere, Inc., 2061 Challenger Dr., Alameda, CA 94501; 514/522-3584. Free; $59.95 new.

MGMStation CAD version 2.5 includes comprehensive layering capability, improved user interface, and macro language for user customization. Version 2.5 I runs on Mac 512KE, Plus, SE, and II; version 2.5 II is designed for the color Mac II. Micro CAD/CAM Systems, Inc., 5900 Sepulveda Blvd., Van Nuys, CA 91411; 818/376-0008. Version 2.5 I $100, version 2.5 II $300; version 2.5 I $999 new, version 2.5 II $1399 new.

PixelPaint version 1.1 is compatible with Apple's System 6.0 and the AppleTalk network. Faster than the original—rotate and distort features are 100 times faster. Can save 1024-by-1024 PICT files. Allows locking of open PixelPaint files on network systems. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043; 415/964-8884. Free; $20 new.

PowerStation version 2.0 eliminates having to search through files and folders to find a single document. Presents Apple's hierarchical file

(continues)

ACCOUNTING
for the Macintosh

When you do accounting you'll want something more than database adaptations, spreadsheet templates or converted MS-DOS programs. *All three of our fine accounting programs were created especially for the Macintosh!*

MultiLedger™
Now you can get General Ledger, Accounts Receivable, Accounts Payable, and Inventory tracking together in one completely integrated program ... at a fraction of the cost of buying individual G/L, A/R, A/P, and Inventory modules.

Payroll
This easy-to-learn, easy-to-use payroll system is ideal for most organizations or businesses with 1 to 1000 employees. Use it as a stand-alone program or integrate it with either of our ledger programs.

Cash Ledger
This is a full-featured accounting system for businesses or organizations using cash-basis reporting. It can also be used by accountants or other professionals who require "write-up" capability.

WE COULDN'T HAVE SAID IT BETTER

"If your preference is for lean, no frills software, you may find that this program wins out over more elaborately packaged rivals." **Macintosh Today** June 20, 1988 / page 28

"This program is so good that if it's the first one you test, I can almost guarantee you it will be the only one you test." **"Computer Output" column** Oshawa Times (Toronto)

"My favorite all-around accounting program is CheckMark Software's **MultiLedger/Payroll** set. It was the simplest and most logical program I examined that provided a reasonably full set of accounting capabilities. Its price/performance ratio represents an excellent value." **Macworld** September 1988 / page 169

MultiLedger – $395.00
Payroll – $295.00
Cash Ledger – $195.00

Full-functioning demo disks available
Dealer inquiries welcome

CHECK MARK SOFTWARE INC.
1520 E. Mulberry / Suite 200
Ft. Collins, Colorado USA 80524
303-484-3541 In Canada 416-731-0744

800-444-9922 ext 51

Version 2.0
PRACTICA
MUSICA™
Ear Training & Music Theory for Everyone

"Best New Education Program, 1987"
-*MacUser Magazine*

- Interactive staff notation
- MIDI compatible • Saves scores
- Teaches intervals, chords, melody, rhythm
- Historical & computer-generated melodies

$125.00 • Call Toll Free 800-445-4866,
In CA: 800-445-8749

ARS NOVA
BOX 40629, SANTA BARBARA, CA 93140

Circle 369 on reader service card

Insurance For Fried Apples?

When your surge protector fails will your insurance save you? SAFEWARE* computer insurance covers power surges, lightning, theft, fire, accidental damage and more! Full replacement of hardware, media and purchased software for as little as $39 per year.

Total Value, Hardware, Media & Purchased Software	Annual Premium
up to $2,000	$ 39
$ 2,001–$ 5,000	$ 69
$ 5,001–$ 8,000	$ 89
$ 8,001–$11,000	$109
$11,001–$14,000	$129

For immediate coverage, information and rates on higher coverages, call

1-800-848-3469

Locally 614-262-0559 On Compuserve, GO SAF

SAFEWARE™

SAFEWARE, The Insurance Agency Inc.
2929 N. High St., P.O. Box 02211, Columbus, OH 43202

Circle 293 on reader service card

Updates

structure in a newly organized system. Allows user to create series of up to 16 screens from which applications and documents can be installed regardless of their location within the hard disk filing system. You create screens that consist of menu bars and buttons, with each button able to launch an application, open one or more documents, or open a desk accessory. Applications and documents can be listed alphabetically. Program remembers setup and location of documents and files and allows the user to power up to the same custom desktop each time. MultiFinder compatible. Requires at least 512K and System 3.0. Fifth Generation Systems, Inc., 11200 Industriplex Blvd., Baton Rouge, LA 70809; 504/291-7221. Free; $59.95 new.

Read-It version 1.06H is an interim upgrade to this OCR software, due to be released as version 2.0 soon. Adds speech capabilities so the Mac can talk to you while in Learn or Recognize mode. Faster than earlier versions and directly supports scanners that use Microtek or Canon engine with MacScan interface. Olduvai Corp., 7520 Red Rd., Ste. A, South Miami, FL 33143; 305/665-4665. Free; $149 new (for ThunderScan only), $395 new (for any scanner).

Suitcase II gives unlimited access to fonts and desk accessories, and can open up to 99 Suitcase files as opposed to 12 in earlier versions. Buttons on the Suitcase DA can be used to access fonts, F-keys, and sounds. The 12 Suitcase files can now be opened independently, and no longer need to be contained in the system folder. Displays Font menu in individual typefaces. Two utilities added: Font Harmony simplifies renumbering fonts; Font and Sound Valet compresses both fonts and sounds. Fifth Generation Systems, Inc., 11200 Industriplex Blvd., Baton Rouge, LA 70809; 504/291-7221. $25; $79 new.

Teacher's Rollbook version 2.0 generates form letters requesting parent conferences, reports on grades by type of assignment, averages grades for all assignments, and prints up to ten sets of assignment reports with one command. 1MB min. memory. Current Class Productions, 22824 Berendo Ave., Torrance, CA 90502; 213/326-4246. $17.95; 149 new.

Timbuktu version 2.01 gives grayscale version of color screen to users when host computer has color monitor. Farallon Computing, Inc., 2150 Kittredge St., Berkeley, CA 94704; 415/849-2331. Free; $99 new.

VersaCAD/Macintosh Edition version 2.0 contains a HyperCard-based bill-of-materials program that allows you to define categories for a report and immediately run VersaCAD drawing files against it. Improved construction tools include rubber-band stretch, chamfers, and automatic calculation of line lengths. VersaCAD Corp., 224 Main St., Huntington Beach, CA 92648; 714/960-7720. Free; $1995 new. □

To have products listed in this section, send upgraded software, an outline of major changes since the previous release, upgrade price, suggested retail price, company name, mailing address, and phone number to Updates, Macworld, *501 Second St., San Francisco, CA 94107.*

CALL FOR FREE CATALOG
30-70% OFF

1 MB SIMM's

1MB SIMM's.....from $299
Lifetime Manufacturer's Warranty
Quick memory: 120NS

Magic Drive Internal

60 megabyte (For Mac II) **$599**
40 megabyte (For Mac II) **$559**
46 megabyte (For Mac SE) ...**$599**
30 megabyte (For Mac SE) ...**$475**

Video Boards

RasterOps

Color Board 104 .....**$2499**
24-bit True Color, graphics board
Color Board 108 .....**$1149**
8-bit, high-res graphics board
19" Trinitron Monitor$2999
Finest monitor available today!
Cornerstone FPD **$895**
Full page display!
19" B/W for Mac II **$1499**

Desktop Publishing

Quark XPress 2.0.....**$499**
PageMaker 3.0 .....**$419**
Illustrator 88 .....**$325**
Freehand.....**$355**
Persuasion.....**$355**
Drawing Table.....**$90**

3 MB Laser Printer

Qume ScripTEN..... **$3399**
Quick and beautiful • 35 typefaces

New Games

Sargon IV **$39**
Arkanoid.....**$29**
Scepter.....**$29**
Citadel.....**$35**
Ancient Art of War At Sea.....**$29**

SOFTWARE

We carry over 1000 software products for your Mac, so please call and ask for items not listed in this advertisement.

Adobe Fonts 6-69	**call**
Calculus	62.00
Canvas	119.00
Cricket Presents	309.00
Expressionist II	79.00
FileMaker II	329.00
FoxBase+Mac	**230.00**
Freelance Plus	call
FullImpact	285.00
Graphist Paint II	269.00
Hyper DA	41.00
Lightspeed C	105.00
MacGolf Classic	63.00
MacLink Plus	142.00
MacMoney 3.0	59.00
MacRecorder	143.00
Microsoft Word	**199.00**
MiniCAD 4.0	372.00
OmniPage	654.00
PowerPoint	249.00
Quark Style	199.00
Red Ryder	59.00
Statview II	369.00
Suitecase II	48.00
Super3D	199.00
SuperPaint	81.00
Tetris	20.00
Tops (Mac or DOS)	145.00

HARDWARE

Hard Disk Drives by : CMS, Everex, Magic, General Computer, PCPC, NuData, Mirror, Rodime & AppleCrate starting at:

	Internal	External
20meg	399.00	499.00
40meg	649.00	699.00
60meg	649.00	699.00
91meg	1295.00	1395.00
150meg	1650.00	1750.00
300meg	2500.00	2500.00
600meg	3995.00	3995.00
Grappler LQ		95.00
Epic 2400 Internal		**299.00**
Shiva Netmodem 2400		469.00
Truvel Color Scanner		**call**
DataCopy 730 Scanner		1399.00
Sharp Color Scanner		**5499.00**
Thunderscan 4.0		195.00
Passport MIDI Interface		87.50
Mac Recorder		143.00
Abaton Propoint		**106.00**
Turbo Mouse (Kensington)		110.00
A+ Optical Mouse		63.00
800K Drive		179.00
Moniterm 19" Monitor		1599.00
19" Sony Monitor		2950.00
Olympia Printer		279.00
QMS ColorScript 100		19,995.00
General Computer LaserWriters		call
2400 B Modem		**139.00**

ACCESSORIES

Disks:	DS	SS
KAO Bulk	1.35	----
KAO Boxed	15.50	11.59
Sony Boxed	19.50	14.75
Sony Bulk	1.39	1.11
MacDisk	1.25	.99
Black Ribbons		**3.00**
Colored Ribbons		**3.50**
Multicolored Ribbons		12.00
Mac Plus Bag		59.00
Mac SE Bag		69.00
ImageWriter II Bag		55.00
Teak Disk Box 50/100/150		16/25/33
Disk File/30		7.00
Hypercard Handbook		19.95
MagicNet Connector		24.00
Kensington Cable Ext. Kit		34.00

BOARDS/UPGRADES

128K-512K Upgrade	299.00
128K-1024K Upgrade	499.00
512K-1024K Upgrade	299.00
1Meg SIMMs	299.00
Magic SCSI Port	69.00
68030 Accelerator 33 mhz	4995.00
Dove Mach II SE	649.00
Dove 524E	344.00
Dove MacSnap+2	399.00
Dove SCSI	129.00
MacPeak 68020	699.00
DoubleTime 16 Board	295.00
Novy Mac20MX	699.00

ORDERING

Orders: **1-800-622-3475**
Information: **1-512-343-9441**
FAX: **1-512-343-6141**

Hours: 7am - 10pm, M-F, 10am - 6pm Sat-Sun CDT

Minimum Order: $40.00

Payment:

American Express, Visa, Master-Card (No surcharge), Checks, C.O.D., and Company & Institution PO's. Net 10.

Tax: Texas residents only, add 8% sales tax.

Prices and items are subject to change and availability.

Terms: You are not charged until your order is shipped. Returns may be subject to a restocking fee.

Shipping: Minimum $4.50 -- Airborne, UPS Next Day & 2nd Day Air, US Mail.

MacProducts USA carries over 2500 products for the Mac, so call for products not listed. Call for a free catalog.

129

MacProducts USA

8303 Mopac Expressway • Suite 218 • Austin, Texas 78759 • USA

1-800-MAC-DISK

Circle 86 on reader service card

CompuServe is offeri on these

ACIUS MAINSTAY AD
ENGINEERING ASHT
BRODERBUND BEA
SOFTWARE CLARIS
PACIFIC NOVELL AU
LOTUS SOFTWARE S
SURVIVOR SOFTWAR

Product support for your Mac.

Macworld Expo
SAN FRANCISCO
Visit our booth 5418
at Brooks Hall in Civic Auditorium, January 19-22, 1989.
Show specials — CompuServe Navigator.

The names listed here are proprietary trademarks of their respective corporations.

ng inside information companies.

OBE ALDUS APPLIED
ON-TATE ACTIVISION
GLE BROTHERS CE
S CROSSTALK DATA
TODESK MICROSOFT
SUPPLY STONE EDGE
RE TOPS AND MORE

Access CompuServe's forums, and you'll find invaluable product support maintained by all these companies. Often, company decision makers are online to discuss the next generation of products, or to put software updates on CompuServe before they hit the market.

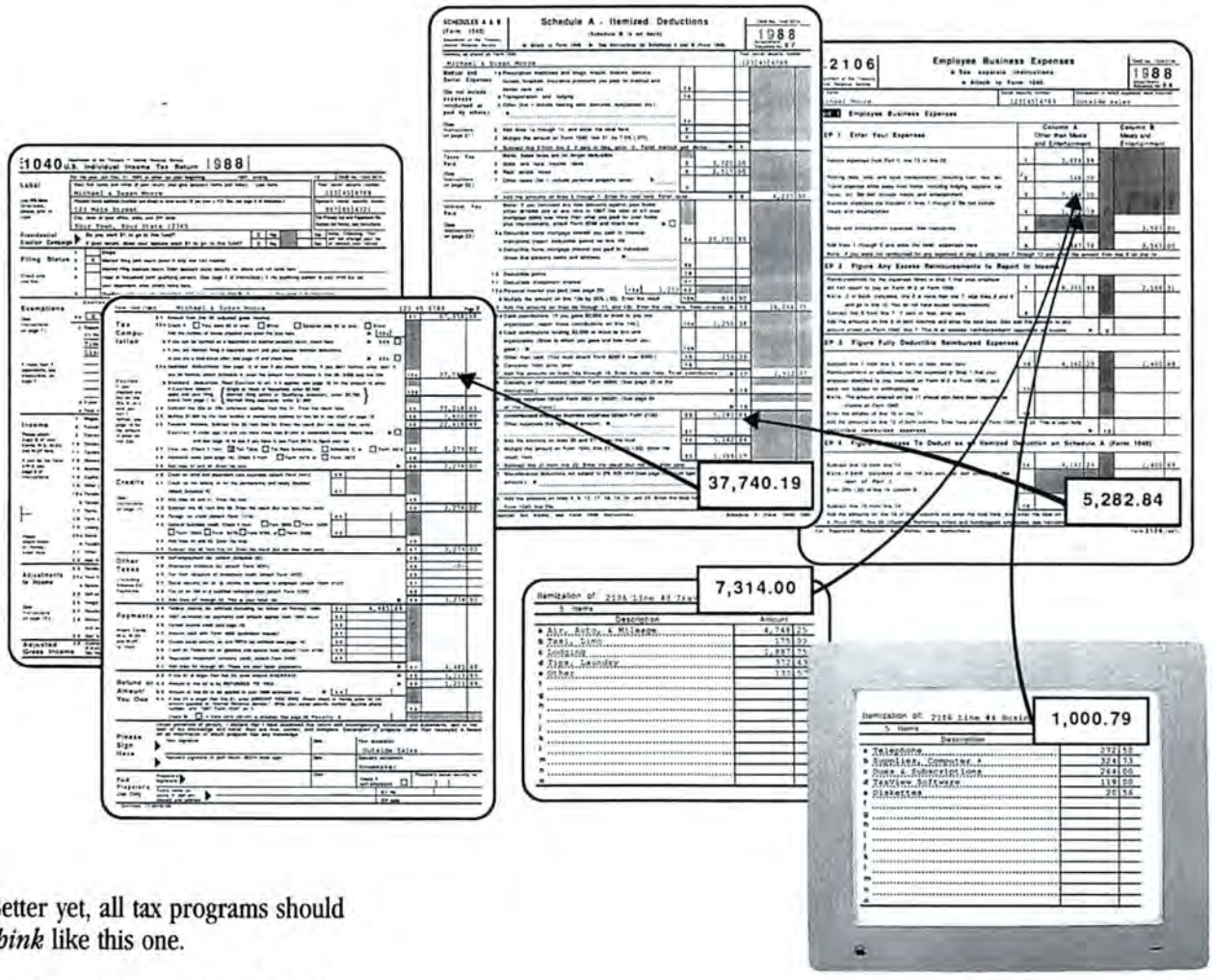
When you run into a problem, there's a good chance you can quickly find the solution online in one of CompuServe's many forums. Or, you can leave a message. You'll get answers fast, often from the person who actually developed the product you are using. Either way, you save yourself time and frustration finding the answers you need when you need them.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. In Ohio and Canada, call 614 457-0802.

CompuServe®
An H&R Block Company

Circle 371 on reader service card

All tax programs should look and print like this one.



Better yet, all tax programs should *think* like this one.

MacInTax Federal for the Apple Macintosh.®

Simply put, MacInTax whisks you through stacks of receipts and W-2's by allowing you to enter data directly into 72 IRS forms, schedules, worksheets and statements displayed on-screen in identical IRS format. The program totals all entered amounts, automatically makes all tax calculations, and instantly links data to and from individual forms, schedules, worksheets and statements.

It even checks your input and helps you prevent illogical, inconsistent or incomplete entries.

The complete IRS instruction booklet is stored on a line-by-line basis.

What's more MacInTax lets you easily import text files from a variety of outside spreadsheet, database and accounting programs.

When you're ready to sign and send your completed return, the program prints forms and schedules identical to the official IRS versions (complete with your data) onto blank paper using your supported laser *or* dot-matrix printer. Of course, all printed forms are fully IRS-approved.

MacInTax Federal 1988

One look and it's easy to see why, each year, users give this program their highest rating.

To order your copy publisher-direct, call SoftView at 1-800-622-6829. Or, visit any one of 10,000 retailers offering MacInTax.

MacInTax Federal for the Apple Macintosh.

SoftView,® Inc.
4820 Adohr Lane, Suite F
Camarillo, CA 93010
(805) 388-2626

©SoftView, Inc. 1988. SoftView, MacInTax and the SoftView logo are registered trademarks of SoftView, Inc. Apple and Macintosh are registered trademarks of Apple Computer, Inc.

Circle 419 on reader service card

Where to Buy

This listing provides company addresses and phone numbers for products mentioned in this issue. Allow several weeks for responses to Reader Service Card inquiries. Asterisks indicate vendors who prefer to be contacted by phone.

Reader Service

Ⓐ

751 **Acknowledge.** SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043; 415/964-9694.
752 **ADC-1.** Remote Measurement Systems, 2633 Eastlake Ave., Seattle, WA 98102; 206/883-7000.
753 **Alchemy.** Blank Software, 1477 Folsom St., San Francisco, CA 94103; 415/863-9224.
754 **AppleFax Modem.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.
755 **AppleShare.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.

Ⓑ

756 **Bit Pad Plus ADB.** Summagraphics Corp., 777 Commerce Dr., Fairfield, CT 06430; 203/384-1344, 800/243-9388.
757 **Brother M-2518.** Brother International, 8 Corporate Pl., Piscataway, NJ 08854; 201/981-0300, 800/284-4357.
758 **Brother M-4018.** Brother International, 8 Corporate Pl., Piscataway, NJ 08854; 201/981-0300, 800/284-4357.

Ⓒ

759 **Chuck Yeager's Advanced Flight Trainer.** Electronic Arts, P.O. Box 7530, San Mateo, CA 94403; 415/571-7171, 800/245-4525.
760 **City to City.** Mediagenic, 3885 Bohannon Dr., Menlo Park, CA 94025; 415/329-0800.
761 **ColorMaster.** CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801; 714/821-2000, 800/225-2667.
762 **ColorScript 100.** QMS, Inc., 1 Magnum Pass, Mobile, AL 36618; 205/633-4300, 800/631-2692.
763 **ColorView 5612.** CalComp, 2411 West La Palma Ave., Anaheim, CA 92801; 714/821-2000, 800/225-2667.
764 **ColorView 5912.** CalComp, 2411 West La Palma Ave., Anaheim, CA 92801; 714/821-2000, 800/225-2667.
765 **CompuServe.** CompuServe, P.O. Box 20212, Columbus, OH 43220; 614/457-8600, 800/848-8199.
766 **Crystal Ball.** Market Engineering Corp., 1675 Larimer St., Denver, CO 80202; 303/893-0100, 800/289-2550.

Ⓓ

767 **Datacopy 830 Flatbed Scanner.** Datacopy Corporation, 1215 Terra Bella Ave., Mountain View, CA 94043; 415/965-7900, 800/821-2898.
768 **DeskPaint & DeskDraw.** Zedcor, Inc., 4500 E. Speedway, #22, Tucson, AZ 85712-5305; 602/881-8101, 800/482-4567.
769 **Different Drummer.** Primera Software, 650 Cragmont Ave., Berkeley, CA 94707; 415/525-3000.

Ⓕ

770 **FilmPrinter.** Mirus Corp., 4301 Great America Pkwy., Santa Clara, CA 95054; 408/980-9770, 800/654-0808.
771 **1st Aid HFS.** 1st Aid Software, Inc., 42 Radnor Rd., Boston, MA 02135; 617/782-4676, 800/843-3497.
* **F1F4.** Shareware on CompuServe.

Ⓖ

772 **G330-70 Color Thermal Transfer Printer.** Mitsubishi Electronics America, Inc., 991 Knox St., Torrance, CA 90502; 213/515-3993.

Ⓗ

773 **HP PaintJet.** Hewlett-Packard, 16399 W. Bernardo Center Dr., San Diego, CA 92127-1899; 619/592-8010, 800/547-3303.

Ⓘ

774 **ImageWriter LQ.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino CA 95014; 408/996-1010.
775 **ImageWriter II.** Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010.
776 **Iris 3024 Ink Jet Printer.** Iris Graphics, Inc., 6 Crosby Dr., Bedford, MA 01730; 617/275-8777.

Where to Buy

Reader Service

L

777 **LightspeedC.** Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 408/253-9600.

M

778 **Mac/LFR.** Lasergraphics, Inc., 17671 Cowan Ave., Irvine, CA 92714; 714/660-9497.

779 **MacPacq.** BIOPAC Systems, 5960 Mandarin Dr., #5D, Goleta, CA 93117; 805/967-6615.

780 **MacProto.** Adex Corporation, 1750 Junction Ave., San Jose, CA 95112; 408/436-9700.

781 **Montage FR1.** Presentation Technologies, 743 N. Pastoria Ave., Sunnyvale, CA 94086; 408/732-2828.

N

782 **NetWare.** Novell, Inc., 890 Ross Dr., Sunnyvale, CA 94089; 415/969-1999, 800/526-5463.

P

783 **PanChroma CHC-345.** Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229; 503/626-2291, 800/547-3303.

784 **PanChroma CHC-645.** Computer Friends, Inc., 14250 N.W. Science Park Dr., Portland, OR 97229; 503/626-2291, 800/547-3303.

785 **Personal Writer 15SL.** Personal Writer, Inc., 1801 Ave. of the Stars, #507, Los Angeles, CA 90067; 213/556-1628, 800/322-4744.

786 **PlotMaster.** CalComp, 2411 W. La Palma Ave., Anaheim, CA 92801; 714/821-2000, 800/225-2667.

787 **ProColor.** Matrix Instruments, Inc., 1 Ramland Rd., Orangeburg, NY 10962; 914/365-0190, 800/852-8533.

Q

788 **QuarkXPress.** Quark, Inc., 300 S. Jackson, #100, Denver, CO 80209; 303/934-2211, 800/356-9363.

789 **QuicKeys.** CE Software, P.O. Box 65580, West Des Moines, IA 50265; 515/224-1995.

Re-ink Your Printer Ribbon for Less Than 5 Cents

Special Offer: FREE MOUSEPAD with any order >60.00

MacInker™, the automatic ribbon re-inker. The Imagewriter MacInker **(mod 234IM)** re-inks Imagewriter I/II black & single color cartridges. The Universal MacInker also re-inks hundreds of different cartridge types **(including the Imagewriter LQ)** with suitable adaptors. Extra dark, dot matrix, lubricated ink yields a truly better than new print quality and helps extend print-head life. Average number of re-inkings/cartridge is 60-100. With the **Multicolor Adaptor (mod M422, $40.00)** your MacInker can re-ink the multicolor Imagewriter II cartridges. We have a full range of optional accessories, inks & cartridges: indelible ink, heat transfer etc. Colors: red, green, blue, yellow, purple, brown, orange, silver, gold. Ask for free catalog.

Imagewriter I/II MacInker (mod 234IM).....42.00
Multicolor Adaptor (mod M422) 40.00
Epson MacInker (mod 271EP) 42.00
Universal MacInker.....68.50
Heat Transfer Adaptor.....35.00
Imagewriter cartridges ...3.15/ea... 4-color...10.00/ea
Extra ink bottle.....3.00/ea....pint.....16.50

MacInker $42.00

Imagewriter I & II **MacInker**, complete with

free bottle of ink, reservoir cover, ink meter and dispenser. Over 100,000 MacInkers sold since 1982

Immediate shipment - 30 days money back guarantee

Order Toll Free 800-547-3303

in Oregon (503)626-2291- fax(503)643-5379

Computer Friends, Inc.
14250 NW Science Park Dr. Portland OR 97229

DATA SWITCHES & MODEMS

2 years warranty. Modems 100% Hayes compatible. Free software.

4 port 8 pin 50.00
4 port 9 pin 50.00
SCSI Switch 2 port.....46.00
SCSI Switch 4 port.....59.00
Cables 15.00
1200 baud 89.00
2400 baud 245.00
World Minimodem.....169.00

Circle 61 on reader service card

NOW MACINTOSH AND WANG CAN COMMUNICATE AND NOTHING GETS LOST IN THE TRANSLATION

Transferring files from one system to another is somewhat pointless if you spend most of your time re-formatting the data.

Which is why we introduced MacLink*Plus* for Wang. Whether you're running a Wang VS system, an OIS or a Wang PC, MacLink*Plus* provides a complete solution for document transfer and file conversion.

MacLink*Plus* includes the entire collection of more than 40 translators – the key to accurate conversion of file formats such as rulers, indents, bold and plain text styles, margins, tabs, underlines, superscripts, subscripts, paragraphs, and tabular tables. If it looks a certain way on a Wang, it will look the same way on a Mac. And, of course, vice-versa. No time-wasting and difficult pre-conversion to ASCII or print files is necessary.

Wang Word Processing

Microsoft Word

MacLink*Plus* doesn't stop there, however. It offers full Wang VS Workstation capabilities, allowing easy access to Wang word processing, data processing and electronic mail. All 32 Wang Workstation functions can be executed through familiar Macintosh menus or command keys, and you'll even be able to use the mouse on Wang displays.

Software for the Macintosh, software for the Wang (8" or 5.25"), software for the PC and a direct connect cable (you can use a Hayes or compatible modem if you prefer), is included in the MacLink*Plus* package; everything you need to be up and running in minutes.

So call (203) 268-0030 for your nearest DataViz dealer, because no matter which Wang system you're using, there's a MacLink*Plus* solution to connect it to the Mac.

Who says you can't have the best of both worlds.

Wang 2110 Terminal

Macintosh 2110 Terminal Emulation

DATAVIZ **MACLINK*Plus*™/Wang**

35 Corporate Drive
Trumbull, Connecticut 06611

Circle 281 on reader service card

Just say

You've known us as AppleCrate. We are now Crate Technology. So, just say Crate!

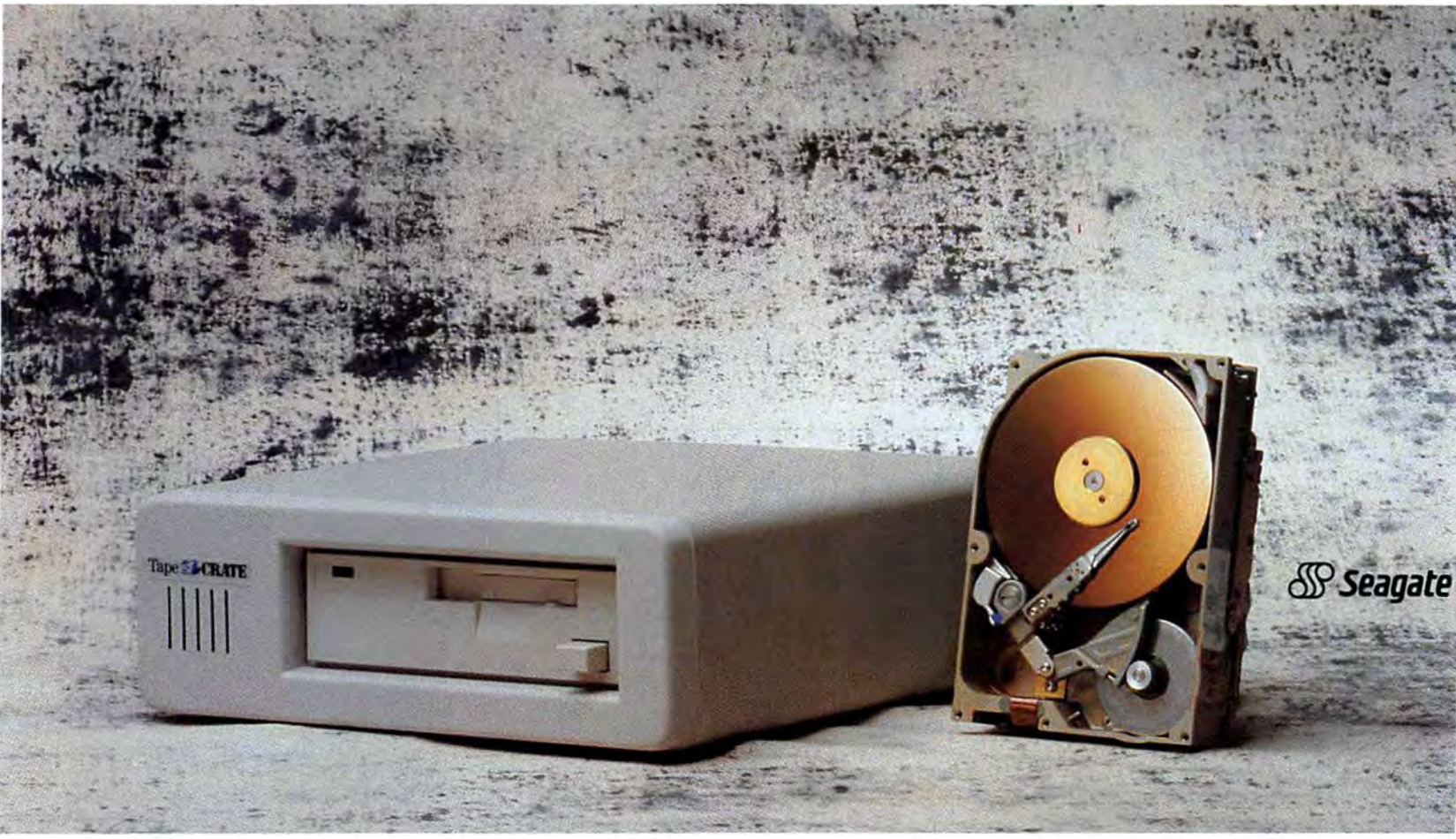
We offer a great line of external disk drives now known as MacCrate ranging from 20MB to our performance driven 80MB model all using Seagate quality disk drives.

We have expanded our product line to include InnerCrate: our solution for your Mac SE and Mac II internal disk drive needs. InnerCrates range from 30MB to our high performance 300MB model.

Introducing TapeCrate, our high speed quality backup system. TapeCrate's high speed data transfer rate, protects 60MB of your valuable information in just 12 minutes. TapeCrate comes with a 60MB data cartridge and is ready for "Plug and Play" operation.

MacCrate, InnerCrate and TapeCrate are registered trademarks of Crate Technology, Inc.

CRATE



Mac CRATE	20MB	65ms	$545
	40MB	28ms	$740
	60MB	28ms	$839
	80MB	28ms	$1149
Inner CRATE	Mac SE 30MB	28ms	$560
	Mac SE 50MB	28ms	$730
	Mac II 40MB	28ms	$585
	Mac II 60MB	28ms	$655
	Mac II 80MB	28ms	$1085
	Mac II 300MB	16.5ms	$2785
Tape CRATE	60MB tape backup		$739

California 800-323-9994 Nationwide 800-543-5808
Call for same day orders or technical support.

Prices will remain in effect until December 31, 1988.

CRATE TECHNOLOGY

6850 Vineland Ave. Bldg. M., North Hollywood, CA 91605

Circle 97 on reader service card

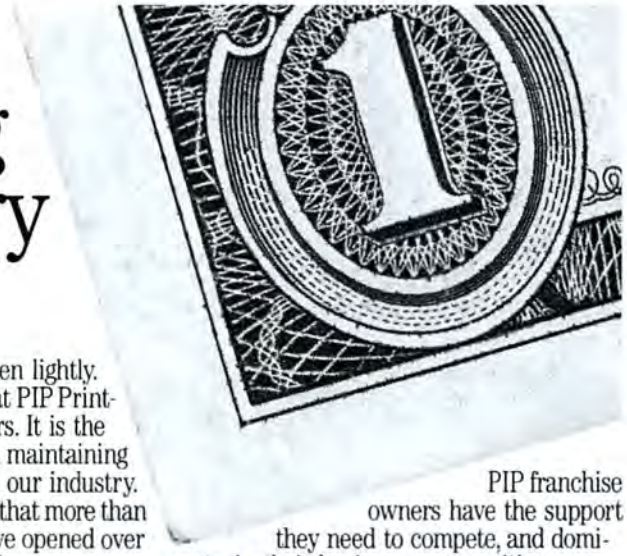
Where to Buy

Reader Service

790 **Screen Gems.** Microseeds, 7030B W. Hillsborough Ave., Tampa, FL 33615; 813/878-2142.
791 **Sharp JX-730.** Sharp Electronics Corp., P.O. Box 650, Sharp Plaza, Mahwah, NJ 07430; 201/529-8979, 800/526-0264.
* **Sky Travel.** MicroIllusions, 17408 Chatsworth St., Granada Hills, CA 91344; 818/360-3715, 800/360-3715.
792 **SlideWriter.** Matrix Instruments, Inc., 1 Ramland Rd., Orangeburg, NY 10962; 914/365-0190, 800/852-8533.
793 **Swivel 3D.** Paracomp, 123 Townsend St., #310, San Francisco, CA 94107; 415/543-3848.
794 **Symantec Utilities for the Macintosh.** Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 408/253-9600.
795 **Tektronix 4693D Color Image Printer.** Tektronix, Inc., P.O. Box 1000, Mailstop 63-447, Wilsonville, OR 97070; 503/235-7202, 800/225-5434.
796 **Tempo II.** Affinity Microsystems, Ltd., 1050 Walnut St., #42, Boulder, CO 80302; 303/442-4840, 800/367-6771.
797 **3+ for Macintosh.** 3Com Corp., 3165 Kifer Rd., Santa Clara, CA 95052; 408/562-6400.
798 **TOPS/Macintosh.** Sun Microsystems, TOPS Division, 950 Marina Village Pkwy., Alameda, CA 94501; 415/769-9669, 800/445-8677.
799 **TurboSynth.** Digidesign, Inc., 1360 Willow Rd., #101, Menlo Park, CA 94025; 415/327-8811.
800 **2001 Quotes.** HyperAnnex, P.O. Box 1354, Saugus, MA 01906; 617/289-9801. □

Public domain software and shareware are available through online information services: user groups (call 800/538-9696 ext. 500 for information on a local user group); or mail-order clearinghouses such as Budgetbytes (800/356-3551 for orders, 913/271-6022 in Kansas), Educomp (800/843-9497, 619/259-0255 in California), or the Public Domain Exchange (800/331-8125, 408/496-0624 in California).

No printed piece does more recruiting for the printing industry than this one.



Notice the attention to detail and unerring craftsmanship. Notice also, as many enterprising individuals have, that business printing has grown to become an industry involving fifteen billion of these fine works.

Fueled by intense consumer demand and exciting new technology like desktop publishing, business printing has emerged at the forefront of business communications.

It is a dynamic industry worthy of an investment not only of your money, but also of yourself. To put it simply, business printing is a highly rewarding profession, not an occupation to be taken lightly.

This has been our belief at PIP Printing for the past twenty years. It is the foundation for our success in maintaining our position as the leader in our industry. We're quite proud of the fact that more than 90% of all the franchises we've opened over the years are still in operation.

And, rest assured that we wouldn't ask you to make such a large investment in our future together if we weren't prepared to do the same. Over the past three years we've invested millions of dollars in technology, training, a corporate identity program and advertising to ensure that our PIP franchise owners have the support they need to compete, and dominate, in their business communities.

So, as you contemplate a future in business printing, we encourage you to call 1-800-292-4747 to discuss a partnership with PIP Printing. We'd be more than happy to send you some printed pieces that could prove even more valuable than the kind shown above.

PIP PRINTING

Offer made by prospectus only. Cash requirement of $25,000 down payment and $35,000 working capital plus one year's living expenses. Financing available through PIP Printing or the SBA. © 1988 PIP® Printing.

Circle 412 on reader service card

Randall D. Smith, President of F.M.I., Inc. invites you to a unique learning experience to be held in your area.

How I Discovered the *Ultimate* Macintosh Learning Experience

The true story of someone who wanted to learn how to use the Macintosh in business ... and how he almost went crazy doing it.

A few years ago I bought a new Porsche 911. As I was reading through the literature I came across an interesting statement. It said: "the only limitation this automobile has is the driver!"

I must admit that I felt the same way when I bought my Macintosh computer. I was like a lot of first time owners in that I never read the manuals. I simply popped in the disks and figured out the basics on my own. After having used an IBM for three years I was thrilled to be able to accomplish the Mac basics without taking a six month Lotus course!

Over the next few months I happily used my Mac for letters, simple spreadsheets, check books, a few graphics, and for games. But as a business owner, way in the back of my mind, I knew that there was a whole lot more the computer and the software could do if they just had someone else behind the mouse.

I realized I needed *training* to get the most out of my computer. I first tried reading the manuals. At some point in school they convinced me that I'm a fairly bright fellow. But after nights of reading manuals I simply didn't understand what I was reading.

My next step was to visit my local Apple dealer for help. He was friendly enough, but made it fairly clear that his interest was in *selling* computers, not *teaching* me how to use them. He did mention however, that there was some training available at $75 per hour. I had already paid for one college education and didn't really have the budget for another!

Next I subscribed to all of the Mac Magazines. Most (including this one) were very interesting. After a while though, I found myself reading the *ads* more than the *articles*. I wasn't interested in advanced graphics, HyperCard stacks, or MS-Dos connectivity. It seemed like more and more of the articles were written to the advanced user - which was definitely not me.

My last resort was a Mac user group. These were great people who were extremely bright and could quote the electrical diagram of the Mac backwards and forwards. But the group was too advanced for me. I was stuck!

In marketing, you are taught to "find a need and fill it". I definitely saw a need for good, practical instruction on the Mac for the *rest of us*. I decided to provide the answer for Mac users myself. In January we presented the very first MacAcademy. Since then we have had tremendous response. MacAcademy boasts many unique features: **Instructors:** Instead of sales people or programmers we feature only top business executives who use the Mac daily in their businesses. **Format:** Two full days of instruction on the Mac, Excel, Word, FileMaker, PageMaker, and HyperCard. **Schedule:** Attendees can design their own personalized schedule by choosing between 18 different, 2 hour workshops. **Price:** While others charge up to $1200 for workshops, we offer two full days for only $249. **Location:** MacAcademy is held in top hotels in business centers across the U.S. **Emphasis:** MacAcademy places training emphasis on techniques and *business* applications of the featured software.

The Results. Over 6,000 people have attended MacAcademy. On a scale of 1 to 5 they have given the experience a 4.6. Companies who have attended include General Electric, Kodak, G.T.E., M.I.T., Honeywell, N.A.S.A., Boeing, Citicorp, Kinko's Graphics, Mobile Oil, Gillette, TRW and 500 additional corporations. Are they happy with MacAcademy? The City of Anaheim sent one employee to our first workshop and ten to our second. We have had over 400 people volunteer to be references for those considering attending.

What about you? I'd like to personally invite you to attend MacAcademy. This year we will present our dynamic 2 day workshop in over 65 cities in the U.S., Australia, Europe, and Canada. For a schedule of our upcoming workshops call (904) 677-1918. Profit from the Ultimate Macintosh Learning Experience.

©1988 Florida Marketing International, Inc.

Turn DEC Computing "Nohow" Into DEC Computing *Know-How*

You can't accept "no way, nohow" answers when it comes to your Digital Equipment system. And you don't have to. The DEC computing know-how you *must* have is right here. Find it at DEXPO East 89.

Test the latest VAX*, MicroVAX*, and PDP-11* enhancements. Evaluate over 10,000 products for multi-vendor DEC systems. Compare new technologies from 250 suppliers.

Explore ***The Apple-Digital Integration Center***. It features leading edge solutions from Apple and dozens of Apple-Digital developers. Concurrent conference sessions explore Apple-Digital issues and trends.

Develop strategies for the successful integration of VAX architecture into business environments. DEXPO's **"Corporate VAX" Conference** features 50 practical sessions on all aspects of VAX management.

Plus, build skills and productivity at **Technical and Training Seminars** provided by ERI Training

Save time and money by doing it all at one show.

DEXPO® East 89

The Complete DEC Computing Exposition & Conference*

Call for **FREE** V.I.P. tickets to the show (each a $20 value). Plus, you'll get a **FREE** Preview of 100 products on exhibit and a complete Conference & Seminar schedule.

Organized by Expoconsul International, Inc. 3 Independence Way, Princeton, N.J. 08540

*Registered trademark of Digital Equipment Corporation

DEXPO HOTLINE: 800-87-DEXPO

Passenger Ship Terminal • New York City • Feb. 8-10, 1989

(48th & 55th Streets at 12th Ave.)

Product Index

Reader Service Number

Software

Business

— Acius, 36
10 Bedford, 56
187 Berkeley System Design, 4
382 Brainpower, Inc., 40
— Checkmark Software, Inc., 221
— Claris, 44-45
410 Connect, Inc, 214-215
165 Design Science, 58
155 DublClick, 215
156 Great Plains Software, 159
167 Individual Software, 22
— Intuit, 177
271 Mediagenic, 200
— Microsoft, 152-153
— Microsoft, IFC-1
87 Monogram, 169
160 M/H Group, 26
399 Niles & Associates, 206
559 Northedge, 173
229 Paracomp, 76
395 PMC Telesystems, Inc., 60
297 Shana Corporation, 185
419 Softview, Inc., 226
215 Symantec, 12
332 T/Maker, IBC
408 Visual Business Systems, Inc., 207

Vertical

— Adobe Systems, Inc., 28
— Checkmark Software, Inc., 221
271 Mediagenic, 200
399 Niles & Associates, 206
229 Paracomp, 76

Data Management

— Acius, 36
317 Preferred Publishers, Inc., 46

Word Processing

180 Deneba, 41
165 Design Science, 58
— Microsoft , IFC-1
160 M/H Group, 26
215 Symantec, 12
332 T/Maker, IBC

CAD/CAM

77 Diehl Graphsoft, Inc., 88
209 Micro Cad/Cam Systems, Inc., 61

Communication

371 Compuserve, 224-225
410 Connect, Inc., 214-215
281 DataViz, 229
150 Farallon, 84
— Tops, 21
304 Traveling Software, 32

Reader Service Number

Educational

25 Bible Research Systems, 42
386 Cirq Training Systems, 42
165 Design Science, 58
251 Great Wave Software, 60
— Microsoft, 171
362 Nordic Software, 213

Graphics/Desktop Publishing

340 Aba Software, Inc., 16-17
— Adobe Systems, Inc., 28
— Affinity, 210
329 Aldus Freehand, 190-191
306 Aldus Persuasion, 30-31
68 Computer Friends, 198
538 Cricket Software, 74
282 Deneba, 38-39
155 DublClick, 215
337 Image Club Graphics, 96
167 Individual Software, 22
393 NuEquation, 210
115 Qume Corporation, 54-55
297 Shana Corporation, 185

Personal Business/Home

10 Bedford, 56
— Intuit, 177
395 PMC Telesystems, Inc., 60
297 Shana Corporation, 185
419 Softview Inc., 226

Entertainment

25 Bible Research Systems, 42
251 Great Wave Software, 60
256 Icom Simulations, 8
— Infocom, 60a
420 Origin Systems, 219
291 PCAI, 86
289 PCAI, 86
290 PCAI, 86

Music

369 Ars Nova, 222

Networking

150 Farallon, 84
421 Shiva, 65
— Tops, 21

Utilities

202 Alsoft, 64
187 Berkeley System Design, 4
357 Central Point Software, 157
364 Fifth Generation, 181
250 Fifth Generation, 181
— SuperMac Software, 43
237 Symantec, 9
304 Traveling Software, 32

Reader Service Number

Miscellaneous

— Checkmark Software, Inc., 221
— Microsoft, IFC-1
— Microsoft, 171
419 Softview, Inc., 226

Hardware

Printers

177 GCC Technologies, 15
100 Jasmine, 90
— NEC Information Systems, Inc., 98
104 QMS/Laser Connection, 82-83
353 Qume Corporation, 54-55
267 Zericon, 220

Boards

403 American Micro Distributors, 207
319 Avatar, 179
375 Clearpoint, 33
127 Clearpoint, 33
173 Dove, 163
196 National Semiconductor, 175
347 Novell, 24-25
349 Siclone Sales & Engineering Corp., 219

Digitizers/Scanners

242 Digital Vision, 220
327 Sharp Electronics Corp., 77
176 Thunderware, 161

Display

354 MacMail, 216
223 Personal Computer Peripherals Corp., 183
46 Radius, 6-7
117 Sigma Designs, 10-11
389 Sunrise Technologies, 199

Hard Disks/Storage

403 American Micro Distributors, 207
97 Crate Technology, 230-231
102 Jasmine, 192
457 Jasmine, 59
145 La Cie, 18
354 MacMail, 216
387 Maxcess,, 196-197
243 Microtech Peripherals, 167
243 Microtech Peripherals, 23
223 Personal Computer Peripherals Corp., 183
149 Rodime, 47
416 Storage Dimensions, 29
414 Storage Dimensions, 27
— SuperMac, 78-79
320 Tallgrass Technologies, 94
6 Tallgrass Technologies, 94
321 Tecmar, 205
367 Western Digital, 34-35

Reader Service Number

Video

68 Computer Friends, 198

Miscellaneous

401 Advanced Gravis Computer, 92
403 American Micro Distributors, 207
61 Computer Friends, 228
86 MacProducts USA, 223
389 Sunrise Technologies, 199
26 Trimar USA, Inc., 206

Accessories

Floppy Disks

208 Sony Corp., 81

Furniture

306 Anthro, 201

Miscellaneous

401 Advanced Gravis Computer, 92
61 Computer Friends, 228
— DEXPO, 234-235
148 Ergotron, 28
148 Ergotron, 195
30 Kensington, 52
192 Kensington, BC
276 Micro Computer Accessories, Inc., 187
388 Micro Vision, 20
239 Secure-It, Inc., 213
389 Sunrise Technologies, 199

Services

410 Connect, Inc., 214-215
— GE Information Services, 165
406 MacAcademy, 233
293 Safeware, 222

Mail Order

5 Beverly Hills Computer, 243
— CMO/Icon Review, 202
97 Crate Technology, 230-231
562 Diskette Connection, 238
368 Dr Mac, 241
— MacConnection, 100-107
264 MacLand, 240
354 MacMail, 216
86 MacProducts USA, 223
78 MacWarehouse, 67-73
411 Micro Star, 237
380 New PC Network, The, 239
45 Open Mac, 242
44 Programs Plus, 48-51
307 Teleman, 208-209
305 USA Flex/Comark, 238

MACWORLD

FREE PRODUCT INFORMATION

Get more information on products you're interested in—simply return one of these cards today. There's no cost. And no obligation.

Please print or type all information.

Name _____ Title _____

Company _____

Address _____ City, State, Zip _____ (zip code needed to ensure delivery)

Phone: Area code/Number _____

☐ Check this 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)

(1-200)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

(201-400)

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

(401-600)

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

CATALOG INFORMATION

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750

WHERE TO BUY

751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950

Expires 3/27/89 S1 JANUARY 1989

MACWORLD

FREE PRODUCT INFORMATION

Get more information on products you're interested in—simply return one of these cards today. There's no cost. And no obligation.

Please print or type all information.

Name _____ Title _____

Company _____

Address _____ City, State, Zip _____ (zip code needed to ensure delivery)

Phone: Area code/Number _____

☐ Check this 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)

(1-200)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

(201-400)

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

(401-600)

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

CATALOG INFORMATION

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750

WHERE TO BUY

751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950

Expires 3/27/89 S2 JANUARY 1989

MACWORLD

FREE PRODUCT INFORMATION

Get more information on products you're interested in—simply return one of these cards today. There's no cost. And no obligation.

Please print or type all information.

Name _____ Title _____

Company _____

Address _____ City, State, Zip _____ (zip code needed to ensure delivery)

Phone: Area code/Number _____

☐ Check this 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)

(1-200)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

(201-400)

201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400

(401-600)

401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550
551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570
571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590
591	592	593	594	595	596	597	598	599	600

CATALOG INFORMATION

601	602	603	604	605	606	607	608	609	610
611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630
631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650
651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670
671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690
691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750

WHERE TO BUY

751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790
791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810
811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830
831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850
851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870
871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890
891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910
911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930
931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950

Expires 3/27/89 S3 JANUARY 1989

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 215 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

MACWORLD

Reader Service Department
P.O. Box 5299
Pittsfield, MA 01203-9906

Advertiser Index

Reader Service Number		Reader Service Number		Reader Service Number		Reader Service Number	
340	Aba Software, Inc., 16-17	77	Diehl Graphsoft, Inc., 88	271	Mediagenic, 200	46	Radius, 6-7
—	Acius, 36	242	Digital Vision, 220	209	Micro Cad/Cam Systems, Inc., 61	149	Rodime, 47
—	Adobe Systems, Inc., 28	562	Diskette Connection, 238	276	Micro Computer Accessories, Inc., 187	293	Safeware, 222
401	Advanced Gravis Computer, 92	173	Dove, 163	388	Micro Vision, 20	239	Secure-It, Inc., 213
—	Affinity, 210	368	Dr Mac, 241	—	Microsoft, 171	297	Shana Corporation, 185
329	Aldus Freehand, 190-191	155	DublClick, 215	—	Microsoft, 152-153	327	Sharp Electronics Corp., 77
306	Aldus Persuasion, 30-31	148	Ergotron, 28	—	Microsoft, IFC-1	421	Shiva, 65
202	Alsoft, 64	148	Ergotron, 195	411	Micro Star, 237	349	Siclone Sales & Engineering Corp., 219
403	American Micro Distributors, 207	150	Farallon, 84	243	Microtech Peripherals, 23	117	Sigma Designs, 10,11
306	Anthro, 201	250	Fifth Generation, 181	243	Microtech Peripherals, 167	300	Soft Disk, 5
369	Ars Nova, 222	304	Fifth Generation, 181	87	Monogram, 169	419	Softview, Inc., 226
319	Avatar, 179	177	GCC Technologies, 15	160	M/H Group, 26	—	Somak Software, Inc., 220a
10	Bedford, 56	—	GE Information Services, 165	196	National Semiconductor, 175	208	Sony Corp., 81
187	Berkeley System Design, 4	156	Great Plains Software, 159	—	NEC Information Systems, Inc., 98	414	Storage Dimensions, 27
5	Beverly Hills Computer, 243	251	Great Wave Software, 60	380	New PC Network, The, 239	416	Storage Dimensions, 29
25	Bible Research Systems, 42	256	Icom Simulations, 8	399	Niles & Associates, 206	186	Sun Remarketing, 189
382	Brainpower, Inc., 40	337	Image Club Graphics, 96	362	Nordic Software, 213	389	Sunrise Technologies, 199
357	Central Point Software, 157	167	Individual Software, 22	559	Northedge, 173	—	SuperMac, 78-79
—	Checkmark Software, Inc., 221	—	Infocom, 60a	347	Novell, 24-25	—	SuperMac Software, 43
386	Cirq Training Systems, 42	—	Intuit, 177	393	NuEquation, 210	237	Symantec, 9
—	Claris, 44-45	82	Irwin, 62-63	45	Open Mac, 242	215	Symantec, 12
127	Clearpoint, 33	102	Jasmine, 192	420	Origin Systems, 219	6	Tallgrass Technologies, 94
375	Clearpoint, 33	100	Jasmine, 90	229	Paracomp, 76	320	Tallgrass Technologies, 94
—	CMO/Icon Review, 202	457	Jasmine, 59	289	PCAI, 86	321	Tecmar, 205
371	Compuserve, 224-225	192	Kensington, BC	290	PCAI, 86	307	Telemart, 208-209
68	Computer Friends, 198	30	Kensington, 52	291	PCAI, 86	176	Thunderware, 161
61	Computer Friends, 228	145	La Cie, 18	223	Personal Computer Peripherals Corp., 183	—	Tops, 21
410	Connect, Inc, 214-215	400	MacAcademy, 255	412	PIP Printing, 232	304	Traveling Software, 32
97	Crate Technology, 230-231	—	MacConnection, 100-107	395	PMC Telesystems, Inc., 60	26	Trimar USA, Inc., 206
538	Cricket Software, 74	264	MacLand, 240	317	Preferred Publishers, Inc., 46	332	T/Maker, IBC
281	DataViz, 229	354	MacMail, 216	44	Programs Plus, 48-51	305	USA Flex/Comark, 238
282	Deneba, 38-39	86	MacProducts USA, 223	104	QMS/Laser Connection, 82-83	56	Virginia Systems, 20
180	Deneba, 41	78	MacWarehouse, 67-75	115	Qume Corporation, 54-55	408	Visual Business Systems, Inc., 207
165	Design Science, 58	—	Macworld Exposition, 267	353	Qume Corporation, 54-55	367	Western Digital, 34-35
—	DEXPO, 234-235	387	Maxcess, 196-197			267	Zericon, 220

Take The Guesswork Out Of Choosing The Best Shareware and Public Domain Software

THE BEST ★ From MICRO STAR

Selecting the best programs from the thousands available is overwhelming. Our librarians have done the work for you, while eliminating the risk. Each collection of 5 double-sided disks contains the very best of the Micro Star/MacIntosh collection for only $23.95 per set!

★ **GAMES** — *Monopoly - Air Traffic Controller - Aliens - Lunar Lander Billards - MacMissles - Golf - MacFootball - Radical Castle Klondike - Orion - and many more!*

★ **EDUCATION** — *Animals - 3D Moles - Orbit - Math Mountain - Hangman - Word Search - Life Hack - Full Moon - Math Mud - Pattern Block - and many more!*

★ **CLIP ART** — *Famous Faces - Cartoons - Borders - Cars - Sports Clips - Logos - Shadowettes - and more!*

★ **AUDIO** — *Sound Effects - Pop Tunes - Sound Mover - Max Headroom - Monty Python - Cheap Beep - plus many more!*

★ **UTILITIES** — *Red Ryder 9.4 - Big Screen INIT - Font Utilities - Disk Librarian - Servant - Disk Utilities - Resource - Editor - and many more!*

★ **APPLICATIONS** — *Typing Helper - BiPlane - MacAuto - Camera MaxWrite - MacRoots - Dot-to-Dot - Memory - CK - and more!*

★ **STACKS NO. 1** — *Your Faithful Camel - Sound Mover - Mac Tips Hyper Slots - Guitar Tudor - Family Tree The Aids Stack - and many more!*

★ **STACKS NO. 2** — *Jungle Adventure - Sound Manager The Guide - Hyper Zap - Away From Home Rez Mover - Home Desk - and many more!*

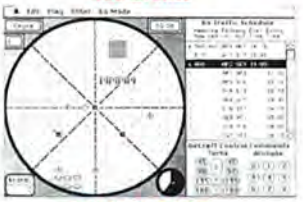
★ **STACKS NO. 3** — *Tilt - Restaurants - Hyper Jotto - Inigo Wine Man - Hyperquackey - and more!*

Each series has five double-sided disks *for only $23.95 per set!*

Choose Micro Star's Econo-Packs for the BEST Values in Shareware and Public Domain

Only $18.95 per set! Any 3 for $54.95! All 6 for $99.95!

150 GAMES



125 STACKS FOR HYPERCARD

250 ART PICTURES

150 SOUNDS

225 FONTS

250 DESK ACCESSORIES

MICRO STAR
1105 Second Street
Encinitas, CA 92024

ORDER TODAY TOLL FREE Orders shipped out same or next day. We accept MasterCard, Visa, checks and C.O.D. orders (add $4). We offer FREE technical support for our customers. Econo-packs contain four double-sideddisks. Ad $5/set for single-sided. Add $4 per order for shipping and handling. Call today for free catalog!

(800) 444-1343
INFO: (619) 436-0130
7 am to 5 pm Pacific Time
Monday through Sunday

Circle 411 on reader service card

SONY

Boxed in Tens

3½" SS . . $1.09 ea., 100+
1G36A12

3½" DS . . $1.59 ea., 100+
1G38A12

MAC • PAC
Bulk Packaged in 50's

3½" DS . . . 1.29 ea., 100+
1H38A13
1.25 ea., 400+

Diskette Labels **5¢** each
Minimum 50

TIDBIT 24 MODEM

2400 BPS External Modem
Specify Mac or Mac Plus Cable
D1-TIDBIT24
OLINK-MAC
F1-MACMODEM(P)
$159 ea.

KAO

Media from the Surface Scientists

100 years of leadership in surface science technology goes into every **KAO** diskette — from raw materials to final packaging. You can be assured that every **KAO** diskette exceeds all world-wide industry standards

Boxed in Tens

	100+
3½" SS	**1.16** ea.
1K36A12	
3½" DS	**1.37** ea.
1K38A12	

Rainbow Pack
5 colors per clear plastic box
Boxed in Tens

	100+	400+
3½" DS .	**1.65**	**1.54** ea.
1K38A11-RB		

Mac • Pac
Bulk packaged in 50's

	100+	400+
3½" DS .	**1.14**	**1.09** ea.
1K38A13		

Diskette labels **5¢** each
Minimum 50

• 7 TO 7 CENTRAL M-F • 9 TO 2 SATURDAY •

USA FLEX

1-800-872-3539
FAX# 312-351-7204
Minimum order $100. No surcharge for MasterCard and Visa. Shipping and handling additional
135 N. Brandon Drive, Glendale Heights, IL 60139

Circle 305 on reader service card

SONY

	2-4 box	5-9 box	10+box
3½ DS	15.95	15.80	15.55
2 me HD	37.95	37.50	36.95

	MAC-PAC-50 (50)	(100)	"NO LABEL" (400)
3½" SINGLE	1.15ea	1.12ea	1.09ea
DOUBLE	1.27ea	1.22ea	1.19ea

Old Reliable the Diskette Connection™
Delaware 1·800·451·1849 P.O. BOX 10247, WILMINGTON, DE. 19850
Oklahoma 1·800·654·4058 P.O. BOX 1674, BETHANY, OK. 73008
Nevada 1·800·621·6221 P.O. BOX 12396, LAS VEGAS, NV. 89112
TELEX-4933362 FAX 405-495-4598

IBM

RIBBONS & DISKS

3.5" DS 1.0 MB #6404107

1 bx	5 bx	10 bx
23.95	23.50	22.95

3.5" HD 2.0 MB #6404078

1 bx	5 bx	10 bx
45.95	45.50	44.95

PROPRINTER XL 4202 #1040150 **$7.99** EA

Old Reliable the Diskette Connection™
Delaware 1·800·451·1849 P.O. BOX 10247, WILMINGTON, DE. 19850
Oklahoma 1·800·654·4058 P.O. BOX 1674, BETHANY, OK. 73008
Nevada 1·800·621·6221 P.O. BOX 12396, LAS VEGAS, NV. 89112
TELEX-4933362 FAX-405-495-4598

3M

Authorized Distributor
Magnetic Media Division Products

Packaged 10 per Box

	2-4box	5-9 box	10+box
3½" S·Side	11.20	10.95	10.80
3½" D·Side	15.50	15.30	15.10
HIGH Density	40.50	39.95	39.50

Old Reliable the Diskette Connection™
Delaware 1·800·451·1849 P.O. BOX 10247, WILMINGTON, DE. 19850
Oklahoma 1·800·654·4058 P.O. BOX 1674, BETHANY, OK. 73008
Nevada 1·800·621·6221 P.O. BOX 12396, LAS VEGAS, NV. 89112
TELEX (4933362) — FAX (405-495-4598)

Minimum order $200.00 "No Surcharge on Visa MasterCard." COD orders add $3.00. Surface Shipping UPS add $3.00 per 100 for 3½" or 5¼", add $4.00 per 100 for 8". U.S. Mail delivery add 9%. "Prices subject to change without Notice."

Circle 562 on reader service card

MAIL-ORDER CONSUMERS DO HAVE RIGHTS.

The vendors and developers who advertise in the pages of **Macworld** share with us a common goal—to serve **you**, the consumer. And as a mail-order consumer, you have certain rights you should know and understand.

Mail-order sales must comply with the rules of the Federal Trade Commission (FTC) and various state laws. Here are some guidelines to alert you to your rights and help you shop by mail more effectively.

THE FTC MAIL ORDER RULES STATE:

1. The Seller must ship your order within 30 days of receiving it, unless clearly stated otherwise in the advertisement.
2. If the Seller cannot ship your order when promised, you must be notified in writing prior to the promised date. The notice must specify a new date if available, and must give you the opportunity to (a) cancel with a refund; (b) agree to a specified delayed shipping date; or (c) agree to an indefinite delay.
3. The Seller's notice must include a postage-paid reply envelope or card so that you may indicate your preference. If you do not respond, the Seller may assume you agree to the delay.
4. Even if you agree to an indefinite delay, you retain the right to cancel at any time before the merchandise has been shipped.
5. If you cancel an order that has been paid by check or money order, the Seller is obligated to mail your refund within seven business days. If you paid by credit card, the Seller must credit your account within one billing cycle following receipt of your cancellation. Store credits or vouchers are not acceptable in place of a refund.
6. If the item you order is unavailable, the Seller may not send you substitute merchandise without your consent.

DO'S AND DON'TS

By mail:

- Compare prices, including sales tax and shipping fees, before you order. Your purchase may be exempt from sales tax—check your state laws on collection regulations. Handling, packing, and shipping fees are legal and most states tax these services.
- State the precise specifications of the merchandise, such as model, make, size, component parts, etc.
- Confirm the price and expected delivery date as advertised.
- State on your order whether you will accept substitute merchandise if the item you specified is unavailable. If you won't accept a substitute, state that your payment should be returned.
- Record of payment is essential if a problem arises, so do not send cash.
- Keep copies of your order and all associated correspondence. Your records should include the company's name, address, and phone number; a description of the merchandise; your canceled check or money-order carbon; the date you mailed the order; and any sales slips and shipping receipts.
- Do not insure your order. It is the Seller's responsibility to make sure you receive your merchandise.

By phone:

- Note the name of the person who takes your order, and the time and date of your conversation.
- Make a record of your order, the price, promised availability, and the expected components.
- Save all correspondence, including your canceled check or money-order carbon and any written confirmation sent by the Seller.

Questions to ask:

- Does the advertised merchandise include all necessary parts and accessories? Are they made by the same manufacturer? Is the version number or model number the same? Is the product compatible with the hardware/ software you intend to use it with?
- Can your order be shipped immediately? If not, when will it be available for shipping?
- Has the advertised price increased?
- What warranties does the merchandise carry? Who provides the service?
- What is the Seller's return policy? Exchange or repair? The refund policy?
- If a problem arises, with whom should you correspond?

PROBLEMS? SOLUTIONS:

1. If you do not receive your order as promised or if the merchandise is defective, write to the Seller immediately. Include a description of your order, the price, date, and account number or order number if available. Keep a copy of your letter.
2. If you register your complaint by phone, send a follow-up letter to confirm and keep a copy of it.
3. If you think the merchandise is defective, review your product instructions and warranty carefully. Make sure you expect only those features and abilities that the product is supposed to have. Then contact the Seller for procedures. Do not return the merchandise until you have been instructed to do so.
4. If you return the merchandise, keep the shipper's receipt or packing slip. Your right to reimbursement of postal costs is determined by store policy.
5. If you have discussed your problem thoroughly with the Seller and remain dissatisfied, write to the consumer complaint agency in the Seller's state. If you paid for the merchandise by credit card, you may have the right to withhold payment under the Federal Trade Commission's Fair Credit Billing Act.

Macworld believes that the customer has a right to product and service satisfaction. If you continue to experience problems with mail-order purchasing, the President of Macworld Communications and the Editor-in-Chief of Macworld want to know about it. Please take a moment to write to: Jim Martin, President, Macworld Communications, or Letters to the Editor, Macworld, 501 Second Street, San Francisco, CA 94107. You may also phone the President at 415-243-0505 to discuss your situation. Our goal is to help you become a satisfied mail-order consumer.

MACWORLD
The Macintosh® Magazine

IDG

· Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Mac

The New PC NETWORK

JOIN THE #1 MACINTOSH "COMPUTER WAREHOUSE CLUB " FOR BUSINESS

MONITORS

NEC MULTISYNC II $587.94

MITSUBISHI Diamond Scan	469.80
NEC Multisync XL	2,025.00
PRINCETON Ultrasync	507.06
SIGMA Laserview SE 15"	1,251.72
SIGMA Laserview SE 19"	1,586.52

PRINTERS

NEC LC890 ..... $3,186.00

LC890 Toner Cartridge (6 Pk.) $61.00

- Postcript Printer
- 8PPM
- 3 MEG RAM

Image Writer II $459.00

Panasonic 1091i w/ Grappler	$258.12
Orange Micro Grappler LQ	$93.96
Apple Local Talk Connector Kit	$57.81

COMPUTERS

apple **MAC SE** $2,396.52

MAC SE with 20MB	$2,850.12
MAC Plus	$1,350.00
MAC II	$3,670.92

BUY NOW AT WHOLESALE MEMBER PRICES!

ADOBE ILLUSTRATOR

Adobe Illustrator 88 allows you versatility in all ares of art and design. The new auto trace tool and a click of the mouse convert shadowed photos to clean line drawings . Use the airbrush to complete your art with shading, masking and blending. Adobe Illustrator is so versatile you can also integrate art from other programs such as MacPaint and MacDraw.

$255.96

ALDUS PAGEMAKER 3.0

Create your own brochures, newsletters, and reports with page formatting, layout and design tools.

$361.80

WRITE NOW 2.0

The number one choice in word processing programs for the Macintosh. Write Now 2.0 now features mail merge, 100,000-word dictionary, cursory key support, direct import and export of text, MacWrite, and RFT (Word, Write, and Works option) files, window menu, decimal tabs, hide pictures option, multifinder and network capability...and more!

$88.35

SOFTWARE

ABA "Draw it Again Sam"	70.20
ACIUS 4th Dimension	480.60
ACIUS 4D Runtime	211.13
ADOBE All Fonts	CALL
ALDUS PageMaker 3.0	361.80
ASHATON TATE Full Paint	59.13
ASHTON TATE Full Write Pro	241.83
ASHTON TATE dBase Mac	282.96*
BLYTHE Omnis 3 Plus Express	264.60
BORLAND Sidekick	60.53
BORLAND Reflx Plus	164.70
BORLAND Pascal	61.56
BRODERBUND The Printshop	28.90
CE SOFTWARE QuicKeys	49.68
CENTRAL POINT Copy II Mac	21.82
CHALLENGER SFT. Mac 3-D	147.26
CRICKET SFT. Cricket Draw	160.92
DENEBA SOFTWARE Canvas	99.36
DENEBA SOFTWARE Coach 3.0	51.03
FIFTH GENERATION Fast Back	49.95
FOX SFT. Foxbase + Development	200.88
LETRASET Ready Set Go!	264.60
MICROSOFT Excel	239.76
MICROSOFT Word	239.76
MICROSOFT Works	179.28
MICROSOFT Write	80.46
NASHOBA File Maker Vr. 4	172.26
SILICON BEACH Superpaint	76.14
SUPERMAC SFT. Pixel Paint	251.64
TOPS Tops Network Station	113.40
TRAVELING SFT. Lap-Link Mac	80.19
WORDPERFECT Wordperfect Mac	185.76

MODEMS

HAYES Smartmodem 1200	284.64
HAYES Smartmodem 2400	424.32
THE* 1200 Baud External Modem	85.32
THE* 2400 Baud External Modem	128.52
THE* 9600 Baud ExternalModem	484.92

SCANNERS

AST Turboscan Mac (Flatbed)	1,327.32
AST Scanner (Sheetfed)	1,186.92
CALCOMP All Models	CALL
HOUSTON INSTRUMENTS	CALL
HEWLETT PACKARD Scanjet	1,003.32
KOALA Mac Vision 2.0	199.80
SUMMAGRAPHICS Mactablet	353.26
MICROTEK Scanners	CALL

DISKETTES

3.5" DS/DD Diskettes Bulk 25	32.76
3.5" Diskettes DS/DD (Box of 10)	13.63
3.5" Diskettes DS/HD Diskette 2MB Cap. (Box of 10)	39.50

BOARDS

DOVE COMPUTERS Mac Snap 514e	CALL
DOVE COMPUTERS Mac Snap 548e	CALL
DOVE COMPUTERS Mac Snap 2	CALL
ORCHID Colorvue SE	491.40

DISK DRIVES

IOMEGA Dual 20MB Bernoull Box	1,664.28
AST-2000 Mac 20/20	1,394.28
CENTRAL POINT 3.5" 800KB Drive	193.32
PRIAM EM65 65MB Hard Drive	1,459.08
RODIME 201Ext. Plus Hard Drive	592.92
RODIME 45 Plus Ext. Hard Drive	862.92
RODIME 60 Plus Ext. Hard Drive	1.003.32

ACCESSORIES

ABATON Pro Point	117.72
AMERIPAC Pac-40 Disk Caes	5.83
APPLE Extended Keyboard MAC II, SE	189.00
CURTIS Diamond Surge Protector	29.45
CURTIS Safe Strip	19.08
DATADESK Mac-101 keyboard	135.00
ERGOTRON Mac Tilt	60.48
FUJI 3.5" Diskettes (box of 10)	19.84
FUJI 3.5' Rainbow Diskettes (box of 10)	21.59
INOVATIVE CONCEPTS Flip n' File II	16.36
KENSINGTON Mac Tilt Swivel	20.25
KENSINGTON Mouse Pocket	6.81
KENSINGTON ADB Keyboard Cable	24.30
KENSINGTON Turbo Mouse	80.95
KENSINGTON Masterpiece II	96.12
PC NETWORK Imagewriter Ribbon	7.51
1MB Simms Modules	CALL

1-800-621-SAVE

Corporate & Export Order Hotline 1-312-205-1300

Monday-Friday 8:30AM-6:00PM

Saturday 10:00AM-4:00PM

All Major Credit Cards Accepted

Tech Support 1-312-205-1410
Customer Service 1-312-205-1510
Fax 1-312-205-1525

MW0189

REAL BUYING CLOUT-Call now & join over 200,000 members who are too smart to pay more! **MEMBERSHIP BENEFITS:** 3% cash discount (included in membership price) • Optional software rental library • FREE Wholesale Buyers Guide • FREE UPDATES • Price Protection • Fully Insured 48-hour shipping • All sales are final except for defects which will be repaired or replaced at our discretion if it is properly returned within the manufacturer's warranty. We can not guarantee compatibility • FREE Technical Support • FREE Bulletin Board • Products subject to change • All products subject to availabilty. **Join Today For As Little As $10.**

625 ACADEMY DRIVE NORTHBROOK, IL 60062

· Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macintosh · Macint

Circle 380 on reader service card

MacLand™

The Lowest Prices with Technical Support, Too!

External Hard Drives

20 Megabyte
CMS Enhancements 20 ..... $539.
Giga Cell 20 ..... $499.
Microtech Int. 20 ..... $599.

30 Megabyte
CMS Enhancements 30 ..... $589.
Giga Cell 30 ..... $599.
MicroNet 30 ..... $579.
Microtech Int. 30 ..... $659.

40 Megabyte
Conner 40 ..... $649.
Giga Cell 40 ..... $649.
MicroNet 46 ..... $699.
Microtech Int. 40 ..... $749.
Quantum 40 ..... $749.

60 Megabyte
CMS Enhancements 60 ..... $749.
Crate 60 ..... $699.
Giga Cell 60 ..... $779.
MicroNet 62 ..... $739.

80 Megabyte
CMS Enhancements 81 ..... $1,099.
Microtech Int. 80 ..... $1,079.
Quantum 80 ..... $949.

90 Megabyte
CDC 90 ..... $1,099.
Giga Cell 90 ..... $1,099.
MicroNet 91 ..... $1,139.

100 Megabyte
Conner 100 ..... $1,049.
Giga Cell 100 ..... $1,049.

120+ Megabyte
Microtech Int. 120 ..... $1,299.
CMS Enhancements 140 ..... $1,299.
Rodime 140 ..... $1,299.

Drives over 150 Meg Call for Price

Internal Hard Drives for the SE

30 Megabyte
CMS Enhancements 30 ..... $469.
Giga Cell 30 ..... $489.
Microtech Int. 30 ..... $539.

40 Megabyte
Conner 40 ..... $529.
Giga Cell 40 ..... $539.
Microtech Int. 40 ..... $639.
Quantum 40 ..... $625.

45 Megabyte
CMS Enhancements 45 ..... $659.
Giga Cell 45 ..... $669.
MicroNet 46 ..... $649.

80 Megabyte
CMS Enhancements 80 ..... $1,099.
Microtech Int. 80 ..... $949.
Quantum 80 ..... $949.

100 Megabyte
Conner 100 ..... $969.

Mac II Internal Hard Drives

40 Megabyte
Conner 40 ..... $549.
Microtech Int. 40 ..... $639.
Quantum 40 ..... $625.

60 Megabyte
CMS Enhancements 60 ..... $659.
Giga Cell 65 ..... $659.
MicroNet 62 ..... $629.

80 Megabyte
CMS Enhancements 81 ..... $999.
MicroNet 80 ..... $879.
Microtech Int. 80 ..... $949.
Quantum 80 ..... $879.

90 Megabyte
CDC 90 ..... $989.
MicroNet 91 ..... $1,025.
Giga Cell 90 ..... $989.

100 Megabyte
CMS Enhancements 102 ..... $1,059.
Conner 100 ..... $969.
Giga Cell 100 ..... $969.
Rodime 100 ..... $1,039.

120 Megabyte
Microtech Int. 120 ..... $1,379.

140 Megabyte
CMS Enhancements 140 ..... $1,199.
Rodime 144 ..... $1,299.

150 Megabyte
CMS Enhancements 150 ..... $1,749.
CDC 150 ..... $1,589.
Giga Cell 150 ..... $1,589.
MicroNet 150 ..... $1,749.

300 Megabyte
CDC 300 ..... $2,495.
CMS Enhancements 300 ..... $2,679.
Giga Cell 300 ..... $2,395.
MicroNet 300 ..... $2,495.
Miniscribe 340 ..... $2,295.
Priam 340 ..... $2,295.

Removables

MicroNet 45 ..... $1,249.
44 Cartridge ..... $119.

44 Cartridge

Hardware Accessories

Anchor-5 year warranty
(includes Cable & Software)
2400 Baud Modem ..... $149.

Everex
2400 Baud Modem & Cable ..... $209.

Farrallon
Mac Recorder ..... $135.
Phone Net Connector ..... $34.

Radius
Radius 16+ Accelerator ..... $849.
Radius 25 Accelerator ..... $1,399.
Full Page Display +, SE ..... $1,349.
Full Page Display II ..... $1,425.
Two Page Display SE, II ..... $1,949.
Radius Color Monitor ..... Call.

Memory

MacLand has memory for most Macs, Please Call for Pricing

All hard disk drives carry a manufacturers one year warranty except for the Microtech International drives which have a manufacturers **Five** year Warranty.

To Order Call 1-800-333-3353

Visa, MasterCard, and **American Express** accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional $5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.

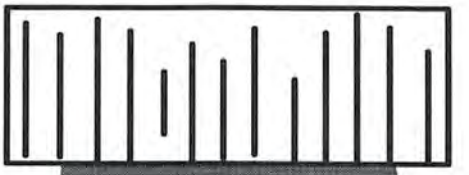
5006 South Ash Avenue, Suite 101 Tempe AZ 85282 (602) 820-5802

Circle 264 on reader service card

DR MAC

Call now for orders and free catalog

1-800-825-MACS
FAX • 1-818-501-3760



Examine Us!

Dr. Mac provides superior service.

Check this symbol for Dr. Mac's special prescriptions.

CALL
1-800-825-6227

Your Prescription For Success

SOFTWARE

3G GRAPHICS
Impact Graphics & Symbols 1 52

ABA SOFTWARE
Draw it Again Sam 74

ADOBE SYSTEMS
Adobe Illustrator '88 325

AEC MANAGEMENT SYSTEM
AEC Info Manager 399

AFFINITY MICROSYSTEMS
Tempo II 76

ALDUS
Pagemaker 409
Freehand 344

ALSOFT
Disk Express 33
Font/DA Juggler Plus 40

ASHTON-TATE
FullPaint 69
FullWrite 275
dBase Mac 275

BEDFORD SOFTWARE
Simply Accounting 199

BERKELEY SYSTEMS
Stepping Out II 49

BORLAND INTERNATIONAL
Sidekick 59
Reflex Plus 165
Turbo Pascal 64
Turbo Toolbox Mac 64

BRAVO TECHNOLOGIES
Mac Calc 72

BRIGHTSTAR
Talking Tiles 76
Hyper Animator 86

CENTRAL POINT
Copy II Mac 19
PC Tools Deluxe / Mac 38

CENTRON SOFTWARE
Casino Games 21

CE SOFTWARE
QuicKeys 50
Calendar Maker 26
Disktop 26
Quickmail 153

CHANG LABS
C.A.T. 2.0 236

CODA
MacDrums 29

COMPUSERVE
Compuserve Navigator 40

CRICKET SOFTWARE
Pict-o-Graph 105
Cricket Graph 119
Cricket Draw 169
Cricket Presents 289

DBFAST
dBFast Mac 115

DENEBA
Canvas 2.0 150
Coach 51
Comment 2.0 51
Coach Thesaurus 31
Coach Professional 99

DUBL CLICK SOFTWARE
Wet Paint Vol. 1 & 2 43

E.K.D.
MacTerm 83

FIFTH GENERATION
Fastback 51
Suitcase 40
Power Station 36

FOX SOFTWARE
FoxBASE Plus / Mac 200
FoxBASE + Runtime / Mac 160

ICOM SIMULATIONS
Iman 80
On Cue 35

IMAGINE SOFTWARE
Smart Alarms & Appt Diary 32
Smart Alarms Multi-User 79

INNOVATIVE DATA DESIGN
Mac Draft 149
Paste-Ease 28
Dreams 265

INTUIT
Quicken 33

LACIE
Silver Server 89

LETRASET
Ready, Set, Go 4.0 275

MACROPAC INTERNATIONAL
101 Macros for Excel 36

MARK OF THE UNICORN
Performer 316
professional Composer 39

MECA
Managing Your Money 125

MICROLYTICS
Wordfinder 32
Gofer 1.0 42

MICROSOFT
MS Word 3.02 248
Chart 92
Excel 250
Works 195
Flight Simulator 34
Power Point 259

NOLO PRESS
Will Maker 33

NORTHEDGE SOFTWARE
Timeslips III 115

SILICON BEACH SOFTWARE
Super Paint 2.0 102
Dark Castle 26
Silicon Press 40
Beyond Dark Castle 26
Super 3D 152
Digital Darkroom 152

SMETHERS BARNES
Prototyper 69

SOFTVIEW, INC.
TaxView Planner 63
Form Set Business Forms 50
Macintax 60

SOFTWARE VENTURES
Microphone 1.1 119
Microphone II 229

SOLUTIONS INTERNATIONAL
SmartScrap & The Clipper 36
SuperGlue 46
The Curator 72

SUPERMAC SOFTWARE
SuperSpool 5.0 54
SuperLaserSpool 2.0 82
Multi-User SuperLaserSpool 199
Diskfit 54
Network Diskfit 199
Sentinel 155
PixelPaint 259

SURVIVOR SOFTWARE
Mac Money 3.0 64

SYMANTEC
Mac SQZ 46
In Box Starter 199
Symantec Utilities 75
Lightspeed C 105
Lightspeed P 75
SUM Mac 58

SYMMETRY CORPORATION
Acta 2.0 32
HyperDA 36

TELEGRAPHICS
Hypertutor 26

TRAVELING SOFTWARE
Lap Link Mac 82

T - MAKER
Write Now 2.0 107

WORDPERFECT CORP.
Wordperfect 195

HARDWARE

CMS
SC 45 646
PRO 43 632
PRO 30 507

CURTIS MANUFACTURING
Safestrip Surge Suppressors 20
Diamond Surge Suppressors 32
Emerald Surge Suppressors 35
Sapphire Surge Suppressors 45
Ruby Surge Suppressors 55

CUTTING EDGE
CE 800K Disk Drive 172
Wedge XL 30+ 625
Wedge XL 45+ 825

DATADESK
Mac - 101 136
HyperDialer 26

DOVE COMPUTER CORP.
68020 Accelerator Boards for Mac
MSE 1 569
MSE 2 (1MB) 1029
MSE 3 (Math Co-processor) 759
MSE 4 (1MB and Math Co-pro) 1215
MacSnap 524 (512K to 1MB) 315
MacSnap 524E (512E to 1MB) .. 299
MacSnap 524S (512E to 1MB) .. 399
MacSnap 548 (512K to 2MB) 574
MacSnap 548E (512E to 2MB) .. 569
MacSnap 548S (512E to 2MB) .. 635
MacSnap 2SE or 1024 Option (1MB Acc. or MacII Memory Exp.) 459
Macsnap 1024 464
Macsnap 2H or 2S 763
Macsnap 4H or 4S 1514
MacSnap Plus 2 469

FARALLON COMPUTING
PhoneNET-AppleTalk 120 9
PhoneNET PLUS 35
PhoneNET Star Controller 1225
PhoneNET Punch Down Block Wire Kit 68
TrafficWatch 155

KENSINGTON
Mouseway 8
Mouse Pocket 8
Mac Plus/Mac SE Cover 9
Disk Drive Cleaning Kit 20
Macintosh II Stand 20
MasterPiece Mac II 103
System Saver Mac 66
Turbo Mouse 103

MIGENT
Pocket Modem 110

PRACTICAL PERIPHERALS
1200 Baud External Modem 105
2400 Baud External Modem 185
Mac Comm. Pac 2400 228

SOFTSTYLE
MacEnhancer 155

SUMMAGRAPHICS
MacTablet 12" x 12" 375

SUPRA
2400 Baud External Modem 140

THUNDERWARE
ThunderScan 4.0 with Pwr Port . 193
Mac II Power Accessory 41

Policies
- Corporate Accounts Welcome
- Visa, Mastercard, and AMEX accepted with no surcharge
- Credit card is not charged until order is shipped
- California residents add 6.5% sales tax
- To order call anytime Mon - Fri, 10 - 9 EST
- Enquiries call (818) 501-6581, FAX# (818) 501-3760
- All prices subject to change without notice

Shipping
- All orders add $4. Shipped Federal Express Standard Air
- Same day shipping on orders placed by 5pm EST

Returns
- Defective software will be replaced immediately by the same item. Call customer service at (818) 501-0861 for R.A. number before returning defective product.

Dr. Mac Inc.
14542 Ventura Blvd., Suite 200
Sherman Oaks, CA 91403

DR. MAC WELCOMES CORPORATE AND EDUCATIONAL ACCOUNTS

Circle 368 on reader service card

GET MORE
FROM YOUR MACINTOSH™ INVESTMENT

PERFORMANCE ENHANCERS THAT WON'T BREAK THE BANK.

INTERNAL DRIVES ❑ ONE YEAR WARRANTY

MASS STORAGE

For Macintosh SE,II

OME 40i- 45 Megabytes **$899.95**

For Macintosh II

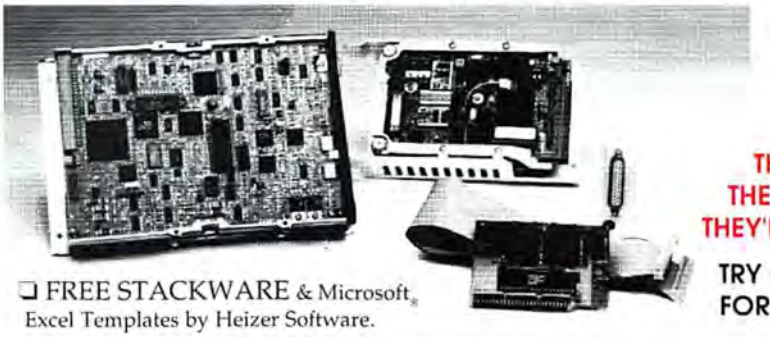
OME 100i- 100 Megabytes **$1199.95**

OME 140i- 140 Megabytes **$1599.95**

EXTERNAL MODELS AVAILABLE

❑ 110/220V Power

❑ < 30 ms access



❑ FREE STACKWARE & Microsoft® Excel Templates by Heizer Software.

THEY'RE FAST!
THEY'RE RELIABLE!
THEY'RE INEXPENSIVE!

TRY OUR SCSI PORT FOR THE MAC 512E

MEMORY

CALL NOW & SEE IF YOU QUALIFY FOR SPECIAL DISCOUNTS

YES! We've Got It! Guaranteed!

For Macintosh Plus,SE,II

Ram II+II - Cost Effective **$CALL**
4 Megabytes RAM, 120ns, CMOS.

Ram II - Cost Effective **$CALL**
Expands to 2.5 Megabytes RAM. SE & Plus

For Macintosh Plus

RamPlus 2- Cost Effective **$CALL**
Expands to 2 Megabytes RAM. Plus Only

RamPlus 4- **$CALL**
Expands to 4 Megabytes RAM. Plus Only

NOTE: RamPlus may not be physically compatible with internal devices.

- 2 YEAR GUARANTY! -
- RELIABLE! -
- AVAILABLE! -
THOUSANDS IN USE ALREADY!

MOST ORDERS SHIP FROM STOCK!

VIDEO

Ask about our Videoworks II bundle!

Mac II to NTSC (Television) Converter

Connects your Macintosh II to NTSC video.

Record your Macintosh images to video tape, or use for live presentations. Compatible with Apple & Spectrum Video Cards.

STANDARD **$599.**

GENLOCK **$999.**

GREAT FOR ANIMATION & PRESENTATION

All OPEN MAC products are Guaranteed:

- Are Manufactured by OPEN MAC Enterprise - Are User Installable - Preserve Manufacturer's Warranty - Carry a minimum 1 Year Warranty - *Are stocked for rapid shipment* - - Are listed at a Cash Discount Price - *Credit Cards not charged until shipment* - Prices may vary

OPEN MAC Enterprises

415/682-0440

2280 Bates Avenue, Suite J, Concord, CA 94520

VISA/MC/AMEX Discover Accepted

GOVERNMENT & FORTUNE 1000
Purchase Orders Encouraged
FAX: 415-686-4244

VideoEx- $149.95
Expand the Mac II to full color capability

DON'T HAVE A MAC II?
Try our Hi-resolution composite video adapters for the Mac SE & Plus. (Sorry, not TV!)

© 1987,1988 OPEN MAC Enterprises. VideoEx, Accelerator2, RamPlus, Ram II, Ram II+II, VA Plus, VA SE, OME 40i, 100i, 140i are trademarks of Open Mac Enterprises. Microsoft is a registered trademark of Microsoft Corporation. Macintosh is a trademark of Apple Computer Incorporated. Videoworks II is a trademark of Macromind Inc.

Circle 45 on reader service card

20 Megabyte External Hard Drive $449

Hard Drives

AST
20 mg/20 mg Tape Back-up...$749

CMS Mac Stack SD Series
(Mac Plus, SE, II)
SD 20 Megabyte $499
SD 30 Megabyte $599
SD 60 Megabyte $799
SD 80 Megabyte $1249

CMS Pro Series Internal Mac SE/II
30 Megabyte SE rear $499
45 Megabyte SE rear $689
65 Megabyte SE rear $899
80 Megabyte SE rear $1199
100 Megabyte SE rear $1489
60 Megabyte Mac II $699
80 Megabyte Mac II $1145
150 Megabyte Mac II $1879
300 Megabyte Mac II $2799

Tape Back-up

CMS 60 Megabyte External
TS-60.....$729

Everex
External 20D $509
20 Deluxe External $575
40/60 DTL External..... $1795
20 ID Internal Mac II $445
91 ID Internal Mac II..... $1395

Cutting Edge
800K External Drive $175
Wedge XL30 .....$625
Wedge XL45 .....$825
Mac 105 ADB Keyboard $129

Moniterm Monitor

Viking I 19" $1598
Viking 2400 24" $1898
Viking G/S 19" $2498
Viking 10 19" Color $3898

Please call for competitive system pricing.

Epson Printers

FX-850, FX-1050, FX-286e, LQ-500

Epson LX-800
9 pin, 180 cps $199
Grappler C/Mac $79

Epson LQ-500
24 pin, 180 cps $369
Grappler LQ $89

Hewlett Packard
DeskJet.....$698

Low prices, great service

Seikosha

SP 1000 AP $215
Imagewriter II Compatible

General Computer
PLP Laser $1598

PLP Plus..... $1698
Business Laser Plus $3398

Dove Computer

MacSnap Tool Kit $15
MacSnap Plus 2..... Call
MacSnap 2 SE ..... Call
Mach II/SE Accelerator $549
Co-Processor 68881 .....$249

Call for SIMM prices

Modems

Beverly Hills
External 1200 Baud.....$99
External 2400 Baud.....$169

Everex
2400 with cable $219
DCA
Mac Irma-Mac II or SE $795

SE Silencer
Ultra quiet
internal Fan
Keeps it cool & quiet $39.95

Accessories

Data Desk Keyboard
101-key layout, 15 Function keys, separate numeric and cursor pads, positive Tactile feel $129

Kensington Microware
New Turbo Mouse..... Call
System Saver $63
System Saver SE $52
Tilt & Swivel $22
Masterpiece Mac II $105
System Stand Mac II $19
Mouse Pad.....$8

Mouse Systems
A+ Mouse.....$65
ADB Mouse.....$79

Aldus
Pagemaker $395

OUR POLICY

- Plain and simple, Hardware; your satisfaction guaranteed or your money back.
- Software; defective software will be replaced immediately. Manufacturers policies prohibit us from offering refunds on opened software.
- We accept most major credit cards with no surcharge added.
- Your credit card is not charged until we ship.
- Please allow 10 days for personal and company checks to clear.
- C.O.D. orders accepted.
- We gladly accept purchase orders from most major institutions.
- California, Texas, Georgia and Arizona residents please add the appropriate local sales tax.
- To place orders call Monday thru Friday 7AM to 6PM P.S.T.
- Prices and Availability subject to change

SHIPPING

All items in stock will ship in 24 hours. We offer daily service from Federal Express, UPS, U.S. Postal Service. UPS ground shipments, please add 50¢ per pound. UPS Air shipments, please ad $1 per pound. Minimum shipping and handling charge $4.00.

Beverly Hills Computer™

Computer professionals since 1975.

1-800-426-8166

From Beverly Hills (213) 273-3710
Fax Machine (213) 675-2522

279 South Beverly Drive, Suite 1200, Beverly Hills, California 90212

Circle 5 on reader service card

"What's wrong with copying software?"

"I use a lot of programs on my personal computer, and I copy them all the time."

"I'm a programmer. Every time you copy one of my programs, you're taking away my income—I depend on *sold* programs for a living."

"Oh, come on. I bought it: I have a right to copy it."

"You *do* have a right to make a back-up, that's true. But when you start copying programs for your friends and co-workers, that's breaking the law."

"What law? Any copying I do is in the privacy of my own home."

"It doesn't make any difference where you do it. Every time you copy a program without permission from the publisher, you're committing a federal offense."

"That's all right, I won't get caught."

"You're missing the point. The issue isn't "What can I get away with?"—it's "who am I hurting?"

Remember, lots of people worked hard to produce every program you use: designers, programmers, distributors, retailers, not to mention all the people who support users. They have a *right* to be compensated for their efforts, and their major compensation is through software sales."

"Well, I don't mean to hurt all those people—or anyone, really."

"Unfortunately, that's what copying does: it hurts people. And, ultimately, it hurts people like you, who want new and innovative software."

Do you copy software? Think about it.

The unauthorized copying of software is a crime.

SPA Software Publishers Association
Suite 1200
1111 19th Street, N.W.
Washington, D.C. 20036

Created by Halcyon Associates, Brooklyn, New York.

Instant Link

The Macworld Catalog

Now *Macworld* connects you with the world of Macintosh products instantly. And cost-effectively.

The Macworld Catalog is your immediate access to hundreds of Macintosh products, manufacturers, and services. Each month, this special direct response section brings you detailed product information arranged by category—so you can quickly compare prices and capabilities. Then pick up the phone and order!

For the best Macintosh buys, scroll through *The Macworld Catalog.*

The Macworld Catalog

Accessories

Furniture 247
Gifts 247
Hardware 247
Mouse Pads 247
Supplies 248

Hardware

Accelerators 249
Bar Code 249
Computer Systems 250
Data Acquisition 250
Emulators 250
Expansion Chassis 250
Memory Upgrade 250
Miscellaneous 253
Networking 253
Peripherals 253
Printers 253

Hypercard Stacks

253

Services

Computer Insurance . . .254
Data Conversion 254
Desktop Publishing 255
Laser Recharge 255
Training 256

Software

Accounting 256
Architecture 256
Astrology 256
Business 256
Business Mgmt. 257
Clip Art 257
Communications 258
Desktop Publishing 258
Document Mgmt. 259
Educational 259
Engineering 259
Entertainment 260
Financial 260
Fonts 260
Fund Raising 261
Genealogy 261
Government 261
Graphics 261
Health 261
Investment 262
Languages 262
Mail Order 262
Medical 262
Music/MIDI 262
Payroll 263
Politics 263
Printer Drivers 263
Programming Tools 263
Public Domain 263
Real Estate 264
Reference Mgmt. 264
Religion 264
Retail 265
Sales/Marketing 265
Scientific 265
Statistics 265
Utilities 265
Word Processors 266

Miscellaneous

Business Opportunities 266
Mailing Lists 266

Categories are subject to change

Advertising Rates & Information
The Macworld Catalog

The Macworld Catalog section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The *Catalog* offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2″ minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at $322 per issue ($965 total).

For more information, space closings, and material deadlines, please call toll-free 800/888-8622.

Instant Link: Macintosh Products, Manufacturers, Services

The Macworld Catalog
501 Second Street
San Francisco, CA 94107
800/888-8622

Account Managers
Niki Stranz, Western U.S.
Carol Felde, Eastern U.S.

The Biggest Small Investment You Can Make.

Take advantage of the direct link with your buyers that maximizes exposure at a low cost.

The Macworld Catalog reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.

Get into the link. Call 800.888.8622 and place your ad now!

800.888.8622

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Accessories

Furniture

MacDesk Organizer

Harwell Services
386 Freeman Ste 3
Long Beach
CA 90814

Call Now
213-433-3807

Printer Stand
Now Available
$25

- Affordable, sturdy, functional, handsome
- 100% wood finished in cherry, oak or walnut
- 2 models, extended or standard
- Holds both external and hard disk drives
- Keyboard and peripherals fit underneath
- Cost only $30

CIRCLE 672 ON READER SERVICE CARD

Furniture for the Macintosh

Nationally advertised fine oak furniture

Save upto 40% factory direct!

- CAD-CAM WORKSTATIONS
- LASERWRITER CARTS
- PRINTER STANDS

AND MORE ...

Call Now
For Free Catalog

1-800-333-8095
The Walker Company Petaluma, CA

CIRCLE 706 ON READER SERVICE CARD

Gifts

HAND MADE 14K PENDANT, TIE TAC OR CHARM

Actual Size

Computer & Fruit of 14K yellow Gold Monitor is patinaed fine Sterling Silver

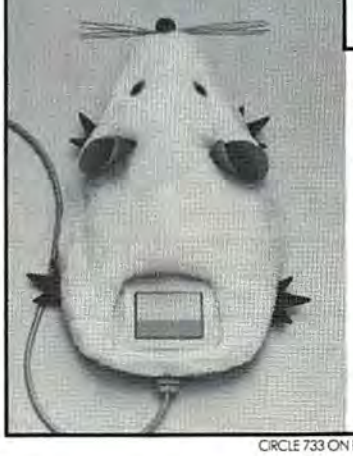
$99.95

enhancements (gems added, engraving, etc.) extra

TO ORDER or for information CALL
Arlen Supply Co.
1-800-458-1301
Est. since 1948

CIRCLE 671 ON READER SERVICE CARD

NYBILS™
SOFT-WEAR MOUSE



LEATHER PAD

8" x 10" black top-grain leather, neoprene backed.

Great gifts, 5 year warranty.

Send only $9. for either (includes S/H) to:

Foresight Designs, Box 70, Southeastern, PA 19399

VISA/MC (215) 647-8534

CIRCLE 733 ON READER SERVICE CARD

Hyper Christmas Card

Carols, stories, fascinating graphics and the magic of HyperCard.Fun for all! $39.95

• • HyperChef • •

Tell HyperChef what is in your cupboard and he will tell you what you can make! Print grocery lists. $49.95

Bright Ideas 87A Ocean St So. Portland, ME 04106

1-800-272-1330

CIRCLE 630 ON READER SERVICE CARD

Cheese Optional!

This holiday season, give your mouse and your friend's mouse the gift they're waiting for - **a house of their own!** Each mouse house is crafted out of the finest materials and is sure to add that finishing touch to your desk, store display, or entire office. Order now to ensure delivery in time for the holidays.

- **Great holiday gift item**
- **$12.95 plus $2.00 shipping**
- **VISA & MasterCard welcome!**

Send check or call 24 hrs:

(213) 499-3430
Magnificent Impressions
555 E. 1st Street
Long Beach, California 90802

Dealer inquiries welcome!

CIRCLE 683 ON READER SERVICE CARD

Hardware

TURBO MOUSE*

Now you can own the *Winner of the 1988 Turbo Mouse Race,* for less than half the retail price!! Our Turbo Mouse has been named Top Input Device for '87 & '88 by the readers of *Macworld.* The '88 *Macworld* standings for Hardware-Top Input Device: • TURBO MOUSE* • Abaton Mouse Trackball-Propoint • Apple Expanded Keyboard • Mac-101 Enhanced Keyboard • Mouse Systems A+ Mouse. Also Turbo Mouse ADB at low, low prices! *Cambridge Automation, Inc., 3260 Industry Dr., Signal Hill, CA 90806, 213/597-1626, 800-345-8666, 800/826-9214 (in CA)*

Security Kits/Cust Cables

For Mac+, SE, II, Image II, LW, & Apple II, IBM, clones & terminals. Since 1984. Largest security line available. MacLock secures Mac, Keyboard, mouse & most peripherals with 8' red coated aircraft cable. MacGuard prevents unauthorized use or power up. Lock incl. No tools req. Also custom data cable for any computer need. Competitive prices. Vol. discounts & dealer pricing avail. *MacProducts, 20231 San Gabriel Valley Dr., Walnut, CA 91789, 714/595-4838*

Mouse Pads

Company Logo Specialist

Grey, Green & Red Pads
Size: 9¼" × 8" × ⅜"

• 12 pads	$9.50 w/logo
• 36 pads	$8.50 w/logo
• 72 pads	$6.90 w/logo
• 144 pads	$4.70 w/logo
• 500 pads	$4.14 w/logo
• 1000 pads	$4.02 w/logo

ENTIRE pad imprintable. Guaranteed to last. Multi-color jobs OK. SAMPLES w/your company logo $12.50. *Computer Expressions, 3833 Chestnut Street, Philadelphia, PA 19104, 800/443-8278*

The Macworld Catalog

Mouse Pads

Custom Printing Available Cloth: Blue, Gray, Burgundy, Red, Brown, Green, Black, Navy & Platinum

Size:	8 × 7½,	8 × 9½,	8½ × 11
12 Pads	3.25	3.50	3.75
72	3.00	3.25	3.50
144	2.85	3.10	3.35

PLASTIC: Blue, Platinum, Gray & Red

Size:	8½ × 11
12 Pads–6.50	36–6.00
72–5.75	144–5.25

CALL AND ASK US ABOUT OUR VIEW PAD AND PICTURE PAD.

Precision Line Inc., 14100 23rd Ave N., Minneapolis, MN 55441
1-800/328-0077, 612/557-1917

MOUSE SADDLE

A leather mouse pad for the rugged and rational. Your mouse will ride cleaner, faster, smoother on a Chesapeake Leather Works cowhide mousepad. Each pad is carefully handmade with specially tanned leather stitched to a rubber base. The ultimate pad.

- Brown, Black or ADB (platinum)
- $19.95 - VISA/MC

Chesapeake Leather Works, Inc.
P.O. Box 567, Acworth, GA 30101
1/800/638-2358

Supplies

BULK DISKS

MC, VISA, COD Accepted

All Items In Stock
100% Guaranteed
Call For Our Monthly Specials

3.5" DS/DD
- SONY 1.29
- DATASAFE 1.19
- TDK DS/HD 3.85

5.25" DS/HD
- TDK 1.29
- DATASAFE .89

5.25" DS/DD
- MAXELL .64
- VERBATIM .59
- 3M .57
- DATASAFE .35

Prices based on 200 Disks
Includes Labels, Sleeves & Tabs

In NJ 800-426-0247 FAX
201-892-5655 201-892-6186

PRINCETON DISKETTE
432 Macarthur Dr ■ Brick, NJ 08724

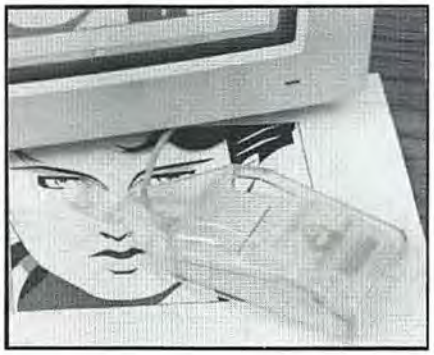
CIRCLE 603 ON READER SERVICE CARD

SHARP TRACER

- Fits over Apple & Mac mouse
- Trace drawing, diagrams, schematics and art
- 30 day Guarantee!!!!
- Featuring 2 Power Lens with Bullseye & Crosshairs
- $ 19.95 plus $2.00 shipping
- All major credit cards accepted

CALL TOLL FREE: 800-877-0878 USA
800-848-8018 Canada
or send check or money order to:
AIM Corporation 960 Penn Ave.
Pittsburgh, PA 15222
Dealer Inquiries Invited
(Mac & Apple Copyright)

AIM



CIRCLE 667 ON READER SERVICE CARD

SECURITY

PADOLOCK ™ physically secures your computer from theft without cables or bolts. Two interlocking steel pads use high-bond acrylic adhesive technology to protect your equipment with 10,000 lbs. of strength. Easy to install. Order keyed different or alike. $ 79.95 + $5.00 shipping

CONTROL POWER ™ gives you control over the use of your computer with a key. No unauthorized access. Control Power attaches to any electronic device with a removable, 3 prong power cord. Order keyed different or alike. $69.95+$3.00 s/h

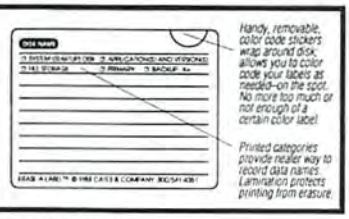
(415) 861-2223

DOSS INDUSTRIES
1224 Mariposa St S.F. CA 94107

CIRCLE 669 ON READER SERVICE CARD

No other label cost less than one you don't replace.

Erase-A-Label™ is a new type permanent disk label made from micro-thin (3mil) plastic. Label has organizational categories protected by lamination. Write on it with the **non-smear** pen; then revise as needed by erasing. 100 or 200 labels + pens/erasers/color coding & container, $26.95/$36.95. Brochure/orders: Cates & Co., 800/541-4351, P.O. Box 2761, Abilene, TX 79604.



CIRCLE 720 ON READER SERVICE CARD

ComputerWear

100% COTTON CANVAS
DUST COVERS!
FOR
MAC, II, ImageWriters, & Lasers

Beige w/ Grey Trim. Breathable. Static-Free!
Available Individually or Special Set Price

Call For Prices or Free Catalog. Dealers Welcome!

Order Toll-Free
1-(800)826-5761
Contemporary ComputerWear
1320-36th Ave San Francisco 94122

CIRCLE 709 ON READER SERVICE CARD

Pack your Mac in seconds!

Cordura case has internal padded pockets for mouse, keyboard and drive. Available in six colors. Extended Keyboard version also available.

For a dealer near you call toll free

1-800-548-0053

1236 N.W. Flanders, Portland, OR 97203

CIRCLE 681 ON READER SERVICE CARD

OPTIMAC™
Eye Saving Optical Magic Spacelight™

Mounts on the top front edge of your MAC . . . Eliminates desk top clutter, glare, visual discomfort and fatigue . . . Precise optical mirror control of tungsten halogen light properly illuminates paper information to the left and right of the computer . . . OPTIMAC does the work of two desk lamps . . . Please tell us type of MAC and/or monitor

$155

Includes shipping within continental U.S. by UPS . . . Add 6% sales tax in California . . . Check Visa or MasterCard

SPACE LIGHTING INC.
37 Commercial Boulevard
Novato, California 94949
(415) 382-7816

CIRCLE 645 ON READER SERVICE CARD

Your Ad Gets More For Less.

Call *The Macworld Catalog* and see why.

800.888.8622

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

QUALITY DISKETTES

3½" DS-DD
100% Certified
Lifetime Warranty
Major Mfg.
99¢ EA. MIN 50

Color 3½" DS DD (5 Colors)
Orange-Red-Yellow-Green-Gray $1.29 ea.
DD80 Holds 80 3½" Holder w/Lock $11.95 ea.
5¼" DS DD $.29 ea.
5¼" DS HD $.69 ea.
3½" DS HD (2MB) **Call for best price**

Shipping $4 per 100 diskettes
Order by phone or send your check to:

AMERICAL GROUP
(800) 288-8025
12132 Sherman Way,
N. Hollywood, CA 91605

CIRCLE 686 ON READER SERVICE CARD

MacDisks for less.

3.5 DS/DD
Blue & Gray
5 Color Labels
White Box
Shrink Wrapped
No minimum.
(In 6 colors $1.33)
$1.12

3.5 DS/DD
Blue & Gray
5 Color Labels
Shrink Wrapped
No minimum.
(In 6 colors $1.28)
$1.07

Continuous form labels!
2⅜" x 2⅜" - 1 across - 2500 . . . **$12.00/M**

DISKS & LABELS To Go

The quality disk & label specialist since 1982
1040 Broadway, Westville, NJ 08093
1-800-426-3303
609-456-6996 • FAX #609-456-7172
All orders F.O.B. Westville, NJ Fresno CA.
C.O.D. orders add $2.20. Purchase orders,
Visa & MasterCard accepted.
All products made in the USA.

CIRCLE 692 ON READER SERVICE CARD

LASEREDGE® Paper/Film

Get high resolution from plain paper laser printers and color plotters. LASEREDGE® high resolution Papers/Films are waxable for paste-up. The bright white background, denser image, and finer edge of line will allow enhanced capability for 300 dpi to reproduce on camera. Call or write for samples today. MC/VISA accepted.
CG Graphic Art Supply, Inc., 481 Washington St., NY 10013, 800/342-5858 FAX# 212/941-9765

Manual Diskette Ejector

Get rid of that tacky paperclip! Add class and style to your Mac or Apple 3.5 drive. Uses Manufacturer's ejector hole. Platinum color Tool and Mount (with adhesive) are high strength, electrically insulated, ABS plastic and chrome steel. QUALITY $4.95. Check, MC, VISA + $1 s/h. DEALERS–Christmas special.
P&J Enterprise, Inc., 1818 Manor Hill, St. Louis, MO 63131, 314/821-1415

Bar Code

BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II
Connects on keyboard or ADB
Requires no additional program or port
Does not affect keyboard or mouse
Industrial quality, heavy-duty units
Also available
Magnetic encoder
Code 39 Bar Code Printing Program
Portable Bar Code Reader

TPS Electronics
4047 Transport Street
Palo Alto, CA 94303
415-856-6833
Telex: (Graphnet) 371 9097
FAX: 415-856-3843

CIRCLE 613 ON READER SERVICE CARD

OREGON WASHINGTON

The Northwest's New "Mac Center"
Any & Every Thing for Your Mac

Mac Friends
YOUR Mac SORCE
Mac ONLY STORE
A NEW KIND OF COMPUTER STORE
Hardware Software
800 331-1322

CIRCLE 682 ON READER SERVICE CARD

PRINTERS/SUPPLIES

PRECISION, DISKETTES, 100% CERTIFIED, LIFETIME WARRANTY, MADE IN USA

DS/DD	30/1.35 ea.	50/1.25 ea.	100+/1.20 ea.
(KAO) HD	30/3.40 ea.	50/3.35 ea.	100+/3.30 ea.

Item Description	Retail	Our Price	With Min. Order
Diskfile/30	13.95	9.95	8.95
Diskfile/30 Lock	15.95	10.95	9.95
Diskfile/80	19.95	15.95	12.95
Diskfile/80 Lock	21.95	16.95	13.95
Mouse Pad	9.95	5.98	4.98

Add $ .75 S/H for items above.

LASER PRINTERS COST + 10% + S/H

Item	Retail	Our Price
Panasonic KX-P4450	$2595.	$1690. Post Paid

NEC, HP, PANASONIC. Call for prices.
Min. order 30 diskettes, S/H. min. $5.00 + 2.00 per 100+. Prices subject to change without notice. Minnesota res. + 6% sales tax.

SEND CHECK OR MONEY ORDER TO:
DMH Technologies
P.O. Box 1414
Maple Grove, MN 55369
(612) 553-4211 3 PM-10 PM Central

CIRCLE 654 ON READER SERVICE CARD

Hardware
Accelerators

68050?

What else can you call an accelerator that fits the 512/Plus/SE and can use the 020 OR 030?

Total Systems Integration
99 West 10th Ave., #333
Eugene, OR 97401
800-874-2288
503-345-7395

CIRCLE 722 ON READER SERVICE CARD

MAC DUST COVERS

For all Mac configurations including printers, ext. disk drives & mouse.
Up To 50% Off On Complete Sets.
Mac, keyboard & mouse. *Reg. $32 . . .* ***NOW $25***
Mac II, monitor atop CPU, keyboard & mouse. *Reg. $42 . . . . . .* ***NOW $33***
Buy one complete cover set, add only $9 for basic printer cover (for Laserwriters add $14) and $3 for external disk drive cover.

OTHER ACCESSORIES
Ribbons, diskette holders, disk banks, Mac Carrying Cases (West Ridge Designs) at reduced prices with complete cover set purchase. VISA/MasterCard, P.O.s & personal checks ok. Satisfaction Guaranteed.

Computer Cover Company
23352 Peralta, #14, Laguna Hills, CA 92653
TOLL-FREE: 800/235-5330
VISA In CA: 800/237-5376 MC

CIRCLE 727 ON READER SERVICE CARD

The Biggest Small Investment You Can Make.

Take advantage of the direct link with your buyers that maximizes exposure at a low cost.

The Macworld Catalog reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.

Get into the link. Call 800.888.8622 and place your ad now!

800.888.8622

The Macworld Catalog

Computer Systems

DISCOUNT MACINTOSH

Macintosh Plus	$Call
Macintosh SE 2 800k drive	$Call
Macintosh SE 30mb internal	$2695
Macintosh SE 40mb internal	$2895
Macintosh II 40mb internal	$3995
Macintosh II 60mb internal	$4150
Apple keyboard for SE or II	$100
Datadesk 101 keyboard	$140
Apple 13" color monitor	$750
Mac II 8 bit video card	$495
Imagewriter II w/cable	$450
Imagewriter LQ w/cable	$995
Apple laserwriter II NT	$3695
General Computer P.L.P. Plus	$1595
C.M.S. external hard drives	$Call
SIMM chips in stock	$Call

KIWI COMPUTERS
P.O. BOX 67381
Los Angeles, CA 90067
(213) 553-4643
Mon-Fri 7A.M.-5 P.M. Pacific Time

Orders must be prepaid by cashiers check or money order. Ground or air shipping charges extra. Call for rates Foreign orders welcome. We ship to most countries. California residents add sales tax. All itmes new with warranty. 90 days on Apple products. Prices subject to change without notice. All sales final. Apple and Macintosh trdemarks of Apple Computer Inc.

CIRCLE 734 ON READER SERVICE CARD

DATA COMPUTER
(213) 470-9555

LaserWtr.SC/NT/NTX	In Stock
Mac+ /20Mb	1345./1895.
MacSE2Dr/20Mb*	2475./2775.
MacSE30/45Mb*	3095./3295.
MacII/40Mb*	3675./4375.
MacII60/80Mb*	4475./4755.
CMS ExternalMac+,SE,II	CALL
CMS Internal MacSE	CALL
CMS Internal MAC II	CALL
MonitorMono/Color	325./725.
*Keyboard Reg./Ext.	99./175.

CIRCLE 650 ON READER SERVICE CARD

Data Acquisition

MacPacq
The MacPacq transforms the Macintosh into a digitial oscilloscope, chart recorder & waveform generator. A complete data acquisition & control system. 8 channel A/D, 8 digital I/O, programmable gain, 64K RAM. Optically isolated, line or nicad powered. Runs remote and/or connected to Mac. Comprehensive software interface provides for powerful & flexible system. $1195 complete.
Biopac Systems, 5960 Mandarin Dr., #D, Goleta, CA 93117, 805/967-6615

Emulators

][in a Mac
An Apple //e computer
...all in software!
Run Apple II software on your Macintosh.
Convert Apple II files to Macintosh files.
$149.95 Add $3 for P&H
COMPUTER:applications, Inc.
12813 Lindley Drive Raleigh, NC 27614
(919) 846-1411

CIRCLE 640 ON READER SERVICE CARD

Expansion Chassis

Expansion Chassis for the MACINTOSH
Open up your Macintosh Plus,SE or II with an expansion chassis system from Second Wave, Inc. *ExpanSE Plus, ExpanSE,* and *Expanse II* allow you to custom configure your Macintosh with a variety of option boards:
Accelerators • Monitors • MS-DOS Communications • Data Acquisition Industrial Control • Transputers
SECOND WAVE, INC.
9430 Research Blvd., Bldg. II, #260 Austin, TX 78759 (512) 343-9661

CIRCLE 687 ON READER SERVICE CARD

Memory Upgrade

We Manufacture
ONE MEG SIMMS
Mac II *Mac Plus* *Mac SE*
Don't settle for long lead times from other suppliers.
•Competitive Price •Full Service
•1 Year Factory Warranty
Order Today: 800-227-4637 or 303-449-6400

CIRCLE 750 ON READER SERVICE CARD

DON'T LET THIS HAPPEN TO YOU!

COLOR? MULTIFINDER?

MEMORY UPGRADES FOR THE MAC PLUS, SE, II

SINGLE IN-LINE MEMORY MODULES

CDC ENTERPRISE (714) 630-4633
2883 E. LA PALMA, ANAHEIM, CA 92806

CIRCLE 736 ON READER SERVICE CARD

$299.00 1 MEG SIMMS
Surface Mount Memory

East & West	(415) 969-6553
Northwest	(206) 630-8089
International	Fax(415) 964-3070

STRAIGHT ARROW
Memory Systems
1979 Colony Street
Mountain View, CA 94043

CIRCLE 665 ON READER SERVICE CARD

MAC MEMORY
One megabyte SIMM modules **in stock** for your Mac Plus, SE, or Mac II.
Immediate delivery.
Fully graranteed.

408-973-8559
TRONIX
Cupertino, CA 95014

CIRCLE 748 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

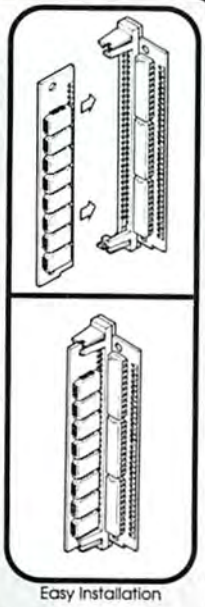
SOFTSTEP

NEW!

MEMORY EXPANSION MODULE

FOR YOUR MAC +/SE & MAC II
WITH 256K SIMMS

Actual Size



Easy Installation

THE BEST VALUE FOR YOUR MONEY

SOFTSTEP I - upgrades your Mac +/SE from 1 Meg to 2 Meg, by expanding your 256K SIMM to a 512K SIMM. The Mac SE expansion slot remains clear.

SOFTSTEP II - upgrades your Mac II from 1 Meg to 4 Meg, or from 2 Meg to 5 or 8 Meg. It expands your 256K SIMM to a 1 Meg SIMM.

Computer Care, Inc.

SOFTSTEP utilizes new technology to conserve power and space. It allows you to upgrade by using your existing 256K SIMMs. All Computer Care products carry a 1 year limited factory warranty. Call for a **FREE** brochure. Made in USA.

5124 Russell Ave. S.
Minneapolis, MN 55410
Fax (612) 925-2720

1-800-950-CARE

As always, our 256K and 1 Meg SIMMs are in stock.

CIRCLE 622 ON READER SERVICE CARD

D SIMS MODULE

100% MAC II COMPATIBLE
1 MG X 8 - 100NS

$360.00 PER UNIT

QUANTITY DISCOUNTS AVAILABLE!
1 YEAR WARRANTY

WJL PRODUCTS INC.
COMPUTER NETWORKING & TECHNOLOGY

8755 N.W. 57th Street
Tamarac, FL 33351
1-800-635-6366 At Tone 726

CIRCLE 639 ON READER SERVICE CARD

MAC SIMMs

Add memory to your Mac Plus, SE or Mac II. One megabyte SIMM modules available in 2 MB sets. We offer the lowest price you'll find anywhere—any quantity. Call for quote. MC/VISA. Immediate delivery. Product satisfaction guaranteed. We've been in the RAM business since 1982.
Palo Alto RAM, P.O. Box 50690, Palo Alto, CA 94303, 415/858-0125

Upgrade w/ACCU-SIMMS

Upgrade your Mac Plus, SE, or Mac II with our surface mounted 1 MEG SIMM modules. They are assembled and tested by us. We are the source. We can give a lifetime guarantee against manufacturing defects. $350 per meg. Quantity discounts available. Full instructions come with order (all SIMMS are 120 nanoseconds or faster).
Data Memory Systems Co., Box 785, Middleton, MA 01949. To order or ask questions CALL 508/683-2325, FAX 508/975-5232

MEMORY
ACCELERATORS
HARD DRIVES
MODEMS

"Your first choice for quality..."

MAC II
1 Meg Increase $ 499 $ 359.*
4 Meg Increase $2,396 $1430.*
SE or Plus
2 Meg Increase $1,198 $ 720.*

MEMORY $$ SALE !!

2400 Baud INTERNAL MODEM for Mac II/SE!
Mac II & SE $ 329! Auto Dial • Redial on busy • Data/Voice
Mini-External 2400 for Mac II, SE & Plus $ 179!

Internal & External Hard Drives for Mac II/SE
Intern: 30mb $479! • 40mb $589! • 80mb $899! • 120mb $ 1199!
External: 40mb $699 • 50mb $769 • 80mb $949 • 120mb $1199!

Increase your SE to Mac II Speed!
Easy installation • 16Mhz microprocessor • 100% compatible with all software and external hardware! $ 329!

Second Source **(602) 966-0357**
2011 E. 5th Street, Suite 6 • Tempe, AZ 85281

*100% compatible with all internal hardware! • While supplies last • All prices subject to change without notice.

HARD DRIVES

LIFETIME WARRANTY

20 Meg Internal	$399
20 Meg External	$489
48 Meg Internal	$519
30 Meg Internal	$415
40 Meg External	$599
60 Meg External	$689
80 Meg External	$1059

Fits in SE+MacII with 2 drives
Include PD+Backup Software
Seagate-Miniscribe-Quantum
WESTCOM COMPUTER
P.O. BOX 154 AYDEN, NC 28513
800-422-8591-919-746-4961

CIRCLE 694 ON READER SERVICE CARD

RAM/ROM Upgrades

128K to 512Ke
128K to Plus
128K to 2MB+
512K to Plus
SCSI Port
Apple ROM/800K Drive.
Free Internal Fan with upgrade. We sell new Macintosh SE's & Mac II's. Seikosha Printers $269, Rodine 20MB hard drive $499, Internal Macintosh® Fans $45.
Simmons Consulting, 5525 Pemberton St., Philadelphia, PA 19143, 215/471-9242

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Memory Upgrade

Ask about our 5-YEAR WARRANTY *Exclusive!*

Memory Expansion SIMM Kits

for Macintosh™ Plus, SE and Macintosh™ II

Easy to install, plug-in modules that let you add 2 to 8MB of memory. Ideal for "memory-gobbling" software applications and the new Multi-Finder multitasking environment.

Guaranteed Same Day Shipment
Orders received by 3:00 p.m. (CST) for 1MB SIMMs are shipped same day, or we pay freight.

We manufacture these high and low profile SIMMs in volume for immediate shipment.

	85ns	100ns	120ns
1MBx8	High Profile	High & Low Profile	High & Low Profile
1MBx9	High Profile	High & Low Profile	High & Low Profile

We buy and sell 256K SIMMs.

CALL FOR PRICES AND DISCOUNTS
1-800-678-DRAM
(678-3726)

Newer™ TECHNOLOGY

Newer Technology
Phone (316) 685-4904
FAX (316) 685-9368
1117 S. Rock Rd., Suite 4
Wichita, KS 67207

Designers and manufacturers of the newest technology in memory
• DartCard™ • attention!?™ • Concentration™
• LIMfile™ • ADDitiON™

CIRCLE 631 ON READER SERVICE CARD

Macintosh System Enhancements/New Macintosh Systems

RAM/ROM Upgrades
128K to 512K
128K to 512Ke
128K to MacPlus
128K to 2MB Plus
512K to MacPlus
512Ke to MacPlus
SCSI Interface

Same Day Turn-Around on Macintosh Upgrades and Computer Repairs!!!

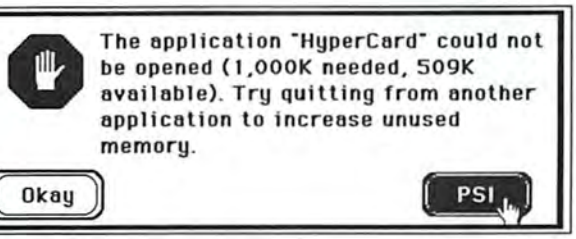
New Macintosh Computers in stock for immediate delivery!!!

New Mac Systems
Mac SE w/kybd
MacII w/kybd
ImageWriter II
LaserWriter NTX
Hardware/Acc.
CMS 20-300MB
800K Drive
12-2400 Modem
Seikosha Printer
Repairs/Parts
Internal Drives
Keyboards
Repl. Mouse
Logic Boards
Power Supplies

Used Mac Systems
512K ..... $ 679
512Ke ..... $ 889
MacPlus $1149
Mac SE $1900

Simmons Consulting
5526 Pemberton Street
Philadelphia, Pa. 19143
(215)471-9242-Ext. 30

CIRCLE 655 ON READER SERVICE CARD



Look familiar?

Call PSI so you will never see this on your screen again!

PSI has the one megabyte SIMMS that will give you the extra memory you need to get the maximum performance out of your Macintosh Plus, Macintosh SE, or Macintosh II. Call now!

(800) 622-1722
(408) 942-8188

PINNACLE SALES INTERNATIONAL

1609-A South Main Street
Milpitas, CA 95035

Macintosh Plus, SE and II are registered trademarks of Apple Computer, Inc.

CIRCLE 617 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

CDC HARD DRIVES
90 Meg 18 ms ½ ht. $1,150
155 Meg 18 ms ½ ht. $1,657
190 Meg 18 ms full ht. $1,735
300 Meg 18 ms full ht. $2,406
344 Meg 18 ms full ht. $2,572
638 Meg 18 ms full ht. $3,445
Quantum 42 Meg 3.5 in 19 ms $630
Quantum 84 Meg 3.5 in 19 ms $993
Custom designed driver software $75.
Third Estate Corp., 1907 Rio Grande, Austin, TX 78705, 800/888-4131

SIMM (Memory Modules)
Diamond-Pac™, top quality American made memory modules offer easy and economical expansion of Mac Plus, SE, II DRAM by 1, 2, 4, or 8 Megabytes. (For additional information: See ad index toward back of magazine for our display ad elsewhere in this issue.) MC/VISA/AE.
AMD (American Micro Dist), 1687-D Algonquin, Huntington Beach, CA 92649, 714/840-5560, FAX: 714/846-0570

Networking

PhoneNET® System
The PhoneNET System is a network solution incl. hardware & software to build networks, manage & use them to their full potential. Components incl. PhoneNET Connectors, PhoneNET Repeater, PhoneNET StarController™ w/StarCommand™ network mgmt. software, TrafficWatch™ network analysis software, PhoneNET™, CheckNET™, Timbuktu™ & Timbuktu/Remote™ to operate other computers on local AppleTalk network or remote sites, & ScreenRecorder™ to record screen sessions for later viewing.
Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

Ethernet for the Mac
Kinetics provides Ethernet hardware & software for all Macintosh® computers. Products include:
• FastPath: AppleTalk Ethernet gateway • EtherSC: SCSI-Ethernet controller • EtherPort SE: Internal Ethernet card for the Mac SE.
• EtherPort II: Internal Ethernet card for Mac II. AppleTalk, TCP/IP & DECnet supported.
Kinetics, Inc. 2500 Camino Diablo, Walnut Creek, CA 94596 415/947-0998

Peripherals

9-Track Tape Subsystem For the Macintosh™

Exchange data files between your Macintosh and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-track tape.

Unit can also be used for disk backup. Transfer rate is up to 1 megabyte per minute via your SCSI interface. Subsystem includes, tape drive, software, and complete documentation. For more information, call us today!

QUALSTAR®
9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822
Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 733 ON READER SERVICE CARD

Printers

Apple Daisywheel Printer
TRUE letter quality on all Mac's & Apple II's. Proport, spacing, boldface, 198 columns. Fast 40cps speed and full 130 character printwheel. NEW $449, RECONDITIONED $349 includes easy MAC point & click driver software & cable. New bi-di tractor $99, sheetfeeder $49. All heavy duty with 90-day guarantee.
Quality Discount Computers, Inc., 135 Artist View Dr., Wellington, NV 89444, 702/465-2473, 415/487-8148

Hypercard Stacks

Hyperworks Tools

Need to make global changes in scripts? Draw or move groups of objects? Make help cards? Let Tools from Hyperworks™ make your work easier. Work on single scripts or groups. Put any script or text onto the Tools Workdesk™ and use the editing Tools to make global changes, count, sort, number, find, add soft returns, offset groups of numbers, and more! Introductory price $59.95
Call 1-800-544-0339 for orders only.
Hyperworks
PO Box 5201, Mission Hills, CA 91345
818/891-0066

CIRCLE 737 ON READER SERVICE CARD

Uncle Max sez,
"Resolve to evolve."

Realize your expectations. Create the HyperCard™ world of your dreams, from the praxtical to the exotic.

Write now for your free Rax of Stax™ catalog.

Have an exciting New Year!

MAXSTAX+™
P.O. Box 2719, Dept. 4
Oakland, CA 94602

CIRCLE 745 ON READER SERVICE CARD

HyperCONTROL™
Report Generator...
- print selected cards
- manipulate data field layouts
- print faster than H-Card reports
- save data in text files

Perfect for mailing labels.
Just $59.95, P&H included.
Works within HyperCard. Installation included.

800-228-0417
NORDIC SOFTWARE
3939 North 48th
Lincoln, NE 68504
402-466-6502

CIRCLE 659 ON READER SERVICE CARD

Miscellaneous

Mac-cessory TM
EVEREX Hard Drives
EMAC-20D $497
MD-2400 Modem Complete **$214**
We carry the entire Everex Line!
NO SURCHARGE FOR VISA & MC
Giga Cell Systems • Nu-DATA
20 MB $489
DATA CELL 20 Hard Drive
Call for other Giga Cell products
Toll Free **800-634-1497**
MC or call 216-543-1952 Visa
Valley Computers
16744 W. Park Circle, Chagrin Falls, OH 44022
We DO NOT charge credit cards until order ships

CIRCLE 619 ON READER SERVICE CARD

The Macworld Catalog

Hypercard Stacks

ADD POWER TO YOUR STACKS

HyperTools™ #1: Icon Editor, Alignment & Array Creation Tools, Scan Cards, Script & Font Tools, XCMD tools, Button Tools and more. 16 Tools in all for stack design! $99.95

HyperTools™ #2: Multiple Choice Lists for Fields, Field Sorting, Formatting & Data Validation, Sound Tools, Group Tools, Font Tools and more. 16 tools for visual presentation of data! $99.95

Stack Cleaner™: Complete menu creation & editing facility for stacks. A script cleaner to reduce the size of scripts by using standard abbreviations. Plus utilities to merge, split, and clone stacks. $49.95

Softworks Inc PO Box 2285 Huntington, CT 06484 (203)926-1116

CIRCLE 612 ON READER SERVICE CARD

Learn HyperTalk™ HyperFast.

Even if you've never programmed before, you'll learn the HyperTalk language for HyperCard™ fast and easy with HyperTutor.™ Guaranteed.

- Quickly learn how to write scripts and modify the stackware you buy.
- Forty-one interactive lessons teach you HyperTalk commands fast.
- Built-in "Test Mac" lets you practice actual scripts and see the results on-screen.
- Lessons contain descriptions of a HyperTalk command, examples of its use, syntax examples, and sample script exercises.
- 30-day money-back guarantee.

4½ Mice

Awarded 4½ Mice from MacUser

Only $49.95. Order Now !!!

Call (800) 851-2917 Ext. W600

In CA, Call (800) 223-1479 Ext. W600

HyperTutor™

Channelmark Corporation, 2929 Campus Dr., P.O. Box 7600, San Mateo, CA 94403 © 1988

CIRCLE 646 ON READER SERVICE CARD

CLIENT means Business!

Client™, a user customizable client & sales management system, maintains customers, business & financial information, contract history & more. Specs Features: Pop-up choice lists for fields, redefine field names & formats, search by any combination of fields, mail labels. Includes latest HyperCard®. $195. *Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116*

MacRecorder™ Sound Sys.

When graphic & text are not enough, give presentations a dramatic dimension—narration & sound. MacRecorder Sound System is an audio workshop. Record, edit, play back live or pre-recorded sound. Includes: Digitizer & SoundEdit™ allows you to add voice, music & sound effects to *HyperCard™*, *Video Works™*, *StudioSession™*, *JamSession™*, & more; & *Hypersound™* lets you record & work w/sound within *HyperCard*. Combine MacRecorder w/our ScreenRecorder™ (avail. separately) to create multi-media presentations.

Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

2 Great Business Stacks

Copyrights, Trademark & Patents

A comprehensive government information stack with "fill-out-on-screen" forms. Complete How-To guidelines. Suggested Retail $49.95.

Business LetterBase

A professional database stack of 175 plus business letters in 12 categories. Includes letter writing guide & much more!

Suggested Retail $49.95.

Aardvark Software, 14400 Ella Blvd. #150, Houston, TX 77014, 713/872-8085

Services

Computer Insurance

CIRCLE 624 ON READER SERVICE CARD

SAFEWARE

INSURES YOUR COMPUTER. Safeware provides full replacement of hardware, media, and purchased software. As little at $39 a year provides comprehensive coverage. No lists of equipment needed. One call does it all! Call 8 a.m. to 10 p.m. ET (Sat. 9 to 5). SAFEWARE, The Insurance Agency Inc. 2922 N. High St., PO Box 02211, Columbus, OH 43202

800-848-3469

(Local - 614-262-0559)

CIRCLE 635 ON READER SERVICE CARD

Data Conversion

Data Translation

Mainframes, Minis, Dedicated word processors, Typesetters, Desk-top publishing systs., Microcomputers.

Convert and translate features of DBMS, spreadsheet and word processing files stored on disks or tapes to or from your Macintosh!

CompuData Translators, Inc.
3325 Wilshire Blvd., Suite 1202
Los Angeles, CA 90010
800/825 8251 213/387 4477

CIRCLE 605 ON READER SERVICE CARD

TAPE/DISK CONVERSIONS

Conversion services to or from over 1250 computer systems:

- Magtapes • Mini Computers
- Micro Computers • Typesetters
- Word Processors

CALL THE INDUSTRY LEADERS

PIVAR COMPUTER SERVICES, Inc.

(312) 459-6010

165 Arlington Heights Rd #MC
Buffalo Grove, IL 60080

CIRCLE 641 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Looking for great desktop output? Authorized Linotype Imaging Center available by 24 hr. BBS. Film acetate as low as $7.50/pg and RC paper as low as $5.00/pg. Choose from more than 300 PostScript® fonts for Mac and IBM—also available for purchase. High Resolution 2540 dpi, OCR, image scanning and disk conversions output to L300. 24-hour turnaround in most cases. Your disk or by modem.

Your ship has come in. 103 E. FRONT ST., RED BANK, NJ 07701

Call Toll Free 1-800-USS-TYPE TYPE SERVICES Riverside

CIRCLE 701 ON READER SERVICE CARD

Type/Imagesetting

Island Color Productions has so many advantages:

- High-resolution typesetting
- Linotronic imagesetting
- Laser printing
- Computer graphics & design
- Speedy turnaround time
- From MAC, IBM or any ASCII file
- Whether keyboard, disk, or modem

Why not take advantage of us? *Island Color Productions, 11 Stony Brook Ave., Stony Brook, NY 11790, 516/751-0485 (voice), 516/751-0430 (24-hr. modem on line)*

National Laser Recharge

Save your money! Let us recharge your toner cartridges for HP Series I & II, Apple, Canon, QMS & others. All Canon, PC models 100% Guarranteed Factory-Like recharge method. No drill & fill! ***Long Life* method for only $49** incl. s/h. Up to 7 charges per cartridge Color avail. We buy empties -$10. Send cartridge w/check or Money Order To:

National Laser Recharge
1413 W. Loop 281, Ste. 101
Longview, TX 75604
214/297-0200

CIRCLE 726 ON READER SERVICE CARD

Desktop Publishing

LINOTRONIC 300 TYPESET OUTPUT

FAST
RELIABLE
INEXPENSIVE

FAST • TYPICALLY LESS THAN 24 HOURS
RELIABLE • EXPERT STAFF • 2 L300'S
INEXPENSIVE • AVERAGE $8 PER PAGE

LAZER GRAPHIX
3250 B POLLUX • LAS VEGAS, NV 89102
1-800-873-8736

CIRCLE 647 ON READER SERVICE CARD

MacTypeNet™

Mac/PC typesetting. Disk or modem. 300-dot LaserWriter™ output; 635-, 1270-, or 2540-line Linotype™ L300P output. Composition, page makeup, printing/bindery services. Hardware/software sales, services, and support; beginning and advanced training and seminars for Macintosh®, PC, and Linotype 100/300 users.
MacTypeNet,™ P.O. Box 3009, Farmington Hills MI 48333, 313/477-2733

Laser Printing Services

LaserWriter (300-dpi)/Linotype L100 (1270-dpi) output of your Mac/IBM files. Disk or modem. 24 hr. service. Linotype $7 per page ($3.50 volume discount). LaserWriter $.50 per pg. Desktop publishing specialists in consulting & design services. Hardware/software sales. Offset printing & bindery services available. Rent IBM/Mac $5 hr. Adobe font dealer. Check our low price.
Laser Printing Services, 26058 W. 12-Mile Rd., Southfield, MI 48034, 313/356-1004 (MI), 800/722-3475 (Nat'l.), Modem: 313/356-3186

Waldman graphics Printers + Typographers

NYC / NJ / Phila DESIGNERS

We help top-notch designers achieve high resolution type & graphics using desktop tools. Keep your standards while lowering your costs. Original electronic art and PostScript special effects our specialty.
• 1270 & 2540 dpi pages from Linotype L300s • Repro, Pos. & Neg. film • Disk or modem • Color separations • Scitex system • Award-winning prepress, printing, binding & mailing • 18 messengers! • Adobe dealer

We are the most knowledgeable people you will talk to. Call Mary Ann Ostberg for more information about our superb services.
212 925-2420 / 201 522-8778 / 215 627-7200 / 609 662-9111

CIRCLE 637 ON READER SERVICE CARD

Laser Recharge

TONER

2 DAY AIR Prepaid Return
$44.50 for laser cartridges

- Remanufacturing Services
  - Laser cartridges in Black $44.50
  - Laser cartridges in Colors $64.50
  - PC cartridges in Black $34.50
  - Microfiche cartridges $44.50
  - Remanufactured cartridge $54.50

Get back your cartridge!
Every cartridge pretested!
Color test prints available!

- We support over 200 printers!
- Bulk toner • Quantity Discounts • Jumbo's
- We buy empties in quantities, please call.

100% Satisfaction

24 Hour Turnaround

LASER QUICK 9723 Mill Creek Drive Eden Prairie MN 55344 •Franchises •Training •Wholesale

800-777-8444

CIRCLE 696 ON READER SERVICE CARD

Long Life Laser Cartridge Recharge

LASTS 30–50% LONGER!

FACTORY LIKE METHOD–NO HOLES CUT!
For Apple, H.P. & 25 more using Canon EP Engines.
100% Money Back Guarantee in writing!
24 hr Turn-Around

SEND $38.50 + $3.00 S/H With Each Cartridge To:

Texas Toner Cartridge Co.
11408 Audelia Rd. #4740, Dallas, TX 75243
214/475-5006 Business Opportunities Available

CIRCLE 715 ON READER SERVICE CARD

reconditioned **TONER cartridges!**
for laser printers & Canon PC Copiers

BETTER THAN NEW!
- 20% MORE TONER
- DARKER PRINT
- 100% GUARANTEED

$44.95

We buy empties-$10

Willow Products Corp. 3857 Willow Ave, Pgh, PA 15234

call for brochure **800-426-8196**

WILLOW

CIRCLE 638 ON READER SERVICE CARD

The Macworld Catalog

Laser Recharge

TONER CARTRIDGE REMANUFACTURER

100% GUARANTEED * COLORS * QUANTITY DISCOUNTS
JUMBO REFILLS * FROM $34.95 * FREE 2 DAY AIR RETURN

WHERE QUALITY COUNTS

9 BRISCOE ST., WOBURN, MA. 01801

617-932-8667

laserstar data

CIRCLE 623 ON READER SERVICE CARD

P.C. Copier & Laser Printer Owners

TONER Service Company

UPS to:
2128 Dolman
St. Louis, MO
63104

We buy empties - $10.00

314-776-1155
800-88-TONER

CIRCLE 604 ON READER SERVICE CARD

Training

CBT Development Stacks CBT

Create Computer-Based Training in HYPERCARD

Four disks, 32 stacks, almost 3 megs of routines, templates and scripts—a roadmap for developing CBT in HyperCard. 100-page User Manual with documentation, instructions and authoring ideas. Price: $135.

No licensing fees or royalties. VISA or MasterCard.

First Reference, Inc.
516 Fifth Ave. #706
New York, NY 10036
(212) 730-8211

New: Version 1.1

CIRCLE 644 ON READER SERVICE CARD

Software

Accounting

Checkwriter/ Invoicewriter

Simple straight-forward macro software for Microsoft Excel® that prints checks (converts check amount to text i.e. 24.95 becomes ***Twenty four AND 95/100 Dollars), keeps a check register, prints invoices and keeps a sales journal. Works with ImageWriter or LaserWriter and uses standard check and invoice forms. $24.95.

Losby Accounting, P.O. Box 10503, Minneapolis, MN 55458, 800/325-5390, MC/VISA or COD

Architecture

Desktop Architect

Professional detailing system by architects. Pre-drawn components to assemble custom details with minor editing. Parts kits combine bitmapped and object-oriented graphics. Includes wall and cross sections, details and interior elevations. 8" × 10" format for working drawings. $189.00 Super Paint required.

Desktop Architect Co. 634 N. High St., Columbus, OH 43215 614/469-9906

Astrology

Graphic Astrology

The Gamma Series . . .

The Perfect Gift !

The Gamma Edition	$199.50
Chart Interpreter	$199.50
Gamma & Interpreter	$325.00
Gamma Basic	$ 59.50

Astrology for Everyone !

Time Cycles Research
27 Dimmock Road
Waterford, CT 06385
(203) 444-6641

Supports Laser & Mac II
Write or Call for brochure
MC/Visa OK

CIRCLE 731 ON READER SERVICE CARD

Business

Strategic Business & Marketing Plans

BizPlanBuilder™ Quickly and easily complete an effective business / marketing plan for presentation to senior management, investors or clients. A comprehensive and proven framework — Over 85 pages of outlines, headlines, structured sentences & paragraphs, lists, suggestions... *already typed & formatted* in 29 MacWrite™ & MS WORD™ files. Includes spreadsheet financials in Excel™

Marketing & Sales Oriented
Everything you will need to organize, describe, promote & support your venture. (Similar to reverse engineering where the best elements of good plans are cut & pasted together.) No *blank* pages. Follow the tutorials & edit into a finished plan. Includes manual. Preferred by investment capital experts, corporate managers & experienced consultants.

Also available:
- Investment Capital Sources
- Domestic & International Marketing
- Employee Handbook Template

Tools For Sales™
Roadmaps to Better Mousetraps
13335 Wildcrest Drive • Los Altos Hills, CA 94022
800/ 442-7373 • 415/ 941-9191

$99.00 + $3 Shipping & 7% Tax (CA)
30-day acceptance / return.
Site licenses available.

Visa MC Amex

CIRCLE 636 ON READER SERVICE CARD

50 TEMPLATES - $ 79.95

FOR MICROSOFT EXCEL™ and WORKS™

PRE-BUILT • READY TO USE • JUST ADD VALUES

- Monthly payments
- Loan Amortizations
- Depreciations
- Full Cash flows
- Break-Even analysis
- Present Values
- Future Values
- Rates of Return
- Financial Ratios
- and much more!

REAL ESTATE • ACCOUNTING • FINANCIAL PLANNING

MICROTEMP™ 1.800.284.8367 FINANCIAL CALCULATORS

318 MENDOCINO AVENUE, SUITE 22, SANTA ROSA, CALIFORNIA 95404

CIRCLE 735 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Business Plans & Forecasts

Business Plan Toolkit™: Build a complete professional business plan. Includes sample outline; texts; spreadsheet models and charts for financial analyses, budgets, forecasts; and practical, easy-to-follow manual. $99.95 Optional HyperCard business plan text guide, $19.95.

Financial Forecasting Toolkit™: Simplify cash flow and financial planning with models, charts, macros, and practical manual. $69.95

Sales and Market Forecasting Toolkit™: Improve your forecast with proven methodologies using models, charts, macros, and manual. $69.95

All toolkits require Excel, Works, or MultiPlan. Charts and macros with Excel only. Add $5 Shipping & handling per order. CA residents add 7% tax.

Palo Alto Software

(415) 325-3190 — 260 Sheridan Ave., Suite 219, Palo Alto, CA 94306 — (800) 336-5544

CIRCLE 628 ON READER SERVICE CARD

Business Mgmt.

Clients & Profits.™ Advertising Agency Management

Designed by advertising professionals for ad agencies: job management; traffic; job costing; payables; time sheets; estimates; receivables; POs; flexible billing; exporting; . Customizable! $2495. Trial-Size $40.

Working Computer
San Diego CA
619 721-0501

CIRCLE 675 ON READER SERVICE CARD

Great Judaic Clip Art

DavkaGraphic features unique pictures of Israel, Biblical figures, holidays, & symbols. It's so good, MacWorld gave it **4** stars and called it "charming". Three disk set **89.95.** Individual disks **$34.95.**

Call **toll free 1-800-621-8227**
Visa, M/C, Amex accepted.
Add $3 for shipping and handling
Call or write for **FREE** catalog of Judaic Mac software.

Davka Corporation
845 N. Michigan Ave• Dept.1
Chicago, IL 60611
(312) 944-4070

CIRCLE 626 ON READER SERVICE CARD

BUSINESS MacBUILDERS™ - the DIRECT MAIL Processor

GARFIELD & DAUGHTERS
P.O.Box 275
Andover ,N.J. 07877

Simple,"NO" Programming
List Management and Mail Merge

Michael A. Garfield
Simple MacSoftware™
P.O.Box 2342
Mill Valley ,CA 94942

Dear Mickey,

WYSIWYG
(What You See Is What You Get)

On 6/5/88 and 9/28/88 We purchased software from your company.
We just wanted to say how "HAPPY" we are with your products in general and the "Custom" screens" you made for us.

We really thought that custom work would "COST",but $25.00 was way below our estimates.Thank You!.

Now with "APPOINTMENT CALENDAR " AND AUTOMATIC CALL-BACK DATES"!

Sincerely,

Jessica and Alexis Garfield

- *Type list in or load list from list broker
- * Type in letter or letters
- * Fill in letter head or use pre-printed paper
- * View on screen
- * Select list to mail
- * Print single letter, entire mailing,or labels

LASER MacLABELS™
3 across laser labeling use with "WORKS","WORD", Etc. (Use with Imagewriter Too!)

When you see just how simple and effective BUSINESS MacBUILDERS™ & LASER Mac LABELS™ are you'll buy them ! But first you've got to try them...almost for "FREE" !

Buy a "DEMO SET" for $15,then buy BOTH,($100,less $15 rebate for the DEMO SET!),for $85 DELIVERED!

Send your check to:
P.O.Box 2342
Mill Valley,CA 94942

Simple™ Mac Software

Call -VISA/MC 415-389-0749

THE SIMPLIFIED ART OF (MULTIPLE) COMMUNICATION

CIRCLE 741 ON READER SERVICE CARD

Clip Art

ADD THAT SPECIAL TOUCH...with PostScript MASTERWORKS™

NEW!
ART NOUVEAU IMAGES
Volume 1 • EPS Format
$79.95 + $3 S&H (U.S.)
Ck/Visa/MC • Contact:
SILICON DESIGNS
POB 2234, Orinda, CA
94563 (415) 254–1460

CIRCLE 721 ON READER SERVICE CARD

Color PostScript Art

Wild Animals, Birds, Women, Food, Sports, Holidays — Domestic Animals, Flowers, Tools, Insects, Nautical, Fish

Subscribe to monthly clip-art
Complete 12 month subscription to 1152 images $ 895.00
Easy Payment Plan Available
Sample One month issue $ 95.00
Includes Color Pictorial Index
14 EPS Discs Per Month
Freehand and Illustrator Formats Also Available

Totem Graphics
5109-A Capitol Blvd.
Tumwater, WA 98501-4415
(206)352-1851

MasterCard VISA

CIRCLE 713 ON READER SERVICE CARD

High Resolution Clip Art created w/Adobe Illustrator
For Mac or IBM

ARTWARE

- Business & Commercial $69.95
- Borders $129.95 (4 disk set)
- Christmas $89.95 (2 disk set)
- Equestrian $89.95 (2 disk set)
- US Maps w/Counties $229.95 (4 disk set)

Artware Systems Inc. • 4332 Beard Rd. • Raleigh, NC 27609
For inquiries (919) 872-6511

To Order 1-800-426-3858

CIRCLE 662 ON READER SERVICE CARD

The Macworld Catalog

Clip Art

INTRODUCING "TOPGUN" Clip-Art
• Hand Drawn • Original • Professional
in Splashes Vol. 2
Assorted Subjects
in Splashes Vol. 1
3 Disks in Each Volume ONLY
$49.95
+ $3.00 S/H & CA Residents add 6.5% Tax
Send Check or Money Order to:
The Mac Group
P.O. Box 85152 MB 231 • San Diego, CA 92138
To Charge VISA / MC Call (800) 888-1718

CIRCLE 651 ON READER SERVICE CARD

MacAtlas™
Professionally drawn maps of the USA by state, world regions by country, and all 50 states by county!
Paint $79 • Draw (PICT) $199 • EPSF $199
To order or request information please call:
800-334-4291
MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530

CIRCLE 708 ON READER SERVICE CARD

GlobalArt
Oriental Images
Clip art on disk
"Stunning" Illustrations.."
"..as lovely as they are useful."*
*C.J. Wiegand, Personal Publishing, June '88
Cathay Europa Designs
P.O. Drawer B
Newmarket, NH 03857
800-533-5504
2-disk set
$79 postpaid
Call Toll Free
Visa, MC, AX

CIRCLE 607 ON READER SERVICE CARD

NEW!! CAPTURE Your Readers
Your Image Builder.
We've got the look you need!
From fun & sassy, to cool & classy.
•Cartoons•Hands•Special Occasions•Education
•Borders & Designs•And lots more!
• Originals by top commercial artists.• Many formats.
$59.95/disk, plus $3 Shpg. TX Res. add 8% tax.
ORDER NOW!
(512)388-7099
P.O. BOX 2142, ROUND ROCK, TX 78680
©COPYRIGHT 1988, EYCON COMPUTER GRAPHICS

CIRCLE 716 ON READER SERVICE CARD

Color EPSF Art
5 new Volumes
• Flags of the USA
• Flags of the World
• Int'l Symbols
• Creative Theme Art
• Seasonal Art
$125 each
To Order Call
DiskArt™
800-333-3305
415-820-3734

CIRCLE 621 ON READER SERVICE CARD

Communications

Burroughs emulation

Contact™ emulates TD/MT/ET and T27 terminals. Sophisticated data capture – all screen data can be used by spreadsheet, database or word processor... CANDE file transfer, fully *à la Mac* interface, soft keys, multiple pages & addresses, password protection... Soon: advanced file transfer

Avenue Software Inc.
1173 W. Charest Blvd. #390, Québec, Qc
Canada, G1N 2C9 – Tel. (418) 682-3088

CIRCLE 642 ON READER SERVICE CARD

Session HP CRT Emulators

The Session family of HP terminal emulators lets your Mac talk to the HP3000, 9000, and 1000. Business Session™ (formerly Mac 2624; $199) emulates an HP 2392 block mode CRT. Graphic Session™ ($299) adds HP 2393 graphics. Color Session™ ($399) emulates the HP 2397. File transfer included. *Tymlabs Corporation, 811 Barton Springs Rd., Austin, TX 78704, 512/478-0611, Telex 755820*

PacerLink (was pcLINK)

Connects Macs to VAX (VMS and ULTRIX), Stratus and UNIX systems. Supports serial line, remote modem, direct Ethernet, and AppleTalk bridged to Ethernet communications media. Provides terminal emulation (VT220, VT100, VT240/241), file transfer, virtual disk, and print services. *PacerShare* extension enables the VAX/VMS system to act as an AppleShare compatible file server. *Pacer Software, Inc., 7911 Herschel Ave. #402, La Jolla, CA 92037, 619/454-0565*

Desktop Publishing

OCR SCANNERS
• Leading OCR software developer
• Support MAC & PC/XT/AT/PS2
• Read text from documents, form, books and magazines using "SPOT" OCR program
• Trainable for English and foreign language characters
• Works with most scanners
• FAX and networking capability
• Customized software available
• Large inventory of Canon, Panasonic and HP scanners
• Free "SPOT" demo program
Avoid the middleman—Go direct!
FLAGSTAFF ENGINEERING 602-779-3341 FAX 779-5998

CIRCLE 719 ON READER SERVICE CARD

MacPalette

By Microspot prints multicolored graphics & text from most Macintosh® software using the ImageWriter II. MacPalette will colorprint documents from *MacDraw, MacDraft, MiniCad, MacProject, MacWrite, JAZZ, Microsoft Chart, Word, Excel* etc. (not *MacPaint.*) It prints black as a true black instead of mixing a black. $69. *CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484*

the graphic heartline

24hr. bulletin board ready to accept your Mac or IBM PC postscript files. Output at 300 dpi or 1270 dpi on L100. Over 100 downloadable Mac fonts and latest Mac system software available on BBS. Coming soon: ● Slides from Mac files. *graphic hearts, 61 Woodmont Rd., Milford, CT 06460. Voice 203/874-1305, 24-hr. Bulletin Board 203/877-2946*

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Document Mgmt.

MacDocument™

New Document Management System powerful enough to index an entire public library. Manage journals, articles, mail, office correspondence—any written information. Locate documents with only a mouse click. Isn't it time you finally got organized? $295.00 or $15.00 for a Demo disk. Call now! MC/VISA 800/888-5368.
Kentrex, Inc., Suite 85, 806 Broad Street, Chattanooga, TN 37402

Educational

Make Learning Fun!

* MacRobots * Read-A-Rama
* Animal Kingdom
* Math Wizard * Fraction Action
* Decimal Dungeon

To order programs or to receive a free brochure call or write:

UNICORN™ EDUCATIONAL SOFTWARE
Dept MW
2950 E. Flamingo #B
Las Vegas, NV 89121
702-737-8862
FAX 702-737-9085

CIRCLE 738 ON READER SERVICE CARD

An all new edition of the
Macintosh Educational Software Collection

- Hard-to-Find & Best Sellers
- HyperCard / Shareware
- Over 150 Titles
- All Subject Areas
- Teachers, Students, Parents

Send for Free Catalog!

CHARIOT •3659 India St. • San Diego, CA 92103 (619)298-0202

CIRCLE 685 ON READER SERVICE CARD

TEST GENERATION AND SCORING!

LXR•TEST™– the only *complete* testing system for the Mac! Rated "best testing tool on the market."

Logic eXtension Resources
9651-C Business Center Drive
Rancho Cucamonga, CA 91730
(714) 980-0046 AppleLink: D0626

CIRCLE 649 ON READER SERVICE CARD

Brainchild Grade™

Unique graphic interface, like a paper grade book, extremely easy to use. Total integration of spreadsheet, database, and report generating software. Complete stats and graphing package. Comprehensive user's manual and tutorial. Free telephone support hotline. Value priced at $25.
Brainchild Corp., available through the Kinko's Academic Courseware Exchange. To order, call 800/235-6919, 800/292-6640 (in CA), 805/652-4158 (International)

Kieran

Integrated learning program for children 2-6 yrs. Uses child's name in speech and pictures. Totally mouse driven interactive program with iconic interface. Covers alphabet training, time telling, counting skills, upper-lower case, and mystery door! 4-mice rating in *MacUser.* Great gift! MC/VISA $39.95.
Ohm Software, 163 Richard Dr., Tiverton, RI 02878, 401/253-9354, 800/346-9034

Teacher's Rollbook

Teachers: The first program that handles all your record keeping needs. Grade averaging and reporting. • Full attendance records and totals • Records disciplinary actions • Class size reports • Up to 315 students per file • Remembers birthdays & checked out items • Requires Mac 512K, +, SE, II, 2 drives • $149 • Demo $10
Current Class Productions, 22824 Berendo Ave., Torrance, CA 90502, 213/326-4246

MacAnatomy

A complete electronic atlas of human anatomy in MacPaint document form. The drawings may be modified and merged into MacWrite documents using the Clipboard. Comprised of four volumes, available singly or as a collection.
MacMedic Publications Inc., 7530 Harwin Dr., Houston, TX 77036, 713/977-2655

Engineering

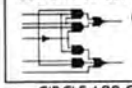
Schematic Entry/Digital Simulation

DesignWorks™

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

- fully interactive digital simulation with logic-analyzer style timing display
- fully compatible with Douglas CAD/CAM™ PCB layout
- full 7400, 4000, LSI, analog libraries
- full high level language PLD support when used with LPLC logic compiler
- dot-matrix, laser, pen plotter output
- user-definable device symbols with full simulation

DesignWorks: $685 LPLC: $535
Low-cost educational versions also available



Capilano Computing
545-108th NE, Suite 6
Bellevue WA 98004
(604) 669-6343

CIRCLE 602 ON READER SERVICE CARD

Electronic CAD

The powerful, easy-to-use Douglas CAD/CAM Professional System takes you from the schematic drawing to the final routed board with:

- Color support on Mac II
- Unlimited multilayers
- SMT capability
- 1 mil resolution
- Layout w/ parts-placement facility
- Schematic w/ digital simulation
- Flexible, multi-pass router

Take your first step into the new age of electronic CAD by ordering a full-feature demo with all 3 programs included. Call or write to us today.

Douglas Electronics, Inc.

Pro. Layout:	$1500	718 Marina Blvd.
Schematic:	$700	San Leandro, CA 94577
AutoRouter:	$700	(415) 483-8770
Demo:	$25	

CIRCLE 680 ON READER SERVICE CARD

Cross Assemblers

µASM™

NEW-8085 & 8096

• -400	COP400 family
• - 1802	1802 family
• - 6502	6502/C00/C02
• - 6801	6801/6800/6301 families
• - 6804	6804/HC04
• - 6805	6805/HC05/6305
• - 6809	6809/6309
• - HC11	68HC11/6800/6801 families
• - 8048	8048 family
• - 8051	8051 family
• - 8085	8085/8080 family
• - 8096	8096/80C196 family
• - Z8	Z8 family
• - Z80	Z80/64180 family

US $129.95 ea plus s/h*

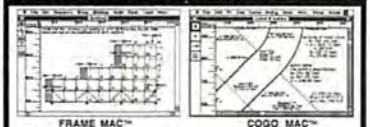
Fast. Full Macintosh interface. Output downloads to most EPROM programmers. Features macros, conditional assy, local and automatic labels, symbol table cross-ref, module sectioning. Editor included. MC/V.

* $4 cont. USA, $8.50 Can, AK,HI, $15 overseas

Micro Dialects, Inc. Dept W
PO Box 30014
Cincinnati, OH 45230
(513) 271-9100
MCI Mail: MICRODIALECTS

CIRCLE 608 ON READER SERVICE CARD

STRUCTURAL-SURVEYING



FRAME MAC™ COGO MAC™

NEW!! COGO MAC... for surveying & land & road layout.

- Enter, edit , and adjust traverses interactively.
- All information is displayed graphically at all times.
- Points, lines, curves, boundaries and traverses can be added, changed, copied, pasted, and duplicated.
- FRAME MAC, BEAM MAC II, BEAM MAC: for structural analysis of 2-D frames, trusses, and beams.
- MacCOGO for calculating structural properties.

All programs have full Macintosh interfaces. Money-back guarantee, free support. From $145-$595.

Compuneering Inc. – (416) 738-4601
113 McCabe Crescent
Thornhill, Ontario L4J 2S6 CANADA

CIRCLE 660 ON READER SERVICE CARD

IEEE 488 Interfaces

MacII488 • NuBus IEEE board for MacII
MacSCSI488 • SCSI/IEEE controller
Mac488B • Serial/IEEE controller
MacSerial488 • IEEE plotter interface
MacDA488 • IEEE desk accessory
MacDriver488 • IEEE language driver

Call or send for your FREE Technical Guide

(216) 439-4091

IOtech, Inc.
25971 Cannon Road
Cleveland, Ohio 44146
Telex 6502820864
Fax (216) 439-4093

London (0734) 86-12-87 • Paris (1) 348 01 78 • Zurich (01) 821 944 • Milan 02-4120360 • Linkoping (013 11 01 40 • Gorinchem (01830-35333 Sidney (2) 452 3831 • Seoul 784-9942 • Munich and other European, North African and Middle East countries not listed (089) 710020.

CIRCLE 702 ON READER SERVICE CARD

The Macworld Catalog

Engineering

UNIVERSAL E(E)PROM PROGRAMMER WITH INTEGRATED MAC USER INTERFACE

- Connects to modem port. **Pull-down commands menus.**
- No **personality modules;** Menu driven device selection.
- Built-in Eraser/Timer option ($50); Conductive foam pad.
- Direct technical support; **Full 1 year warranty.**
- Stand alone duplication & verify (27xxx parts).
- **Quick pulse algorithm** (27256 under 60 sec).
- 27xxx to 1 Mbit; 25xxx; 68xxx; CMOS; **EEPROMS.**
- 8741,-2,-4,-8,-8H,-9,-9H,-51,-C51,-52,-C52,-55, 9761 & more.
- Offset/split Hex, Binary, Intel & Motorola 8, 16, 32 bit.
- **Manual with complete schematics.**

VISA MC AMEX *Call today for datasheets !!*

$ 495

B&C MICROSYSTEMS

355 WEST OLIVE AVE., SUNNYVALE CA 94086
PH: (408) 730-5511 FAX: (408) 730-5521 TELEX: 984185

CIRCLE 725 ON READER SERVICE CARD

Scientific Plotting Package

SoftWear Plot produces publication-quality plots using multi-column ASCII file (e.g., program outputs, text editors, spreadsheets). Linear or logarithmic formats in either axis, overlays, zoom, on-line measurements, custom labels and tokens. Number of points limited only by disk space. LaserWriter and big-screen compatible, $99.95 + $5 s/h.
SoftWear Products, 7230 Oliver St., Lanham, MD 20706, 301/577-9207

Road Design

MacRoad is a fully interactive road design program that allows you to:
- Design cross sections using a palette of edge & surface types
- Design vertical gradings graphically
- Produce a schedule of quantities
- Adjust the grading & immediately see the effect on the cross sections & quantities
- Produce drawings on a range of printers or pen plotters

Creative Engineering, 6 Antill St., Wilston Queensland 4051, Australia, +61 73566271

Entertainment

MacScuba™

Have you ever dreamed of scuba diving in some exotic port in seach of sunken pirate treasure?

The Ultimate Mac Simulator

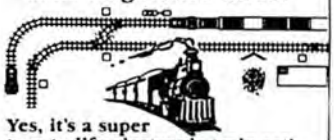
MacScuba simulates the underwater world using Mac's 3D graphics and digitized sound. You control all aspects of scuba diving from filling your tank to doing decompression dives using the U.S. Navy dive tables. Fight off killer tiger and hammerhead sharks while you explore a sunken pirate wreck in search of treasure. Fun for the experienced diver or if you have never been in the ocean before.

$49.95
+3.50 S&H
To Order Call:
(602) 893-8324

Paradise Software Corp.
P.O. Box 50996
Phoenix, AZ 85076

CIRCLE 732 ON READER SERVICE CARD

Pardon me, boys, is this the MacInooga Choo-Choo?



Yes, it's a super true-to-life electronic train set!

You can build elaborate model railroad systems on your MacIntosh and bring them to life with the click of a switch. You simply place desired images of tracks, engines, cars, and terrain on a grid in any configuration. Build layouts of one screen or more. Run your train at night. Use MacPaint to create more scenery.

Abracadata
Box 2440, Dept. M
Eugene, OR 97402

$49.95
+ 3.55 Shipping
VISA/MC/AMEX
(503) 342-3030

CIRCLE 676 ON READER SERVICE CARD

Tired of Arcade Games?
Nine real simulations: Rommel's DESERT WAR • MIDWAY or SOLOMONS (carrier actions) • Rome's glory in BARBARIAN or EAGLES IN THE SAND • WESTERN CAMPAIGNS or THE ARMY OF NORTHERN VIRGINIA (Civil War) • NORWEGIAN SEA or U.S. invasion in RED STARS (U.S./Soviet clashes) $34.95 each game or $64.95 for two. 512K Minimum. VISA and MC Accepted. Allow 4-6 wks.
SJP Enterprises PO Box 246 MCHenry IL 60050

CIRCLE 710 ON READER SERVICE CARD

NEMESIS™ Go Master®

Go, a game of strategic elegance, has been a way of life in the Orient for over four thousand years. Many consider Go to be the secret of the Japanese businessman's success. *"While chess is a game of war, Go is a game of market share"* [President of Nikko Hotels].

"If you are interested in Go, buy this program." J.Pournelle
Game of the Month BYTE 7/87

Toyogo, Inc. (617) 861-0488
76 Bedford Street, #34-C, Lexington, MA 02173
$79 Go Master®, $49 Joseki Tutor™,
$59 Tactical Wizard™ Add $6 U.S. S&H

CIRCLE 693 ON READER SERVICE CARD

Football Fans!

Are your teams going to win this week? Use the Analyst™ desk accessory and find out. Predict college and pro game winners plus the point spread. Fun the easy to use. 60% accuracy guaranteed or your money back. A great gift for the fan! $19.95. Runs on any Macintosh.
Vertical Solutions, P.O. Box 7535, Olympia, WA 98507, 800/942-4008

Financial

New AmPack Plus

is a flexible loan amortization software package designed by a CPA & tax attorney. Supports variable rates, graduated, skipped, & principal-only payments. Includes balloons, negative amortization, customized reports, APRs, & more. AmPack $49.95; AmPack Plus $89.95. VISA/MC $5 s/h.
Softflair, Inc., 8753 Park View, Milwaukee, WI 53226, 414/797-4490

Fonts

Beverly Hills 1.5

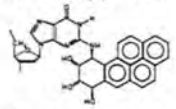
"Best Imagewriter™ font available!"

- Professional, "typeset" appearance
- Provides better quality photocopies
- 11 sizes: 6-12, 14, 18, 24 & 36 pt.
- 72 fractions from 1/2 through 9/9
- Horizontal lines of varying length
- 2-/1-pixel leading/space adjustment
- Additional mathematical symbols
- Two manuals provided on-disc
- Save cost of expensive printer; only $15 ($15.98 in CA) + blank disc!

ADH Software
P.O. Box 67129
Los Angeles, CA 90067-0129

CIRCLE 648 ON READER SERVICE CARD

DOWNLOADABLE LASERWRITER FONTS
FOR SCIENCE
≃ å ā ã Ā ∇ α β γ Φ Ψ ħ ∮ ∓ ! i



FOR FOREIGN LANGUAGE TEXTS
Μῆνιν ἄειδε θεά, Πηληϊάδεω Ἀχιλῆος
ąęćźłśńĄĘŻĆŹŁŚŃ

ALLOTYPE TYPOGRAPHICS
1600 PACKARD ROAD SUITE 5
ANN ARBOR, MICHIGAN 48104
(313) 663-1989
Compatible with all Macintosh systems

CIRCLE 615 ON READER SERVICE CARD

Custom Laser Typography

Complete line of LaserPerfect™ Fonts. Distinctive, downloadable fonts features legibility, good fit, kerning, *Fine type*: adaptations of Bembo, Gill Sans, Granjon, many others. *Foreign*: Hebrew, Ancient & Modern Greek, Hindi, Cyrillic. *Also*: Fractions, Bar code, Phonetic, OCR-A, LCD. $55-125. Logo conversions, custom fonts. Free samples and estimates.
Neoscribe International, P.O. Box 633, East Haven, CT 06512, 203/467-9880

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Fund Raising

Community Contact System

A unique approach and solution for nonprofits to more effectively communicate to the public they serve. The system enables organizations to increase fund-raising, public relations and marketing activities. Macintosh and the Community Contact System. Set yourself apart! Call today.
Campagne Associates, Ltd., 9 Goldfinch Lane, Nashua, NH 03062, 603/891-2129

Genealogy

MacGene™ new (ver. 3.10)

80% faster & 100% complete. Designed specifically for the Mac. One program for data entry, find, list & charting. Features: History, Hints, Mail-List, Family Tree, Pedigree, Statistics, Biography, etc.
- LDS compatible • Mac's & Mac-XL
- MORE NOTES • User Fields
- Custom Reports • Import/Export
- No copy protect • 80-pg. manual
- $-back guarantee $145. Demo $25.

Applied Ideas, Inc., P.O. Box 3225, Manhattan Beach, CA 90266, Free info: 213/545-2996

Family Roots™

Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indices and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information. Satisfaction guaranteed. MC/VISA/AE.
Quinsept, Box 216, Lexington, MA 02173, 617/641-2930, 800/637-ROOT

HyperFamily-Tree™

The HyperCard stack that lets you easily record and graphically display genealogy information. Autolink lets you click-to-navigate through generations of your ancestors. Super fast search. Automatic pedigree charts, family group sheets, family lines and birthday calendars. Print & export functions. $49.95 plus $3 S&H. VISA/MC orders welcome.
Lesiter Productions, 14 Hill Blvd., Mechanicsburg, PA 17055, 717/697-1378

Family Heritage File

Most powerful genealogy program on the Mac. Rated "Best" by *Macworld*. Licensed vers. of *Personal Ancestral File,*™ produced by the LDS Church.
- Mac user interface • Supports all Macs & hard disks except 128K
- Exports data to word processors/databases/modems
- Reports: Pedigree, Family Group, Individuals, Marriages, Surnames, Documentation, etc., $149 + $3 s/h (Utah res. +6%. Demo $7.

Star•Com Software Systems, Windsor Park East, 25 West 1480 North, Orem, UT 84057, 801/225-1480

Government

DoD Contractors

S I M S

CLASSIFIED FACILITY MANAGEMENT SOFTWARE

(Security Information Management System) makes the control of classified documents, contracts, and personnel virtually error free and meets all administrative requirements of the "ISM", (Industrial Security Manual).

DEMONSTRATION DISK $20.

MAXSOLUTIONS

241 12th St. Del Mar, CA 92014

(619) 481-0479

CIRCLE 674 ON READER SERVICE CARD

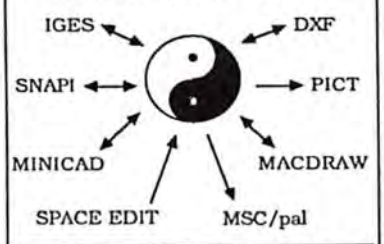
Graphics

MacPerspective™

Allows architects, draftspeople, and artists to rapidly construct perspective drawings of houses, buildings, or other objects. Viewpoint can easily be changed. Drawings can be printer in any size up to 100 inches. Easy to learn and use. Fast, professional program with many features, thorough manual. $219.
Knick Drafting, Inc., 12755 So. Patrick Dr., Ste. P, Satellite Beach, Fl. 32937, 407/777-0275

CADMOVER™

GRAPHIC TRANSLATION UTILITY FOR MACINTOSH CONNECTIVITY



KANDU SOFTWARE CORP. 703-532-0213

CIRCLE 661 ON READER SERVICE CARD

PostScript Plotting!

Desktop Plotter is a Turbo Pascal toolkit for high resolution plotting on the Laserwriter or output as Adobe Illustrator files. Unlimited charting, including picture-graphics, from simple Pascal programs. Illustrator-Pascal translator, spline, text at any angle/size, bezier curves, arcs, circles, statistical markets, etc. $75.00.
Sequoia Aircraft Corp., 2000 Tomlyn Street, Richmond, VA 23230, 804/353-1713

MiniCAD 3.0

By Diehl Graphsoft boasts 1000+ power zoom, symbol library, 40 layers, auto-dimensioning, double-line tool, clip/add/intersect polygons tools, object snap, fillet & trim-lines tools, object sizer & locator, 9 decimals accuracy, full 2-D & 3-D modes, etc. It reads *MacDraw* & *MacDraft* files. $495. Demo avail.
CompServCo., 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

MacPlot & MacCAD

MacPlot by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. MacPlot supports over 50 plots. MacCAD is a series of 12 separate architectural & engineering template symbol libraries for use with *MacDraw, MacDraft, MiniCAD,* etc.
CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

GraphPainter™

For desktop publishing to data analysis. Does scatter, line, area, bar, column, overlays, log, semilog, multiaxis, multiseries & more. You control scaling, grids, markers, patterns, etc. Finish with the paint tools & 7 curve fits. I/O with popular programs and LaserWriter. 512K+ req. $60, MC/VISA.
Brasel Software, P.O. Box 4274, Chesterfield, MO 63006, 314/256-3317

Health

Nutritional Software

Take steps to eat more sensibly. Analyze diets for nutritional content (calories, sodium, etc.) *NutriCalc Plus*™ includes 32 nutrients, 1700+ foods (3000 avail.). Does RDA comparison, energy analysis, tracks histories, $225. *NutriCalc*™ analyzes 8 nutrients, 900+ foods, plots progress, analyzes recipes. $65. Both have brand names & fast foods. NCP.
Camde Corporation, 4435 S. Rural Rd. #331, Tempe, AZ 85282, 602/821-2310

Analyze Diets, Menus . . .

so much more with the FOOD PROCESSOR II!
- This TOP-rated software has the best database of any system on the market today! Acclaimed by schools-colleges-hospitals-homes-fitness centers & businesses.
- 2400-3000 foods - 30 nutrients. $250
- CALL OR WRITE TODAY FOR FREE DEMO DISK!

ESHA Research, P.O. Box 13028, Salem, OR 97309, 503/585-6242 or 585-7755

The Macworld Catalog

Investment

The Right Time System

The Stock, Index & Futures programs generate accurate Buy/Sell signals for individual stocks, indexes and commodities. The software was developed by an expert portfolio manager for his own personal use & are now available for any smart trader who wants to make quick profits. Call or write for free info.

T.B.S.P. Inc., 2265 Westwood Blvd. #793, Los Angeles, CA 90065, 213/312-0154

Profits!™ Trade more profitably, see market trends in seconds. Commodity Report magazine said, **"...this jewel... Everyone who is in stocks or commodities should have Profits!"** Rated 96 by MacGuide **$495 + 4.95** shipping.
also ***The Investor*** by P3. Organize your portfolio. Combines power and ease of use. **$150** + shipping.
CA residents add tax.
Button•down Software
172 Donegal Ave.
Newbury Park, CA 91320
MC/Visa 805/498-9380 or
info 800/628-2828x403

CIRCLE 620 ON READER SERVICE CARD

Languages

Читайте по-русски!

HyperCard Foreign-Language Software

Introduction to Russian with extensive sound - 39.95
Verb Tutors: German, French, and Spanish - 29.95
Russian Verbal Aspect - 29.95
Russian Noun Tutor - 29.95
Word Torture - vocabulary stacks in Russian, German, French, and Spanish - 19.95

The HyperGlot Software Company
505 Forest Hills Blvd.
Knoxville, TN 37919 (615)558-8270

CIRCLE 678 ON READER SERVICE CARD

FORTRAN in MPW

Language Systems FORTRAN is a fullfeatured FORTRAN 77 compiler integrated w/MPW. Full ANSI FORTRAN 77 plus VAX-type extensions. SANE numerical calculations & data types incl. COMPLEX*16. 68000, 68020 and 68881 object code. Arrays greater than 32K. Link with Pascal, C, MacApp. $304 w/MPW via air. Mac+, SE, MacII.
Language Systems Corp. 441 Carlisle Drive, Herndon, VA 22070, 703/478-0181

MACTRAN PLUS

The versatile Integrated Made-for-Mac Development System
- Includes: Editor, Optimizing Compiler, Source Level Debugger, Linker, Library Manager
- Supports: 68020/68882 in-line code generation. Significant VAX FORTRAN & ANSI 8X extensions. Comprehensive MAC Tool Box Interface. Unlimited code segment size.

DCM DATA Products, 1710 Two Tandy Center, Fort Worth, TX 76102, 817/870-2202

Mail Order

CMA Medical
CMA Dental
CMA

CMA Micro Computer
55888 Yucca Trail, Suite 5
Yucca Valley, CA 92284
MultiPhase CMA
MultiWave CMA

Solo and multipractitioner office management systems for the Macintosh 512KE, Plus, SE and II. Compare these features:

Paper Claims	Appointments with Recall	Multi User Multi Tasking
Electronic Claim Files	Management Reports	Networks: AppleShare, Corvus, TOPS, MacServe
SuperBill	Production Analysis	
Patient Ledgers	Responsible Party Billing	File Interchange with other Data programs
Financial Histories	Audit & Backup	
Diagnostic Data Base	Patient Labels	

Please Call
(619) 365-9718

1979 11th Year 1989

CIRCLE 673 ON READER SERVICE CARD

Medical Office Mgmt.

Tess System™ software for insurance and billing. Expandable line to grow with your needs. Our $650 package outperforms software selling at three times that price. Multi-user & electronic claims available. Call for Demo software, VHS tape, or documentation. System prices from $650 to $5000.
Wabash Medical Resources, Inc., 4727 Shireton Court, Indianapolis, IN 46254, 317/299-7800

16 Day Rental on Mac Software

Telecom Software Review

1-8ØØ-MAC-TSRØ
(1-800-622-8770)

Rental Fees Apply To Purchase

Bus.Sense-60.90, CalendarMaker-7.90, Canvas-23.90, CricketGraph-24.90, Coach-12.90 dBaseMac-64.90, DeskPaint-18.90, Fast Back-12.90, Fonts-9.90, Games-7.90/up GraphicWorks 1.1-15.90, Image Studio-59.90, In-House Acct.-23.90, Jam Session-7.90 MacProof-23.90, McMax-38.90, MGMS-149.90, MicroPlanner+ -65.90, MiniCad-74.90 Pixel Paint-61.90, Post Art-10.90, Pro3D-49.90, Quickeys-13.90, RSG4-61.90, Sentinel-21.90 Suitcase-8.90, Video Works II-26.90, MS Works-35.90, MS Write-23.90

Hundreds More In Stock

CMS Hard Disk Drives
CALL FOR LOWEST PRICES AVAILABLE ANYWHERE
Prices Start At $488.00
60 Meg Tape Back Up – $718.00

Our Second Year for the Business Mac
TSR – 3723 East 83rd Street, Tulsa, OK. 74137
MasterCard In Ok. 918-496-1140 Visa & COD

CIRCLE 614 ON READER SERVICE CARD

Make Surgical Teaching Rounds on your Macintosh™ computer

MacSurgery™

Volume I

is an interactive program which presents you with commonly encountered clinical situations and provides you with answers and references. The format is that of multiple-choice questions and answers.

Great for board preparation and continuing education!!!

needs Hypercard™

MacMedic Publications
7530 Harwin Houston
Texas 77036
(713) 977-2655
$125 + 8% tax in Tx.

CIRCLE 718 ON READER SERVICE CARD

Music/Midi

MIDI for Your Mac!

Beginner, professional, solo or ensemble—Soundware carries the best MIDI products for your musical needs. From software and MIDI interfaces to complete studio setups, our commitment is to provide you with the best product information, values and ongoing support available. Call today for our FREE CATALOG and latest prices.

(800) 333-4554
Good Anywhere in the U.S.

soundware™

200 Menlo Oaks Dr., Menlo Pk, CA 94025
(415) 328-5773

CIRCLE 747 ON READER SERVICE CARD

Call 1/800/FOR MIDI

MIDI for everyone! Start your computer/MIDI system today with discount prices & expert help from FUTURE MUSIC. You don't have to be a PRO–most of our customers are just "plain folks" with a home computer and a love of music. Call for FREE CATALOG of Hardware, Software, Synthesizers, 4-tracks and more. All major brands avail.
Future Music Inc., 489 E. Plumb Lane, Reno, NV 89502, 702/826-6434

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Mac to MIDI Made Easy!
Make the Right Choices
We have designed MAC based system for headline superstars and 1st time users. We offer: • Expert advice • Complete systems design. We sell: • All MIDI interfaces, software, accessories • All major synths & samplers • At discount prices. Why settle for less than the best?
TekCom Corporation, 1020 N. Delaware Ave., Philadelphia, PA 19125, 215/426-6700

Payroll

Time Saver Payroll™ V.4.0
• GET READY FOR 1989 •
Full Featured Payroll system.
• Salaried, hourly, comm. & tip wages • 11 deductions, incl. fed., state & local taxes • 401k deductions • Tax tables easily edited by user • Monthly & quarterly reports, incl. 941, FUTA/940, SUTA
• Prints checks and W-2 forms
• *Flexible–easy to use!* Requires Microsoft *Excel* $99.50 + $3 s/h. MC/VISA/Chk. Demo $15 + $3 s/h (applied to purchase).
Western Software Associates, 110 El Dorado Rd., Walnut Creek, CA 94595, 415/932-3999

Politics

Constituent Manager
The Ideal Political Software for the Apple MacIntosh®
Peripheral Visions, Inc.
(800) 882-8889
In Maine 877-9554.
CIRCLE 653 ON READER SERVICE CARD

Printer Drivers

Printer choice on your Mac

The PRINT-LINK™ $62
For graphic printing with a wide variety of Ink Jet or Dot Matrix printers. (9 & 24 pin.)

MAC DAISY LINK™ $82
For letter quality printing, with typewriters, Daisywheel printers and lasers (in Qume or Diablo emulation).

Cables optional $22.95

GDT Softworks Inc. P.O. Box 1865, Point Roberts, WA. 98281
Inquiries: (604) 291-9121 To Order: 800-663-6222
Macintosh™ is a trademark licensed to Apple Computer, Inc. The PRINT-LINK™ & MAC DAISY LINK™ are trademarks of GDT Softworks Inc.
CIRCLE 627 ON READER SERVICE CARD

Programming Tools

POWER DEVELOPMENT TOOLS

- Programmer's EXTENDER
  Vol 1: Macintosh User interface
  Vol 2: lists, printing, graphics, tiling, popups
- EXTENDER GRAFPAK
  high quality color graphs - bar, line, log; customizable symbols, grid patterns

Invention Software
313-996-8108
CIRCLE 629 ON READER SERVICE CARD

Public Domain

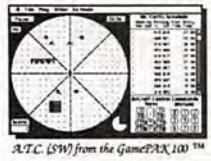
4000+Prgms•Tips•Nwsltr
No club has more programs or a better newsletter. Members in 50 Countries. 1 time $8.50 subscription gets you our Intro disk w/13 terrific prgms + disk w/description of our HUGE library of over 4000 pgms PLUS our quarterly newsletter filled with tips & new programs. Members pay $7 for any disk (+ $1 s/h)
PD Mac, Dept. 32, P.O. Box 5626, Sherman Oaks, CA 91423

Top 100 Macintosh Public Domain Programs
The ONE HUNDRED most popular Mac Public Domain programs. Includes 39 utilities, 18 DA's, 18 games, 3 vaccines, 21 Hyperstax. No pictures or scans. Every one is useful. FREE catalog of over 8,000 Mac Public Domain programs with every order. VISA/MC. $19.95 + $3 Shpng
MacOnly, Inc.
1-312-433-8796
CIRCLE 712 ON READER SERVICE CARD

Abacus
At Abacus you pay only $5.00 for a double sided Sony disk of public domain and shareware software. While we cater to all models of the Mac with a huge selection in all categories, what truly sets us apart is the amount of Mac II specific software we offer. With close to 20 megabytes of color programs, files & images for the Mac II, we can't be beat. Send $1 (refundable) for catalog.
ABACUS, 158-39 Jewel Ave., Flushing, NY 11365

HyperPAK 100 (Volumes I, II, III, or SoundPAK 150)
Recipe Box from the HyperPAK 100™

DeskPAK 200
Samples from the DeskPAK 200™


GamePAK 100
A.T.C. (SW) from the GamePAK 100™

FontPAK 200
Several fonts from the FontPAK 200™

LaserPAK 100
Several laser fonts from the LaserPAK 100™

UtilityPAK 150
Layout from the UtilityPAK 150™

ArtPAK 250
Art samples from the ArtPAK 250™

Each PAK only $25.00
Each PAK on 4 double sided disks. Save even more: take any 3 for only $69.95, or any 6 for only $129.95!
(800) 356-3551 ORDER TOLL FREE! **(913) 271-6022** CUSTOMER SERVICE
Ordering hours: 8-6 M-F, and 12-5 Sat (CST). Add $4.00 per order S&H ($7 Canada, $12 foreign). 2nd day & overnight delivery available. KS orders add 5%. Thousands of satisfied customers in over 60 countries have made Budgetbytes their #1 choice for Macintosh Public Domain and Shareware. You'll find the best service, the best selection, and the best prices. Choose from over 4,000 programs on over 600 disks, and never pay more than $3.50 per single sided, or $6.50 per double sided disk again! No membership fees or no club to join. Just great software at honest prices. Send $2.00 (refundable with your first order) for our new 240 page catalog and start getting more bytes for your buck, today!
Budgetbytes
P.O. Box 2248, Topeka, KS 66601
Please support Shareware by sending registration fees to programmers!
CIRCLE 601 ON READER SERVICE CARD

The Macworld Catalog

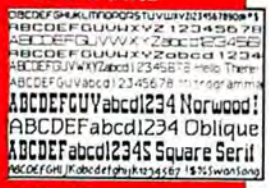
Public Domain

125 Stacks for HyperCard™

150 Games

250 DAs

225 Fonts



250 Pictures

VISA MC

For a limited time only!
$19.95 per set!
All five sets: Only $89.95!

All sets on double-sided disks. Add $5/set for single-sided
Call 800-843-9497 Add $4 p/h per order
Order yours today!
Ask for our FREE 180-page catalog!

Educorp
531 Stevens Ave. Suite B
Solana Beach, CA 92075

CIRCLE 740 ON READER SERVICE CARD

Free Custom Software!
Don't buy public domain software you don't want! Pick the programs you want from our catalog of thousands P.D.-S.W. programs to create a custom disk. We do not charge for programs, pay only a small fee for producing a custom disk. No club fees. Prices as low as $2.90 per disk. Call now for a free catalog!
Software Supermarket, 5101 Addison Dr., Charlotte, N.C. 28211, 800/438-1242 Ext. 515, in N.C. 800/534-0476 Ext. 515

Public Domain You Pick It!
Tired of getting what they want to send you? Choose an 800K disk of what YOU want from our library of over 300 meg of high quality shareware & public domain software, graphics, games, DA's, fonts, utilities & stacks. ONLY $15. Prices reduced for multiple disks. Send $5 (refundable) for a catalog.
HK Distribution, P.O. Box 201432, Austin, TX 78720-1432

Real Estate

Real Estate Software

Ten Minute
- Property Manager

Accounting system for multiple properties. Ideal for investors who manage their own properties.

- ProAnalysis

A Sophisticated investment analysis program designed for the investor who demands professional quality analysis.

Demos Now Available!

Metropolis *Software*
499 Hamilton Ave.
Suite 202
Palo Alto, CA 94301

CIRCLE 689 ON READER SERVICE CARD

New from RealData —
Real Estate Investment Analysis, Version 6.0

Real Estate Investment Analysis has been our best-selling product since it was introduced in 1982. Many software products have come and gone over the years, but RealData and our *Investment Analysis* have stood the test of time. Now Version 6.0 adds new power to this popular program.

What can it do? *Real Estate Investment* allows you to make ten-year projections of the income, expenses, cash flows, re-sale and tax implications of your property. It performs virtually all of the complex Tax Reform, financing and rate-of-return calculations for you in just seconds. It also includes a lease analysis and annual operating statement

Real Estate Investment Analysis, Version 6.0 runs with Microsoft Excel™ or Works™ on the Mac 512 or greater — just $250.

To order, call or write today. MC, VISA, AMEX Welcome
or send $2 for our catalog of real estate software for the Mac and PC.

REALDATA®
78 North Main St.
South Norwalk, CT 06854
(203) 255-2732

CIRCLE 610 ON READER SERVICE CARD

REMS Investor Series
CCIM recommended. Multi-year cash flow projections and analysis, amortization, depreciation, tax calculations, and export to Excel. REMS Investor 3000 imports from Excel, handles partnerships, ground leases, participation loans and more. Not a template.

REMS Investor 2000 $395
REMS Investor 3000 $795

GOOD *Good Software Corp.*
13601 Preston Rd. Suite 500W, Dallas, Texas 75240
1-800-272-GOOD

CIRCLE 679 ON READER SERVICE CARD

Property Management
Comprehensive program for managing residential and commercial properties. Many management reports, including operating statement, delinquent rent, lease expiration, and transaction register. Provides check writing, check reconciliation, posting late fees, recurring expenses–$395. Investment analysis–$245.
Yardi Systems, 813 Reddick St., Santa Barbara, CA 93103, 805/966-3666

Reference Mgmt.

RefMaker 2.0
Works with Microsoft® Word and HyperCard™ or Reflex™. Incorporates references downloaded from BRS (MESH & BIOZ), MEDLARS, & CAS Online. Creates bibliographies automatically from manuscript citations. 20+ customizable bibliography styles. Stores 10,000 references. Easy to use! $75 postage pd.
Cat's Cradle Software, P.O. Box 684, Ann Arbor, MI 48106, 313/665-6152

Religion

ThePerfectWORD™
Bible Search Software

English Versions
KJV • NIV • RSV

Greek-NT • Hebrew-OT

Star Software, Inc.
229 Live Oaks Blvd. #MW
Casselberry, FL 32707
(407) 831-8050
Demo $5 • Dealers Wanted

CIRCLE 723 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

The Macworld Catalog

Retail

Retail Engine™, the complete point of sale software system for apparel stores with up to 10 locations. Sales, Cash, Inventory, A/R, A/P and General Ledger. Decisive and timely information for the apparel retailer who has a passion for success.

Houlberg Development
PO Box 151501
San Diego, CA 92115
(619) 287-7444

CIRCLE 714 ON READER SERVICE CARD

typeset quality
Equations Made Easy

"An excellent toolkit that all technical people should have..."- Jean Louis Gassée, VP, Apple Computer, Inc.

Expressionist™ 2.0 2-Way TEX Interface

$$\mathbf{B} = \frac{\mu_0}{4\pi}\int \frac{\mathbf{J}\times r}{r^2}\,d\tau$$

A powerful application and desk accessory that generates equations for word processing and Desktop Publishing.

allan bonadio associates 814 Castro #56, SF, CA 94114, (415) 282-5864 **$129.95**

CIRCLE 690 ON READER SERVICE CARD

Statistics

MULTISTAT

Comprehensive Statistics with Graphics

- Full Mac interface: hierarchical menus
- Powerful data editing & transformation
- Full range of descriptive statistics
- Parametric statistics include 't'-tests, ANOVAs (one and two way), simple & multiple regression, proportion etc.
- Non parametric statistics include chi-square, Fisher exact, McNemar, Mann-Whitney U, Spearman correlation, Wilcoxon, Kolmogorov-Smirnov etc.
- Graphics include pie-charts, scatter diagrams, histograms, bar charts, line-graphs with error bars etc.
- Pseudodata generator for training uses
- Import / export from Excel etc. **$250**

BIOSOFT
PO Box 580, Milltown, NJ 08850
201-613-9013
Payment with order: check/AMEX/VISA/MC

CIRCLE 739 ON READER SERVICE CARD

RATS! Version 2.1
Best-selling econometrics software program. Now available on the Mac. Multiple regression, including stepwise, 2SLS, logit, probit, and much more! Forecasting with ARIMA, VAR. Exponential smoothing, model simulations, support for daily/weekly data. $300. VISA/MC. 512K + external drive.
VAR Econometrics, Inc., P.O. Box 1818, Evanston, IL 60204-1818, 312/864-8772, 800/822-8038

Sales/Marketing

MarketMaster for Mac
Automatic Sales Inquiry Follow-up! Enter leads whenever you get them and *MarketMaster™* contacts the right people the right way at the right time. Prints letters & envelopes, phone lists, scripts, and NEVER FORGETS! Easy to learn and use. Frees salespeople to SELL and supports them to SELL MORE!
Breakthrough Productions, 10659 Caminito, Cascara, San Diego, CA 92108, 619/281-6174

Your Ad Gets More For Less.

Call *The Macworld Catalog* and see why.

800.888.8622

Scientific

Geological Software
Great graphics, low prices!
• Lithologic log plotting • Gridding • Contouring • Piper/Stiff plots • Oil & Gas economics • Stereonet plots • Plate tectonics • Geophysical modelling, + much more for the Macintosh & PC $50–$1500. Call or write for *FREE* catalog of easy-to-use software products.
RockWare Inc., 4251 Kipling, Suite 595, Wheat Ridge, CO 80033, 303/423-6171, Telex: 9102504964

CLR ANOVA
Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal *n*. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Can read text files w/entries separated by spaces, commas, or tabs. $75 + $3 s/h.
Clear Lake Research, 5615 Morningside #127, Houston, TX 77005, 713/523-7842

Utilities

Hot! Hot! Hot!

MacLabeler® Plus
Label Construction Set™
The ultimate disk labeler
$79.95

- ***It's easy...*Label your disks automatically with a click of a button.**
- ***It's flexible...*Design and save your own Label Templates.**
- ***It's powerful...*Put 10 kinds of fields anywhere you want:**

Disk name
File / Folder names
Desktop icons
DA's & System fonts
Space and HFS/MFS
Date & Serial #
Imported graphics
Custom text

- **Give each field a font, style, color, custom width, etc.**
- **Fill these fields by inserting disk.**
- **Set to manual or automatic modes.**
- **Bordered or borderless labels.**
- **Built-in print queue.**
- **For MacPlus, SE, or Mac II.**
- **For LaserWriters or ImageWriters.**
- **60 pin-feed QuickLabels® included.**

DiskQuick™ **$49.95**

- **Catalogs hard disks and floppies.**
- **Powerful "Subset" file locater.**
- **Shows info box comments.**
- **Exports catalog to database.**

- **512k to Mac II.**
- **IW or LaserWriter**
- **MacGuide rates it a 96...** *"Essential for anyone who uses a hard drive or owns more than two floppy disks."*

Ideaform Inc. (515) 472-7256
PO Box 1540, Fairfield, IA 52556

MacLabeler, Label Construction Set, QuickLabels, and DiskQuick are trademarks of Ideaform Inc.

CIRCLE 658 ON READER SERVICE CARD

The Macworld Catalog

Word Processors

QUEDM

...QUality EDitor w/Macros ™

The Most Powerful Text Editor with Macros

• Unlimited Undos • Find Files with Key Words • Find/Replace with Wildcards • Write or Record Macros • Count Lines, Sentences, Words • Extract any Data from Text Files • Text Folding • File Compare • Many More Features! ONLY $119

PARAGON concepts inc 4954 Sun Valley Road Del Mar, CA 92014

To Order: (800) 922-2993; in CA: (619) 481-1477; S&H $3.50, CA res. + sales tax; VISA, M/C O.K.

CIRCLE 609 ON READER SERVICE CARD

Print Envelopes on Your MAC.

Print envelopes to enclose your letters by copying & pasting the letter's name & address block. Or, print envelopes using names & addresses stored in HyperCard stacks. ncp.

InfoLogic™ Envelope • $37 post paid, NY residents add applicable sales tax. VISA & MasterCard accepted.

InfoLogic™ InfoLogic Software, Inc. 1937 Regent Street • Niskayuna, NY 12309 (800) 548-4124

CIRCLE 709 ON READER SERVICE CARD

Miscellaneous Business Opportunities

If you have a 6'x8' working space, you can start your own toner cartridge recharging business—full or part-time.

The demand for recharged toner cartridges for laser printers and copiers is just beginning to explode. You can cash in on this demand by starting your own high profit, low overhead recharging business. The Laser Charge process enables you to offer companies in your area a way to reuse toner cartridges instead of having to buy more expensive new ones. Your customers save money, and you make money.

Laser Charge provides dealership training, tools, supplies, trade secrets, marketing strategies and technical support. Choice of two dealership plans: $4,900 or $6,900. Master Distributorship Plan also available.

LaserCharge

Call for a free cassette and brochure about this new field!

1-800-223-8134

CIRCLE 730 ON READER SERVICE CARD

The Macworld Catalog is the direct response section for the Macintosh marketplace. It's action-oriented advertising that reaches the experienced users who know what they want, want it fast, and look for it here–each and every month.

The most readers. The least cost. Immediate access. Just call *The Macworld Catalog* at 800.888.8622 and place your ad–today!

800.888.8622

Mac Underground

THE MAC UNDERGROUND WANTS YOU !!!!

The demand for our on-line electronic magazine for the Mac is more than we can handle! Distribute our magazine & software products in the US, Can., U.K., Australia, Far East or Europe. We offer:

• EXCLUSIVE TERRITORIES •
• PROVEN MARKET •
• SMALL INVESTMENT - BIG RETURNS •
• TECHNICAL and SALES SUPPORT •

Have fun and make $$ with your Mac! You can launch this business from your home or existing business, and expand from there. For further information...

CALL

MAC UNDERGROUND, 1180 South 1300 East, Salt Lake City, Utah 84105 USA (801)-582-1676

CIRCLE 670 ON READER SERVICE CARD

Mailing Lists

MAILING LIST of Mac Users

On labels, tapes, diskettes... or by modem.

Choose from hundreds of thousands of users!

Only 5¢ per name, with no charge for selecting, sorting, media, or delivery.

Semaphore Corporation, 207 Granada Dr., Aptos, CA 95003

(408) 688-9200 (voice) 662-2717 (modem)

CIRCLE 611 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.

Find out what's up at MACWORLD Expo.

Attendance 1985 - 1988

San Francisco
Up 144%

Boston
Up 166%

Expo Booths 1985 - 1988

San Francisco
Up 300%

Boston
Up 280%

You can always count on seeing the newest, the best and the most at MACWORLD Expo. That's why, year after year, the original Macintosh-exclusive computer show keeps getting more and more popular, both for users and for vendors.

Fact is, MACWORLD Expo will:

• **Save you time and money . . .** by literally putting at your fingertips the hardware, software and peripherals that represent the entire state of the art of Macintosh™ computing. *You'll make smarter buying decisions.*

• **Build your knowledge . . .** by enabling you to attend a helpful tutorial that meets your specific need, whether you use your Mac at the office, at school or at home. *You'll learn from the experts.*

• **Develop your skills . . .** by giving you plenty of opportunities to practice what you've learned, using one of the many Macintoshes that will be available to you. *You'll get hands-on experience.*

The number of MACWORLD Expo cities is up too.

Now our nation's capital joins San Francisco and Boston in hosting MACWORLD Expo. You'll see special emphasis on the products, systems and applications representing the specific needs of government agencies and operations. Pick the location that's best for you:

SAN FRANCISCO January 20-22, 1989
Moscone Center • Brooks Hall • Civic Auditorium

WASHINGTON, DC April 26-28, 1989
DC Convention Center

BOSTON August 10-12, 1989
Bayside Expo Center • World Trade Center

The next move is up. Just fill in, detach and return the coupon below to MACWORLD Expo, Box 155, Westwood, MA 02090. We'll mail you the information you need to: get a special reduced rate on your admission, avoid the registration lines and make the most of your time learning what's up.

What's up, MAC?

Please send me details about attending the following MACWORLD Expos:

❑ **San Francisco**, Jan. 20-22, 1989 ❑ **Washington, DC** April 26-28, 1989 ❑ **Boston**, August 10-12, 1989

Name _____ Company _____

Street _____ City _____

State _____ Zip _____ Phone _____ MAC

Sponsored by MACWORLD, the Macintosh™ Magazine. An IDG Communications publication. MACWORLD Expo is an independent trade show not affiliated with Apple Computer, Inc. MAC, MACINTOSH and MACWORLD are trademarks of Apple Computer, Inc.

MACWORLD EXPOSITION

Macworld Best-Sellers

Months on chart	Last month	This month	
Business Software			
35	3	1	**Microsoft Excel** *Microsoft*
44	2	2	**Microsoft Word** *Microsoft*
23	1	3	**Microsoft Works** *Microsoft*
31	4	4	**PageMaker** *Aldus*
20	6	5	**MacWrite** *Claris*
34	10	6	**MacDraw** *Claris*
4	5	7	**WordPerfect for the Macintosh** *WordPerfect*
4	7	8	**Adobe Illustrator** *Adobe Systems*
9	–	9	**WriteNow for the Macintosh** *T/Maker*
6	–	10	**FileMaker Plus** *Claris*
Education Software			
11	2	1	**Reader Rabbit** *The Learning Company*
27	1	2	**Math Blaster** *Davidson & Associates*
24	4	3	**Typing Tutor** *Simon & Schuster Computer Software*
12	–	4	**Early Games** *Springboard Software*
1	–	5	**KidTalk** *First Byte*
Entertainment Software			
27	2	1	**MacGolf** *PCAI*
7	1	2	**Beyond Dark Castle** *Silicon Beach Software*
23	4	3	**Dark Castle** *Silicon Beach Software*
9	3	4	**Falcon** *Spectrum HoloByte*
26	–	5	**Flight Simulator** *Microsoft*
Networking/Data Communications			
23	1	1	**TOPS** *TOPS*
19	2	2	**AppleShare** *Apple Computer*
14	4	3	**PhoneNet** *Farallon Computing*
27	3	4	**LocalTalk** *Apple Computer*
2	–	5	**Red Ryder** *FreeSoft*

Months on chart	Last month	This month	
Hard Disks*			
2	2	1	**EMAC 20 External** *Everex*
1	–	2	**EMAC 40 External** *Everex*
2	–	3	**Pro Series 20-SE** *CMS Enhancements*
21	–	4	**Apple Hard Disk Internal 20SC** *Apple Computer*
11	3	5	**FX20** *General Computer*
Add-In Boards			
8	4	1	**Macintosh II Video Card** *Apple Computer*
14	3	2	**Apple 1MB Memory Expansion Kit** *Apple Computer*
14	2	3	**Apple 2MB Memory Expansion Kit** *Apple Computer*
14	1	4	**Radius Accelerator** *Radius*
2	–	5	**Mac286** *AST Research*

Product Watch

Editors' choice: Other recent or forthcoming products of particular interest.

Microsoft Word 4.0 *Microsoft* word processor

Milo *Paracomp* mathematics processor

Studio/8 *Electronic Arts* color graphics program

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order suppliers. Covers sales during September 1988.

**Does not include hard disks installed at the factory.*

The WriteNow difference: *Ease, Performance, and…*

	WriteNow 2.0	MacWrite 5.0	MS Write	MS Word 3.01
Spelling checker size	100,000 words	100,000 words	80,000 words	80,000 words
Font size range	4-127 pts.	7-24 pts.	7-72 pts.	2-127 pts.
Maximum recommended document size (in pages)	Over 2,000	240	50	500
Number of open documents	Unlimited *	1	30	30
Mail merge	**Yes**	No	No	Yes
Number of editable, on-screen columns (WYSIWYG)	4	1	1	1
On-screen auto-numbering footnotes	Yes	No	No	No
Automatic repagination	Yes	Yes	No	No
Graphics in same line as text	Yes	No	Yes	Yes
Multiple headers and footers	Yes	No	No	Yes
Extensive Undo	Yes	No	No	No
Variable line spacing (in points)	Yes	No	No	Yes
Selective font, size, style, and ruler changes	Yes	No	No	Yes
MacUser Magazine's Best New Word Processor	**Yes**	No	No	No
Search for a word	2.4 *sec*	7.6 *sec*	9.5 *sec*	9.7 *sec*
Spell Check document	6.3 *sec*	2 *min* 34.0 *sec*	2 *min* 2.3 *sec*	1 *min* 48.0 *sec*
Copy & Paste large area	6.8 *sec*	1 *min* 0.9 *sec*	12.4 *sec*	12.3 *sec*
Change font size of document	10.7 *sec*	50.2 *sec*	17.6 *sec*	16.2 *sec*
Change font of document	10.8 *sec*	37.1 *sec*	14.1 *sec*	15.2 *sec*
'Save As' a 12-page document	3.6 *sec*	9.4 *sec*	20.3 *sec*	19.6 *sec*
Retail Price	$195	$125	$175	$395
Happy Users	***Yes***	*?*	*?*	*?*

…*Happy Users!*

Our users love WriteNow—a claim our competition can't easily make for their products.

How do we know? Because our users tell us—on registration cards, on the telephone, on bulletin boards, and in letters.

We've heard dramatic stories about how WriteNow has significantly reduced training and support costs. And how clean, fast, and enjoyable it is to use. And how WriteNow got the job done when our competition sputtered.

You see, at T/Maker we feel a great word processor is more than just a stockpile of features. It's the *usability* of those features—how easy they are to learn and use, and how they *feel* under your fingertips when doing real work.

And from their overwhelmingly terrific response, it's clear our users agree.

WriteNow 2.0 is *the* user's choice for best Macintosh word processor—*and we'll show anyone our customer registration cards to prove it!*

T/Maker.

What's new with WriteNow 2.0?

Mail merge, 100,000-word dictionary, Cursor key support, Direct import/export of Text, MacWrite, and RTF (Word, Write, and Works option) files, Window menu, Decimal tabs, Hide pictures option, MultiFinder and network compatibility,…and more!

Registered users will receive upgrade details in the mail. Non-registered users should call or write for details.

T/Maker Company • 1973 Landings Drive • Mountain View, CA 94043 • 415-962-0195

All timing tests performed by an independent testing organization on a 12-page document using a Macintosh SE and a 20 megabyte hard disk.
* **Number determined by Macintosh system constraints.**

Demo version of WriteNow included on all Jasmine hard drives.

© 1988 T/Maker Company. All rights reserved. The following are registered and unregistered trademarks of the companies listed: WriteNow, licensed to T/Maker Co.; Macintosh, Apple Computer, Inc.; MacWrite, Claris Corp.; Microsoft, Microsoft Corp.

Circle 332 on reader service card

10 reasons why you should switch to New Turbo Mouse.

1 Fly across even the biggest screen with automatic acceleration. Turbo Mouse® senses the speed at which you're working and moves the cursor further when you move faster.

2 No rolling room required. With the Turbo mouse ball on top, you move only the ball, not the whole mouse.

3 Three times as precise as a mouse. New patented "optical levering" technology offers 200 CPI pin-point precision.

4 One button is for regular clicking, the other is a click lock. You choose which is which.

5 Advanced two-button design allows for either right or left-handed use!

6 Only 4" by 6", Turbo Mouse fits neatly beside any Macintosh® or Apple IIGS® keyboard.

7 Turbo Mouse offers a second mouse port. Turbo Mouse ADB offers a second ADB port.

8 Perform one of seven functions—Save, Print, Open, Close, New, Quit, or Undo when you click both buttons at once. (Only in Turbo Mouse ADB.)

9 Turbo Mouse ADB, #62360, works with Mac SE, Mac II, or Apple IIGS. Turbo Mouse, #62358, works with Mac or Mac Plus. Both have a suggested retail of $169.95.

10 It's easy to find. For a Turbo Mouse dealer near you, just call **1-800-535-4242,** or **212-475-5200.**

KENSINGTON®

See us at MacWorld Expo, Booth #528

Circle 192 on reader service card

© 1988 Kensington Microware Ltd.