MACWORLD

October 1987 $3.95
Canada $4.95

The Macintosh™ Magazine

Juggling Programs

with MultiFinder

- **HyperCard– A New Dimension for Your Mac**
- **Which Accounting Package Fits Your Business?**
- **9 Spelling Checkers Compared**
- **Plus– 15 In-Depth Reviews**

On September 30, 1985 we announced the most powerful, most versatile spreadsheet ever.

"If you're a spreadsheet user, Microsoft Excel is one of the best reasons to buy a Macintosh ...After being loyal and dedicated 1-2-3® users for several years, we've just recently converted all our 1-2-3 files over to Microsoft Excel. It's that good." Don Crabb, *InfoWorld*, November 10, 1986

"Microsoft Excel is unquestionably the most powerful spreadsheet program available on any personal computer." Lon Poole, *Macworld*, September 1985

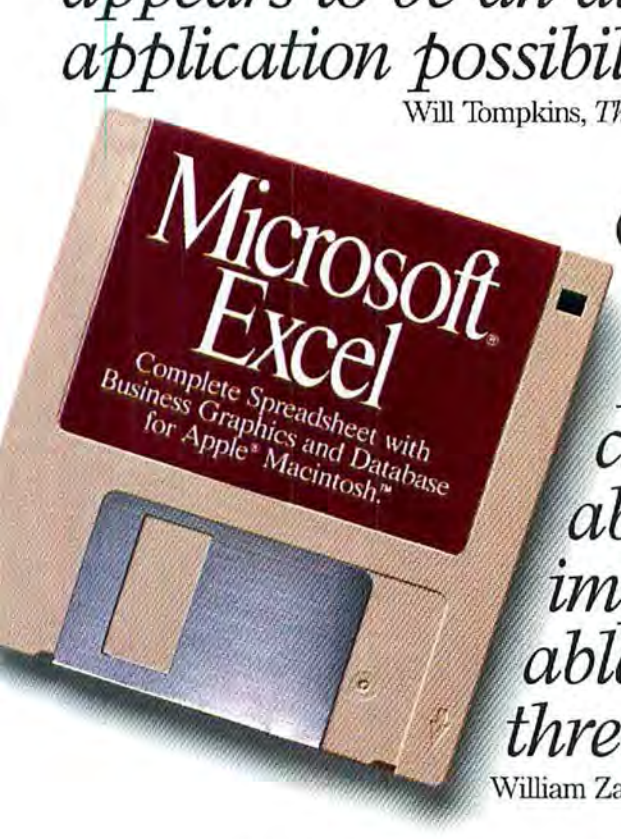
"In terms of features and ease of use, Microsoft Excel makes 1-2-3 look rather pale." *The Seybold Outlook On Professional Computing*, October 20, 1986

For the name of the nearest Microsoft dealer, call (800) 426-9400. In Washington State and Alaska, (206) 882-8088. In Canada, call (416) 673-7638.

Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation. Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc. 1-2-3 is a registered trademark of Lotus Development Corporation.

"Microsoft Excel is easy to learn, but better, it's also easy to use. Best of all, you can easily get at Microsoft Excel's powerful macro capability." Jerry Pournelle, *Byte*, April 1986

"Microsoft Excel has implemented the most all-inclusive and powerful use of linking yet seen in micro spreadsheets... It offers what appears to be an almost unlimited range of application possibilities."
Will Tompkins, *The MACazine*, Vol. 2, No. 10



"A powerful spreadsheet program with equally powerful data-base and charting (or graphics) capabilities, it offers substantial improvements over comparable PC-DOS programs in all three areas."
William Zachmann, *Computerworld*, December 8, 1986

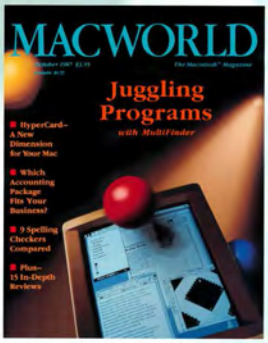
It seems we underrated it.

Microsoft®

MACWORLD

October 1987

The Macintosh™ Magazine



On The Cover

Departments

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

17 **David Bunnell**

27 **Letters**

43 **Commentary**

51 **Contributors Notes**

55 **Steven Levy**

67 **Verbatim**

173 **New Products**

179 **How To: Quick Tips**

187 **How To: Getting Started with Desk Accessories**

203 **How To: Insights on PageMaker 2.0**

213 **How To: Mac Programming Tools**

225 **How To: Mac Word Processing Tools**

237 **Updates**

245 **Where to Buy**

268 **Best-Sellers**

87 Macworld News

▪ *ImageWriter LQ* Apple launches a new dot matrix printer into the business market.

Features

109 MultiFinder: The Application Juggler

115 The Final Spelling Test

123 The Two Faces of HyperCard

130 Building Bridges and Gateways

136 The Accounting Software Match Game

142 Choosing a Programming Language

page 136

Reviews

150 AppleShare Revisited

151 Life in the Maze

153 Key Replacements

154 Riding the Desktop Express

156 More Than Just an Upgrade

157 Masterpiece: Theatre It's Not

158 Where Did All the Slide Rules Go?

159 The Video's in the Works

161 The Big Picture
windows on a small screen.

162 The Digital Audio Workstation
Sound Designer and *Softsynth.*

164 Current Events
C.A.T. desktop management system.

165 Amazing Space
Space Quest adventure game.

166 Financial Plans for Pros
Optum-3 custom financial planning.

167 Take a Note
Comment attaches notes to windows, text blocks, or spreadsheet cells.

169 Hold Those Disks!
Seven disk holders–plain to fancy.

MACWORLD

David Bunnell
Editor-in-Chief

Jacqueline Poitier
Director/Art and Design

Jerry Borrell
Editor
Christopher Burg
Art Director

Editorial
Managing Editor: Charles Barrett
Senior Associate Editor: Adrian Mello (Features)
Senior Technical Editor: David Ushijima
Associate Editors: Gil Davis (News), Nancy E. Dunn (Departments), Janet McCandless (Reviews), Brita Meng (East Coast Editor)
Assistant Editors: Eileen Drapiza (New Products), Valerie L. Kuletz, Jane Lagas, Joe Matazzoni
Senior Copy Editor: Julie Ericksen
Copy Editors: Cathy E. Abes, William Freais, Felicity O'Meara
Editorial Assistant: Mark Hurlow
Editorial Administrative Assistant: Otto Waldorf
Editorial Secretary: Sharon Roe
Contributing Editors: Danny Goodman, Jim Heid, Steven Levy, Erfert Nielson, Lon Poole, Charles Seiter, Franklin Tessler, Bruce Webster

Harry Miller
Corporate Editor
J. Kelley Younger
Editorial Director
Karen Wickre
Editorial Administrator

Assistant to the Editorial Director:
Daniel C. Berkowitz

Art and Design
Designer: Susan Howard
Associate Art Director: Joanne Hoffman
Senior Design Associate: Leslie Barton
Design Associate: Victoria Floyd
Assistant to the Director:
Jon Christianson

Production
Director: Herbert Linden
Senior Production Manager:
Linda Manes
Editorial Production Manager:
Ellyn L. Hament
Production Editor: Susan M. Ford
Ad Traffic: Jayne Boyer
Lead Typesetter: Mark L. Duran
Typesetter: Virginia Weir
Display Advertising Supervisor:
Georgia George
Assistant: Rosanne Reynoso

Research
Director: Cheryl Woodard
Manager: Gary L. Rocchio
Assistant Manager: Ralph Ames
Analyst: Ray Petsche
Report Coordinator: Steven F. York

Corporate Development
Publicist: Shirley Gines
Special Projects: Jeffrey S. Glines
Administrative Assistant:
Emily Bower

James E. Martin
Group Publisher

Marketing and Advertising Sales
Director of Advertising Sales:
Larry Hilderbrand
Senior Account Manager/ No. California (San Francisco):
Penny Rigby (415/546-7722)
Western Advertising Manager/ Northwest: Patricia Navone (415/546-7722)
No. California (San Jose):
Cherie La France (415/546-7722)
Midwest: Shannon Dolan (312/827-4477)
Southeast: Judy Sutter (404/394-0758)
New England: Claire Wallace (617/879-0700)
New York: Bill Thompson (201/967-1350)
So. California, Southwest, Texas: (213/312-8008)
Directory/1/6-Page Ads: Niki Stranz

Circulation
Director: John Griffin
Single-Copy Sales Manager:
George Clark
Single-Copy Sales Rep: Martin Garchar
Business Manager: Gail Egbert
Promotion Manager: Daniel Orum
Promotion Coordinators:
Billie Brownell, Ed Chittenden
Fulfillment Manager: Deborah Winders
Fulfillment Coordinators:
Evelyn Adenau, Doug Norde

Administration
Director: Janet D. McGinnis
Accounting Manager: Pat Murphy
Administrative Services Manager:
Joseph Wollenweber
Employee Relations Manager:
Shelly Ginenthal
Technical Manager: Nancy Canning
Assistant to the President:
Christina W. Spence
Assistant to the Publisher:
Loretta Giglione

Corporate
PCW Communications, Inc.

David Bunnell
Chairman

Bartlett R. Rhoades
President & CEO

John Griffin
Vice President

Herbert Linden
Vice President

James E. Martin
Vice President

Jacqueline Poitier
Vice President

Cheryl Woodard
Vice President

Andrew Fluegelman
1943-1985
Founding Editor

October 1987
Volume 4, Number 10
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 $6 per year from Canada and Mexico; add $12 per year for surface mail or $80 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, 415/546-7722.
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 and the APPLE LOGO are registered trademarks, and MAC, MACINTOSH, MACWORLD, and MACLETTER are trademarks of Apple Computer, Inc. Printed in the United States of America.
Copyright ©1987 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.

IDG COMMUNICATIONS

BPA

A disk each month

PACKED with PROGRAMS

Over 500,000 sold to homes, schools and offices

DISCOVER UPTIME. Build an exciting library of programs for less than one dollar each. You deserve value. At UPTIME value is yours. Each month over 30,000 people just like you enjoy UPTIME. Your disk arrives with eight programs and more every month...

Enjoy eight programs including two new desk accessories on each monthly disk. Make your life easier. Get more from your Macintosh. Organize and be more productive with **home** and **business management** programs. Learn with **educational** programs. Enjoy all the **games** and **adventures.** Using your Macintosh is now a snap with **tutorials** and **desk accessories.**

It's easy, inexpensive and fun. It's UPTIME! Too good to be true? There's even more! Each monthly disk has reviews of the latest software, hardware and peripherals. Save time and money. Learn the strengths and weaknesses of each item we evaluate. Shop "on the disk" in our Micro Discount Mall.

Subscribe now and save. You won't believe the low price! Satisfaction is guaranteed — or your money back. You'll be amazed at just how much comes on every UPTIME disk. Make the very next one yours. Fill out the coupon. For immediate service call toll-free:

1-800-437-0033
anytime, day or night.

QUALITY PROGRAMS LESS THAN $1 EACH

NEW FOR ALL MACINTOSH COMPUTERS

FROM **Volume 1, No. 8**

Small View ■ Alphabet Talker ■ Saviour DA ■ Armonk Font ■ File Function Key ■ Kaleido ■ Panic! ■ Stuntcopter

Circle 537 on reader service card

I'm a Macintosh enthusiast who wants more. Please start my subscription to **UPTIME** immediately.

1 Disk Issue $14.95 ☐
3 Disk Issues $36 ☐
6 Disk Issues $59 ☐
12 Disk Issues $89 ☐

I'LL BYTE!!! SAVE $89.90

(Add $2 per issue in foreign countries, except Canada and APO)

Name _____ Address _____ City _____ State _____ Zip _____

Type of Computer _____ (Please make checks payable to UPTIME.)

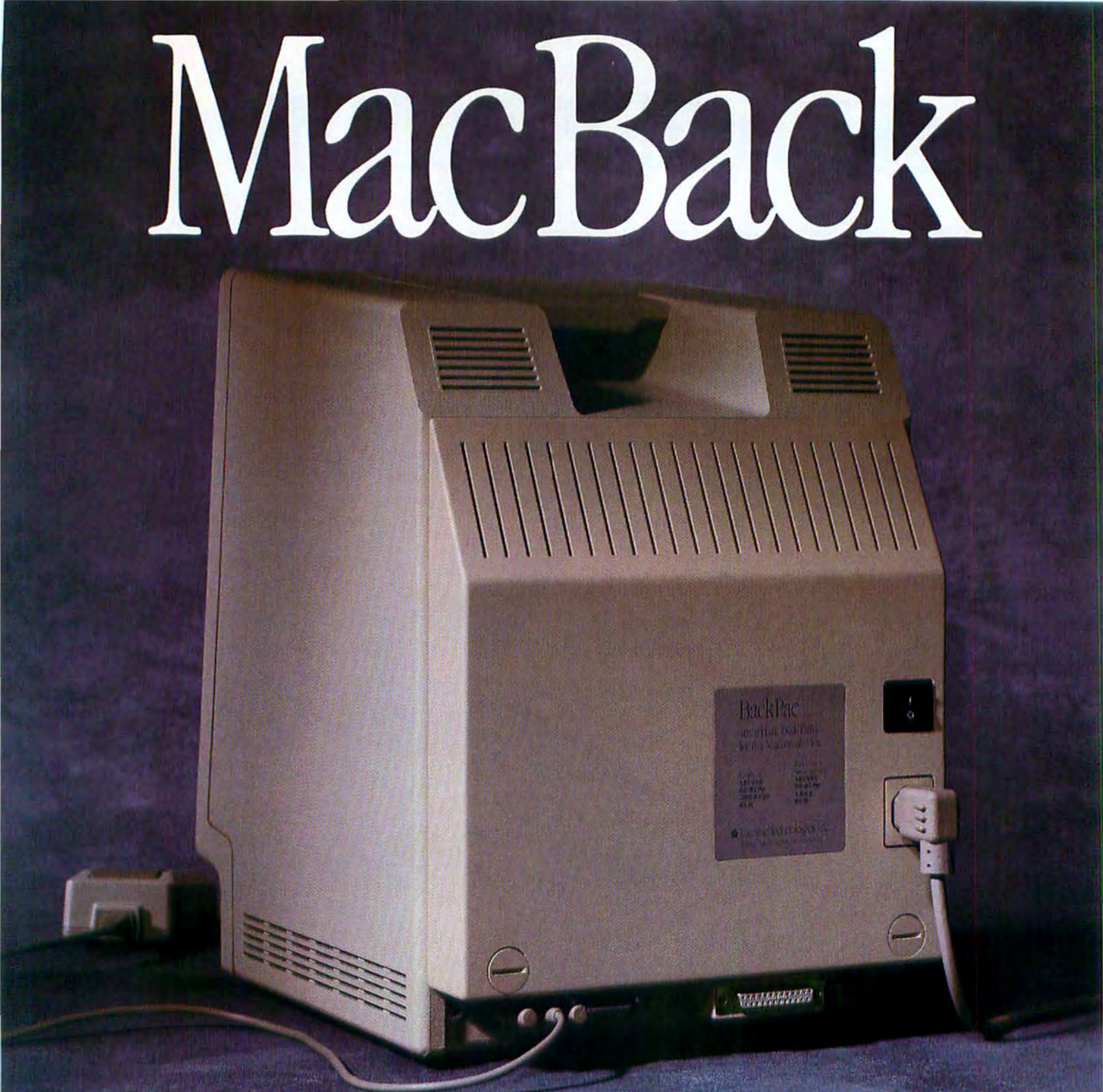
☐ Payment enclosed. Bill my: ☐ Visa ☐ MC Exp. Date _____

Signature _____ Account No. _____

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925

MW10

MacBack



Introducing BackPac 40™ by Jasmine Technologies.

Look *closely* at this photo. What you are seeing is 40 megabytes of silent fully integrated power and flexibility. This is the "upgrade path" Macintosh Plus™ owners were hoping for. The convenience and portability of an internal hard disk with the reliability and ease of installation of an external SCSI hard disk. Only 1½" thick.

Unlike other drives, BackPac fits into your Mac carry bag still attached to your Macintosh Plus.

To order call (415) 621-4339

$1299 *($1339 Visa/MasterCard)*

Dealers/Developers: call for pricing.

Jasmine Technologies, Inc.
555 De Haro Street, San Francisco, CA 94107

Air Freight $30.00. CA residents add 6.5% sales tax. C.O.D. orders add 5% + shipping. Same day rush shipments available at extra charge.
BackPac™ is a trademark of Jasmine Technologies, Inc. Macintosh Plus™ is a trademark licensed to Apple Computer, Inc. Product specifications subject to change.

Make mistakes faster.

LightspeedC™ is here. Spend your time creating. Not waiting.

Compile at 15,000 lines per minute. Link the largest programs in two seconds. Make edits as fast as you can type.

LightspeedC brings a new level of speed and efficiency to the development of Macintosh applications. This high performance programming environment combines a multiwindow text editor, compiler, linker and auto-make facility – all in one high speed system.

The compile-link-test cycle is so lightning quick, you can actually make one change at a time. Test assumptions. Explore alternatives. Go ahead, take a few chances. If you're wrong, you can correct yourself in a flash.

In fact, LightspeedC is so fast, it will dramatically shorten the development cycle. And improve the way you work.

LightspeedC gives you all this and more for just $175. For more information or the name of the dealer nearest you, call us at the number below. Find out how fast you can make mistakes. And correct them.

Lightspeed Pascal™ is here. Now you can track down errors quick as a click.

Compile at 10,000 lines per minute. Link in a blink. Debug in record time.

Lightspeed Pascal gives you the power to create your own standalone Macintosh applications. Quickly and easily. It includes a text editor, compiler, linker, project manager and intelligent debuggers – all in one easy-to-use package.

Source-level debugging means you can use all the power of Lightspeed Pascal without leaving your program. Trace through your application statement by statement – one step at a time. Plus, Lightspeed Pascal automatically points out bugs as you type your program.

What's more, Lightspeed Pascal's Project Manager automatically recompiles and relinks only the parts of the program you change – with a single keystroke.

Lightspeed Pascal gives you all this and more for just $125. For more information or the name of the dealer nearest you, call us at the number below. Find out how fast you can make mistakes. And correct them.

THINK Technologies, Inc.
135 South Road, Bedford, Massachusetts 01730
617-275-4800 • 1-800-64-THINK (Sales)

LIGHTSPEEDC and LIGHTSPEED Pascal are trademarks of THINK Technologies, Inc.
Macintosh is a trademark of McIntosh Laboratory, Inc. and is used by Apple Computer, Inc. with its express permission.

THINK

Circle 96 on reader service card.

We didn't make great ideas. Just infinitely ea

Ever since paper replaced cave walls as man's favorite vehicle for expression, the attempt to communicate ideas has been an enduring source of frustration.

That frustration has just been eased dramatically.

Because Letraset introduces Ready, Set, Go! 4.0—an enhanced version of what InfoWorld called "the new champion among Macintosh desktop publishing programs."

To put it simply, Ready, Set, Go! 4.0 is the easiest, fastest, most creative way yet devised of helping you organize, visualize and edit your thoughts onto professional-quality pages.

In fact, it removes any meaningful distinction between what you can do at your desk and what might otherwise require large budgets, long lead times and a studio full of designers.

The technically inclined will be pleased to note that it has a unique

it any easier to have

sier to express them.

block architecture that enables you to envision the finished page before it's finished.

Integrated word processing with real-time hyphenation that lets you create and design text and image simultaneously. Plus such essential tools as arbitrary runarounds, custom page sizes, style sheets and support for high-resolution graphics.

For those more concerned with the ultimate outcome of these features, Ready, Set, Go! 4.0 will help you make a raw concept blossom into a newsletter of finished elegance. Transform random brainstorms into a report of symphonic coherence. Or create a dazzling business presentation from a jumble of brilliant insights.

And although other software packages may talk about doing all this, Ready, Set, Go! 4.0 is the only one that can put it down on paper.

For more information, including the location of your nearest authorized Letraset graphic design software dealer, call (800) 722-0377. If you purchase Ready, Set, Go! 3.0 between June 1-August 11, you receive an upgrade at no charge.

Letraset®
ESSELTE

©1987 Letraset, Inc. Ready, Set, Go! is a trademark of Manhattan Graphics. Macintosh is a trademark of Apple Computer, Inc.

Circle 652 on reader service card

HE'S GOT THREE QUESTIONS. YOU'VE GOT TWO ANSWERS. YOU NEED MORE.

Next time, get your act together.

With Living Videotext's MORE,™ you can organize your presentation, anticipate every objection. And win.

So call 1-800-822-3700. In California, 1-800-443-4310.

And before you know it, you'll be the one asking all the questions.

Not copy protected. Suggested retail price $295. MORE is a trademark of Living Videotext, 117 Easy Street, Mountain View, CA 94043. © 1987, Living Videotext.

Mac Bulletin

Gobble, Gobble

Presentation graphics may be hot in business but they're even hotter when it comes to business mergers.

Take the examples of Living Videotext and Forethought, both recently acquired by larger firms.

Forethought, publisher of a leading presentation graphics program called *PowerPoint,* was purchased by Microsoft, which said it intends to enter the desktop-presentations software market.

Another developer of presentation graphics programs, Living Videotext, known for *More* and *ThinkTank,* became a division of Symantec, publisher of such MS-DOS programs as *Q&A, SQZ, Note-It Plus, Time Line,* and *4Word.* As a result of the merger, Living Videotext hopes more of its Macintosh programs will be sold to businesses through Symantec's corporate-oriented sales force.

Acquiring a corporate sales force was a prime motivation for another merger. Borland International, known for *SideKick, Reflex* and *Turbo Pascal,* said it was acquiring Ansa Software, which publishes the MS-DOS relational database program *Paradox.*

A theme running through the current merger trend was voiced recently by Dave Winer, president of Living Videotext: "We found it was necessary to have more resources to stay competitive in this market, where there are more and more large players."

Apple Goes for Four

Apple has upgraded four of its most popular applications. *MacDraw* 1.9.5, *MacWrite* 4.6, *MacProject* 1.2, and *MacTerminal* 2.2 are now compatible with the Mac II and SE and with Apple's file server, *AppleShare.*

Until September 30, 1987, Apple customers can upgrade free of charge by taking the master copy of their program (the original disk with original label) to any authorized Apple dealer.

WordPerfect Meets Stiff Competition

WordPerfect, a leading word processor in the MS-DOS world, is expected to offer a unique combination of features on the Macintosh.

WordPerfect's offerings include up to 24 on-screen columns, a thesaurus, a 112,000-word spelling checker, and a number of automatic capabilities such as saving, outlining, paragraph numbering, and hyphenation.

The program can transfer *WordPerfect* files between the Macintosh and many other computers that run *WordPerfect,* while retaining nearly all the file's attributes and formatting.

Fans of *WordPerfect* have been awaiting its Macintosh debut for more than a year. Now the program will have to compete with *Word* 3.01 and *FullWrite Professional.*

Version 1.0 of *WordPerfect* is expected to cost $395. For information, call WordPerfect Corporation at 801/225-5000.

Memory Runs Scarce

Even Apple is feeling the nonavailability of 1MB memory chips and is apparently unable to meet the memory-expansion demand for its Mac II video card.

However, Dove Computer is advertising it has plenty of 1MB low-power CMOS memory chips available in 1- to 8MB configurations for the Plus, SE, and II.

Dove's substantial memory supply is a result of its long-standing relationship with Toshiba. However, Toshiba's future ability to supply memory chips is in doubt because of pending Congressional action restricting its business activities.

But as long as Dove has a supply of memory, it's taking advantage of the situation—earlier this year, Dove was rated the third largest supplier of memory chips in the United States.

Superconducting Macintosh?

Because of recent breakthroughs in superconductivity, many Mac enthusiasts are wondering, when can we expect a superconducting Macintosh?

While a superconducting Mac operating at room temperature may be years away, its prospects seem increasingly bright.

For example, look at what's happening with the Josephson Junction, a switching device that can operate ten times faster than our best conventional computer circuits when in a superconducting mode.

Not only is speed way up, but there's almost no heat loss with superconductors. As a result, these Josephson Junctions can greatly reduce the size of supercomputers (such as the Cray) by packing many more transistors into a much smaller space and by possibly eliminating bulky cooling equipment.

Does that mean we can expect a "Mac/Cray" on our desks in a few years? No, but ten years ago most of us probably didn't expect the power and ease of use of a Macintosh either.

68030 Spawns Cottage Industry

Motorola's MC68030 microprocessor, which will be in production late this year, is expected to prompt a cottage industry that will produce adapter cards to upgrade Mac IIs to the newer and faster CPU.

Although not simple to develop, these cards will essentially change the pin assignments on the 030 so it can plug into the socket normally occupied by a Mac II's MC68020. A cable can come off the adapter board to connect the 030's internal MC68451 paged memory management unit (PMMU) with the PMMU socket on the Mac II's system board.

Motorola engineers expect the MC68030 to yield twice the performance of the 020. They also claim that the 030 is 100 percent upwardly software compatible with the entire

(continues)

family of Motorola M68000 microprocessors.

Also available with the 68030 will be a new MC68882 math coprocessor that is upwardly software compatible and pin compatible with the MC68881 now included on every Mac II system board. Like the 030, the 68882 offers about double the performance of the 68881, claims Motorola.

Perhaps somewhere deep in Apple several next-generation Macintosh prototypes with 68030s and 68882s are beating away at speeds that rival present-day workstations.

Love Them Bugs

One of our regular contributors, Prasad Kaipa, wants to alert you to the following bugs he's found in both the LaserWriter and the LaserWriter Plus:

- If you print a document that empties the paper tray, a PostScript error will occur intermittently.
- Print more than 15 copies of a document while on an AppleTalk network, and a time-out condition occurs that aborts the print job. Reason: Laserwriter turns AppleTalk off while printing, and AppleTalk disconnects after 2 minutes.
- Print a document with more than 10 patterns plus a bit map, and you can expect PostScript errors. Leave out the bit map and chances for errors are reduced. Reason: pattern imaging takes up almost all the LaserWriter's memory, leaving virtually no memory for bitmap imaging.
- Try manual-feed printing on standard U.S. letterhead while you have a European (B5) letterhead tray in the LaserWriter, and you'll get a B5-formatted letter. To work around this, make sure the paper tray in the printer matches what you've specified in the dialog box, even if you're feeding the paper manually.

Apple is aware of these bugs, but it's unlikely that the next version of the LaserWriter's ROM will remedy them. If you plan accordingly you can avoid the errors, or at least know what causes them.

PageMaker and Word Upgraded

Annoying problems found in *Microsoft Word* 3.0 have been corrected in version 3.01, claims Microsoft.

Microsoft also upgraded *Word* to be compatible with the Macintosh II and to do better with file conversions, pagination, and printing on non-Apple serial printers.

Updates have been sent free of charge to registered users of version 3.0. Users of *Word* 1.05 who registered their copies before October 1, 1986, may upgrade to version 3.01 for $99. A special promotional upgrade price of $50 is still available for those who registered *Word* 1.05 after October 1, 1986.

Meanwhile, Aldus has shipped *PageMaker* 2.0a, which is compatible with *Word* 3.01 and includes an "export filter" for T/Maker's *WriteNow*.

PageMaker customers who purchased version 2.0 after July 1 may receive 2.0a at no charge, providing they mail a copy of their sales receipt along with their registration card to Aldus. Aldus Extended Technical Support subscribers will receive the product free. All other registered users can purchase the enhanced version of *PageMaker* for $10.

The AppleFax Breakthrough

By early November you should be able to send and receive Macintosh files and facsimile documents worldwide, using Apple's recently announced AppleFax modem and AppleFax Resource software.

You can create a fax document by word processing it on your Macintosh. Then you can print the file on any fax machine in the world simply by selecting AppleFax Resource from the Chooser. You'll be prompted for the fax machine's phone number and the time you want the message sent. It can be transmitted immediately or sent later–possibly at night when telephone rates are lowest.

Your AppleFax station, as Apple calls the combination of AppleFax modem and software plus your Macintosh computer, can also be set to automatically receive fax documents, which can be printed on an ImageWriter or LaserWriter using special fonts optimized for fax reproduction.

AppleFax is fast–it operates at 9600 bps. But its one-way transmission mode means it can't be used for interactive communications such as bulletin boards, or for information services like Dialog.

The modem and software will cost between $600 and $700, plus the cost of a serial port cable.

Mac II Runs MS-DOS Programs

A new program for the Mac II, called *SoftPC*, runs MS-DOS programs just like an IBM PC or compatible computer.

That's the claim of *SoftPC*'s inventor, Rod MacGregor of Insignia Solutions in London.

"It means we've captured the golden egg and put it on the Mac II," he said. "People used to have to buy an IBM PC or compatible to run MS-DOS programs–now they can do it right on their Mac IIs."

SoftPC will list for $595 but it's expected to be available in the fourth quarter of this year through Softsell.

SoftPC also allows the user to transfer files between MS-DOS and Macintosh operating systems. When a Mac II is running Apple's planned UNIX-based operating system, A/UX, *SoftPC* will allow multiple windows. Each window will run any of the three operating systems. Compatible files can be transferred between windows using regular file transfers and cut and paste.

"We emulated the PC by simulating every integrated circuit chip," said MacGregor. "That was the easy part. The hard part was getting the program to work at different operational speeds."

MacGregor claims that the Mac II running *SoftPC* executes programs at about the speed of a PC XT. When *SoftPC* is running on a Sun Microsystems workstation, the speed equals that of a PC AT.

SoftPC now works on a Sun workstation in a UNIX environment. Its success has raised interest among computer manufacturers who see the potential for running other programs on their systems, MacGregor said.

As a result, Insignia is carefully selecting among operating systems and computers as it picks its next project. One potential emulation would allow the IBM's OS/2 to run on the Mac II.

For further information, call Insignia in Los Angeles at 213/850-7170. □

Rodime drives for the Mac.

Speed like you've never seen.

The fastest average seek times of any hard disk drives for Macintosh™ . . . 28ms! And the largest capacities.

A combination any Mac user would love.

The 450 RX™—45 megabytes of internal storage for the Macintosh SE and Macintosh II.

The 1000 RX™ and 1400 RX™—100 and 140 megabytes of internal storage for the Macintosh II.

And the PLUS External Series for the Mac Plus and SE. 20 and 45 megabyte capacities that have compact housings that fit right under the Mac.

The 20 and 45 megabyte internal PLUS drives have fans that cool the drives *and* the Mac Plus. Designed by Rodime for easy installation.

Best of all, the RX and PLUS Series drives have the unmatched reliability and support of Rodime—the largest supplier of hard disk technology for the Macintosh.

Rodime drives. The largest capacities and the fastest speeds.

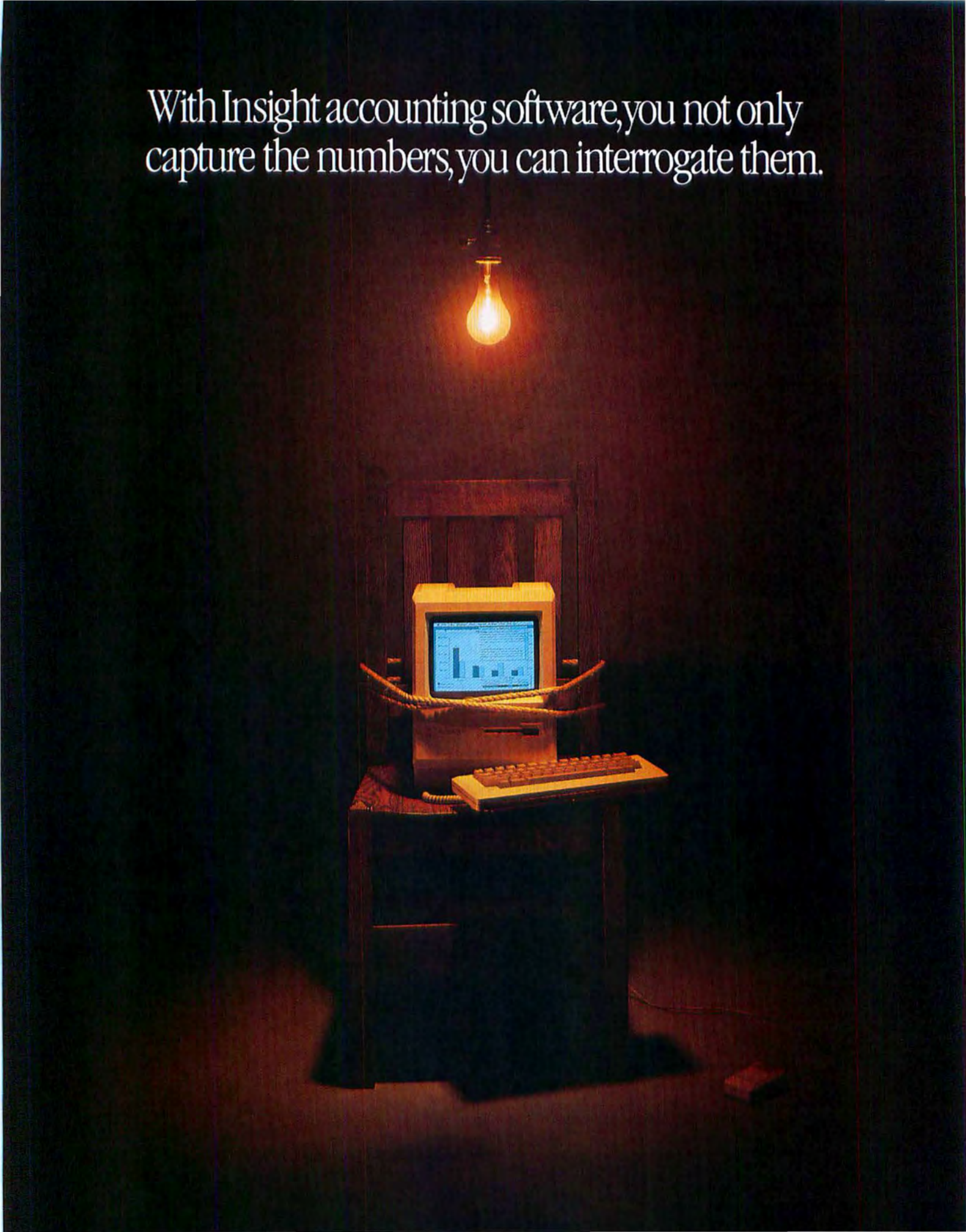
Drive one today . . . experience the speed.

RODIME SYSTEMS

Rodime, Inc. Peripheral Systems Division, 29525 Chagrin Blvd., Pepper Pike, OH 44122, 216-765-8414
Rodime PLC, Nasmyth Road, Southfield Industrial Estates, Glenrothes KY6 2SD, Fife, Scotland

Circle 149 on reader service card

With Insight accounting software, you not only capture the numbers, you can interrogate them.



You need some serious cash by next Friday.

Can you get it in time from receivables?

Do some of your customers owe you a big chunk of money this week? If so, are they good for it?

If not, can you get it from the bank? Your credit's been okay; but how will they view this current problem?

Speaking of which, just what caused it? Or who?

With Insight, you'll know. It's the accounting software that not only keeps track of your numbers, but gets them to talk.

For example, Insight tells you who's going to pay you and when—based on their actual payment history. So you'll be dealing with realistic projections, instead of pie in the sky.

The Interpretation window compares your results with industry norms for service firms, manufacturers, distributors; flags potential problem areas and people responsible; and suggests action you can take to improve your results.
The Definition window not only tells you what things mean (like "ratios") but also who's watching them (like your banker), and what accounting and business factors affect them.

Insight goes on to define and analyze your financial information and suggests possible actions to take. For example, Insight lets you know that your current ratio—your short-term assets compared with liabilities—is good and getting better for a company like yours. Yes, you could use a loan. But because Insight

The Graph window shows you trends over the last 12 months of your key financial indicators, comparing them with last year's and with industry norms.

makes it clear that your inventory is turning nicely, your banker knows he's dealing with a temporary blip, not a lost cause.

Insight's Accounts Receivable and Billing, General Ledger, and Accounts Payable packages have won top honors from both *Macworld* and *MacUser* for accounting software. And the world's largest accounting firm, Peat Marwick, "has reviewed Insight and certifies that it passes their rigorous testing procedures."*

Peat Marwick has also written a guidebook on how to choose, implement, and make the most of a small business accounting system. For a free copy of their booklet, as well as a free demonstration of Insight, call 1-800-262-6620 (or in Massachusetts, 617-242-7700) for the dealer nearest you.

And see what getting some real insight into your business is all about.

**This certification affirms our assertions presented in the software product description. A copy of their opinion letter is available upon request. © 1987 Layered, Inc.*

MacUser EDITORS' CHOICE AWARD 1·9·8·6

MACWORLD WORLD CLASS AWARD 1987

Insight is the most honored accounting software on the market today.

INSIGHT

ACCOUNTING SOFTWARE BY LAYERED

Circle 318 on reader service card

new VERSION 1.1

THE NEW YORK TIMES:

"MicroPhone is a breakthrough in communications software..."

LOS ANGELES TIMES:

"The program is more sophisticated and easier to use than any...on either the PC or the Mac."

MACWORLD:

"...brings together the best traits of every Mac communications program."

INFOWORLD:

"MicroPhone is the easiest communications package we've seen."

With reviews like these who needs advertising?

They say the best advertising is word of mouth. So we're reprinting some of the multitude of words that have already been said about MicroPhone communications software for the Macintosh.

And what they're saying, universally, is that MicroPhone—created by Dennis Brothers—has far outdistanced all its predecessors. That for the novice, MicroPhone is the simplest telecom software ever devised. That for the expert, MicroPhone is the most powerful.

On-line for the lazy.

MicroPhone gives you the means to create infinitely elaborate macro (automated) routines with infinite simplicity. Its powerful script language is written in plain English, and it also features a recording mode that watches, saves, and repeats what you do. So no programming skills are required.

The upshot is that MicroPhone will save you time, hassle, and on-line fees by automating virtually every operation you now have to key by hand. Log on procedures. File transfers. And, for a good example, E-mail retrieval routines.

At a single command from you, MicroPhone will dial your E-mail service, give your ID number and password. Navigate its way through the labyrinth to your mailbox. Check for mail. Log off if there is none. And if there is, MicroPhone will collect, print, and save all messages to your disk. Then, politely log off.

If you prefer, you can direct MicroPhone to initiate this sequence simply by inserting the disk. Or automatically, at any specified time, day, night. Or at regular intervals.

Anything else you need to do, from collecting stock quotes to sending and receiving files, is just as simple.

Try it out at home or office.

You can find out firsthand just what a remarkable program MicroPhone is. Without risking a cent. We give you a thirty-day moneyback guarantee, no questions asked. Which is virtually unprecedented in software.

Since MicroPhone is not copy protected, we obviously have vast confidence both in our program. And in you.

Let's get technical box.

- 50 to 57,600 Baud
- Supports XMODEM
  - YMODEM
  - ASCII
  - 1K BLOCKS
  - MACBINARY
  - MACTERMINAL 1.1
- Emulates TTY
  - VT52
  - VT100
- Capture file On/Off
- Printer On/Off
- Auto log on scripts for information utilities provided
- Scripts invoked by
  - Button
  - Menu
  - Command Key
- Scripts have full logic constructs
- Works with ALL Macintosh models & LaserWriter
- Works with all async modems (Hayes included)
- Includes Switcher & CompuServe subscription
- Includes text editor licensed from Dreams of the Phoenix Inc.
- Documentation by Neil Shapiro

MicroPhone™

Communications Software for the Macintosh

MacUser Editor's Choice Award

SOFTWARE VENTURES™

2907 Claremont Avenue Suite 220 Berkeley, CA 94705 415-644-3232

MicroPhone is a trademark of Software Ventures Corporation © 1986, 1987 Software Ventures Corporation

Circle 210 on reader service card

David Bunnell

Benchmarking Ethics

It's time we woke up and took a good hard look at some of the shenanigans going on in the name of greed and self-interest.

Lately it seems I've been hearing more and more horror stories about the questionable ethics of some people in the computer publishing world.

Here are some notable lapses from grace that have come to my attention recently.

A software reviewer for a major computer magazine also happens to be a product manager for a leading software firm.

A computer magazine reporter willingly sells his inside source down the river in order to get an even bigger story from the source's own computer company. "We're trying to stop leaks," says the marketing executive at the company in question. "I'll give you even more information if you'll tell me which engineer spilled the beans."

The reporter downloads the name of his source and the dirty deal is done.

Six months after a magazine has reviewed a computer system, the columnist who reviewed it has not returned the evaluation equipment. The system is stacked with various boards, a hard disk, and a modem. When the system is finally (and grudgingly) returned, the manufacturer checks inside the computer and discovers that the machine has been stripped of many of its boards.

"Often, we're billed for missing equipment," admits the editor of the magazine when asked to provide an explanation for his writer's behavior. "But otherwise, companies hesitate to do anything for fear the columnist will strike out against them in the future."

A software marketer has become wary of calls from magazine advertising salespeople who represent themselves as members of the editorial department. "We have your press release, we're interested in your product, we think it meets our readers' needs," the sales rep declares, before popping the loaded question at the end of the conversation: "By the way, have you ever considered advertising in our magazine?"

"Then I get mad," the software marketer says. "If they're in ad sales, I don't need to waste my time giving them a long technical talk about my product. Now I just ask them in the beginning, 'Are you in sales or editorial?'"

In another case, an advertising rep screams abuse over the phone at a company that hasn't bought advertising space in her magazine in some time. "I just want to let you and your boss know that the way you advertise in those other magazines and not in ours is really beginning to irk me!"

Sighs the software firm's marketing executive, "Our company is private and not as big as Microsoft or Lotus or Ashton-Tate. So we have to be very particular about our advertising. We do advertise in that magazine, but not in every issue. They have no excuse for their rudeness and arm-twisting."

The truth is that computer publications are no different from any other medium when it comes to having ethical systems crash. The insider trading case against a reporter from the *Wall Street Journal*'s "Heard on the Street" column comes to mind. In television journalism too, some major networks are known to have faked battle scenes during their news coverage.

One of the problems specific to computer journalism is that many of the older journals have always been trade publications. Only with the advent of the personal computer in the early eighties did we witness the emergence of computer publications for the consumer. Consequently, many computer magazines and newspapers are advertising-driven. Their purpose is to create an environment for ads.

(continues)

Decisions, D

Visit us at MACWORLD Expo/Boston

Choose with confidence from Jasmine's wide range of quality, innovative products at affordable prices. From the pacesetting Direct Drive series, to the unique BackPac 40, you never compromise quality for price when you purchase a Jasmine product. Discover why MacWorld (July 1987) said "It's easy to fall in love with the quiet Jasmine drive."

MegaDrive™

Hard drive power with the freedom of a floppy.

MegaDrive™ is a high speed, SCSI storage device featuring removable, 10 megabyte, MegaFloppy™ diskettes which are much more reliable than other removable, mass storage products. Compact in size, it fits under your Macintosh or into a Macintosh carrying case.

In a word, MegaDrive™ is flexible. It has something for every Macintosh user. Accountants can put each account on its own disk and lock them away for safe keeping. Desktop publishers can put fonts, clip art, layouts and different clients on separate MegaFloppy disks. Musicians can organize their sound libraries and samplings and the average Macintosh user can finally make heads or tails of the mountains of floppy disks they've acquired over the years!

MegaDrive **$999**
($1029 Visa/MasterCard)

MegaFloppy Disks: $39.95 each ($41.15 Visa or M/C)
MegaFloppy Three-Pack: $109.95 ($113.25 Visa or M/C)*
**Three packs include handy Storage Case*

To Order Call (415) 621-4339

Remember that Jasmine saves you 40% or more.

Our prices include 30 Day Trial/Money Back Guarantee, and Full One Year Warranty.

Every drive is shipped with a technical hotline number to answer any questions. MegaDrive, Direct Drive 20, 40, 50, 80, 160, BackPac 40, Jasmine, are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change. Prices include 2' cable and PD software. Prices do not include shipping, CA sales tax (6.5%) or special rush handling. Apple is a registered trademark of, and Macintosh is a trademark licensed to Apple Computer, Inc.

Call for dealer and developer pricing.

s, Decisions.

Direct Drive™ Series

Hard drives that re-defined value and quality.

From the Direct Drive 20, to the revolutionary Direct Drive 80, Jasmine now offers a full spectrum of drives to meet every user's needs. Our newest addition, the Direct Drive 160, offers an incredible combination of power and speed for just $2899! The Direct Drive series is synonymous with excellent construction, no cost "extras" and high reliability.

20MB $649
($669.00 Visa/MasterCard)

40MB $999
($1029.00 Visa/MasterCard)

50MB $1159
($1193.00 Visa/MasterCard)

80MB $1399
($1441.00 Visa/MasterCard)

160MB $2899
($2986.00 Visa/MasterCard)

"The Jasmine Direct Drive 80 is an excellent value, offering not only outstanding price and performance, but an excellent price against the small disk market as well.* InfoWorld *highly recommends looking at this drive for your Macintosh."

– InfoWorld
June 29, 1987

"The Drive ran flawlessly during the review period, with very good performance and no compatibility problems of any kind."

– MacWorld
July 1987

BackPac 40™

Portability and Power for the Macintosh Plus

The introduction of the incredible BackPac 40™ has established Jasmine as the leader in innovation as well as value. Weighing less than 3 pounds, BackPac 40. silently integrates 40 megabytes of power into the "upgrade path" Macintosh Plus™ owners so desperately need. The convenience and portability of an internal hard disk with the reliability and ease of installation of an external SCSI hard disk. BackPac 40.

BackPac 40 ***$1299***
($1339 Visa/MasterCard)

"backup software included."

JasPort

SCSI Power for the Macintosh 512.

JasPort, a Macintosh Plus compatible SCSI port for the Macintosh 512 Enhanced or 512K with ROM upgrade, permits Macintosh users to utilize Jasmine's Direct Drive, MegaDrive and other SCSI devices. User installable.

JasPort ***$129***

Jasmine Technologies, Inc.
555 De Haro Street, San Francisco, CA 94107

Circle 747 on reader service card

For example, one major trade publisher, Cahners Publishing, clearly states in its corporate philosophy that its publications are primarily advertising vehicles. Naturally, you can't expect a great deal of critical reporting to come from journals of this persuasion.

Consumer-oriented computer publications are a different breed altogether. Or at least they should be. I don't think such journals can ever hope to remain successful if they're not editorially driven. For one thing, they wouldn't be able to sell enough subscriptions to be truly viable.

At some publishing companies, however, it's not uncommon for the editor of a magazine to report to the publisher, who not only has advertising as a main interest, but also runs the sales staff. These publishers frequently put pressure on editors to avoid negative stories. They pressure editors to cover products from potential advertisers. And they pressure editors to review a lot of products so that they can go to the advertisers and say, "We give you editorial coverage, so you should advertise with us."

Such publications include reader-service numbers in their reviews. Readers may think it's a reader service–but take it from me, this is nothing more than a ruse to sell ads. What happens is that after a product is reviewed or announced, the advertiser receives a couple hundred reader-service inquiries. This provides a great entree for the advertising sales rep to call the company. "Look at all the response you're getting just from this little review," goes the common pitch. "Just think of what will happen when you place an ad with us!"

A reader-service number at the end of a review is a dead giveaway that you're reading an advertising-driven magazine.

One major computer magazine features an "editor's day." This is a traveling road show designed to put potential advertisers in touch with editors and columnists. The idea is for the manufacturers to parade their products to a captive audience of the magazine's editors, who are required to make the trip. It's torture, but they have little choice except to be there.

Then the advertising squeeze is put on the companies to advertise in the magazine.

To my mind, and throughout the history of journalism, really good editors are reader-oriented, not advertising-oriented. Good editors and computer journalists have to put themselves into the shoes of their readers. They have to know the problems and challenges of implementing and using technology.

Reporters have to be ready to blow the whistle on products that don't work. They have to tell readers when a product has a lot of features but is too complicated to use. They have to really find out if the package is bug-ridden or if it lives up to its promise.

We all have to guard against being so enthusiastic about new technology that we overpromote it. The computer press has certainly been guilty of that. We shouldn't simply be pushing people to buy new hardware and software all the time. We must always be showing our readers how to use existing resources better.

...a strict code of ethics in the field of computer journalism

Macworld is dedicated to providing "power to the reader." In fact, this is what sets us apart from other publications. We do not want to view technology as being good in and of itself, or to look favorably on new products just because they represent new technology.

At *Macworld,* we like to raise questions that aren't usually asked. We want to know about the product's long-term benefit to the customer. How is that technology going to make our readers' workplaces more productive? How will it qualitatively improve the work process? Is the product better than another similar product? Or would it perhaps be better not to buy any such product at all?

We believe that whether you're a multiple-unit buyer or a single-unit buyer–whether you're consuming one or a thousand–you have a basic right to a certain level of quality and performance.

We feel it is our journalistic responsibility to delve into issues like after-sales support, warranties, dealer service, and the capability to expand and upgrade. Our regular *Updates* column, for example, keeps you informed about the latest versions of Macintosh software so that you can stay up to speed with upgrades.

One of the major issues that is so crucial to our readers–and one that concerns advertisers and computer journalists alike–is the question of how we review products. How do we choose the products we review? What is our methodology? What standards do we set for accuracy and subjectivity? How reliable is the critique?

Over the past few years, our reviewing process has become more and more sophisticated.

In the early days of personal computer publishing, most reviews were written by somebody who would take a package from a shelf, open it up, run it in a machine for about an hour, glance at the manual, then write the review based on his or her impressions.

Today's sophisticated readers need to have products reviewed in context. Jack Dongarra, one of the most famous benchmark creators in the field of electrical and electronics engineering, perhaps put it most succinctly in a recent issue of *IEEE Spectrum* when he stated that the best benchmark is a benchmark of real-world applications.

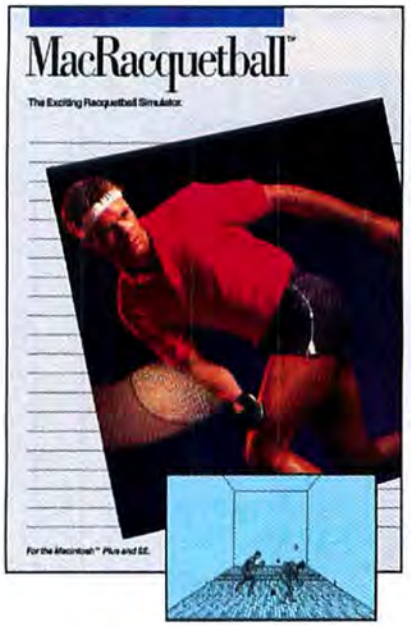
That means when an accounting package is evaluated, you need to know what it's like to use it. You want to know how it behaves when you're planning your budget. How it works inside your business–not how it performs in a lab or on an editor's desk.

At *Macworld,* we do a great deal of checking in the review process. For a software review, for instance, we have an editor working closely with the author who is reviewing the product. They both have the software package–and they both put it through its paces. The editor verifies the author's findings by duplicating the procedures on his or her machine.

Then we have a technical editor who checks the technical aspects of the product to make sure that what the reviewer says about the program is accurate.

Compounding the complexity of the review process is the fact that the products themselves have become increasingly complex. When the Macintosh first came out, the 128K Mac was so simple and easy to use. Now we have a much more complicated machine with multitasking, lots of memory, and a wide variety of features and options. Using a software package on the Mac is no longer the simple task it used to be.

(continues)

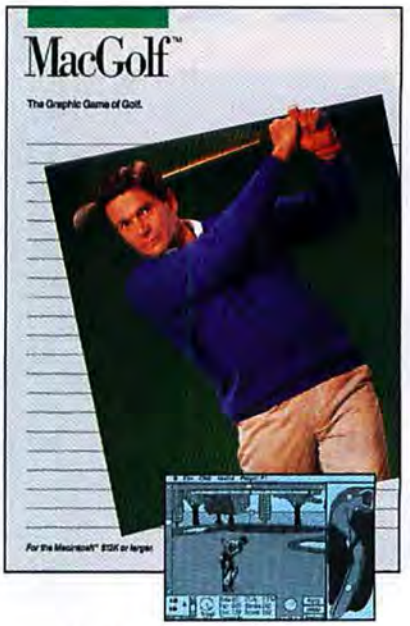


The hottest sport on a court – the hottest game a Macintosh™ can handle.

Even if you've never been on a racquetball court, you'll spark to the excitement of this challenging simulation.

MacRacquetball turns your Macintosh screen into a full perspective 3-D display of court, players and ball. With the mouse, you have complete control of player position, ball placement, ball speed and shots. Two people can play the same game over AppleTalk® or modem.

Superb graphics give MacRacquetball completely convincing realism. There are more than 1000 frames of ultra high speed digitized animation. It's one racquetball court that's always open when you're ready to play.

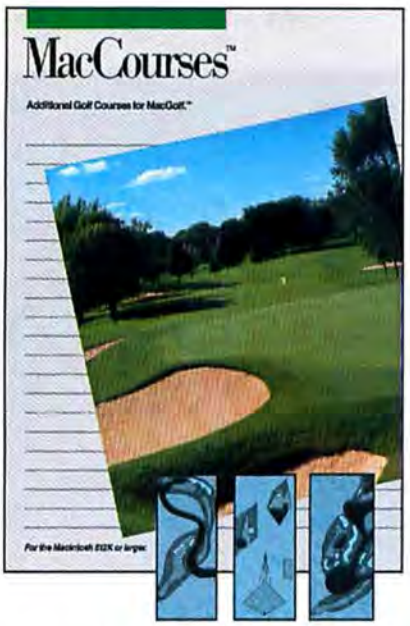


Enthusiastic players everywhere have made MacGolf the best selling Macintosh game ever.

MacGolf puts you in the picture, a full perspective 3-D simulation of realistic golf action. You match your skills against fairways, roughs, bunkers, water hazards, sand traps and trees.

MacGolf gives you a player's eye view of the course, in any direction, and an aerial overview of each hole. You have complete control of your position, ball placement, ball speed and direction, and selection of all 14 clubs. Digitized graphics and sounds add to the excitement.

MacGolf is so close to the real thing it will improve your golf game. And by the time you've reached the eighteenth hole you'll know you've been in a real contest.



When you have the best selling Macintosh game in the world, what do you do for an encore?

Here's new turf for adventurous MacGolfers. These are courses to conquer for mouse wielding pros who have taken the measure of the original MacGolf courses.

If you liked MacGolf, you'll love what MacCourses brings to the screen. Four new 18 hole, par 72 courses: Cedar Creek, Golden Sands, Thunder Ridge and PCAI International. The fairways, traps, hazards, and putting greens of MacCourses are in a whole new league.

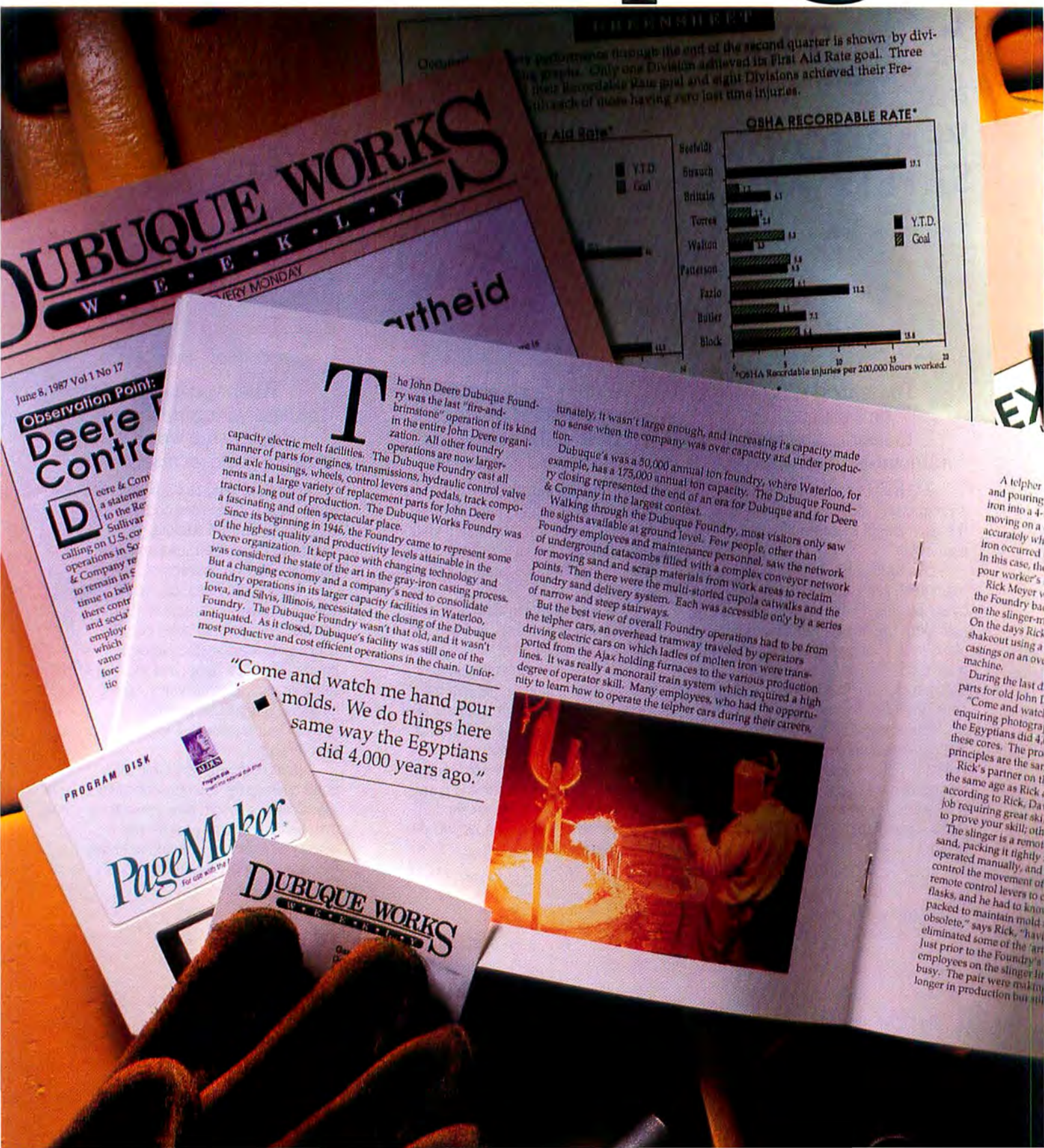
If you thought MacGolf was good training for the outdoor game, MacCourses should turn you into a pro. Get MacCourses now, use it when you're ready – you never know when you'll need the challenge.

PCAI™

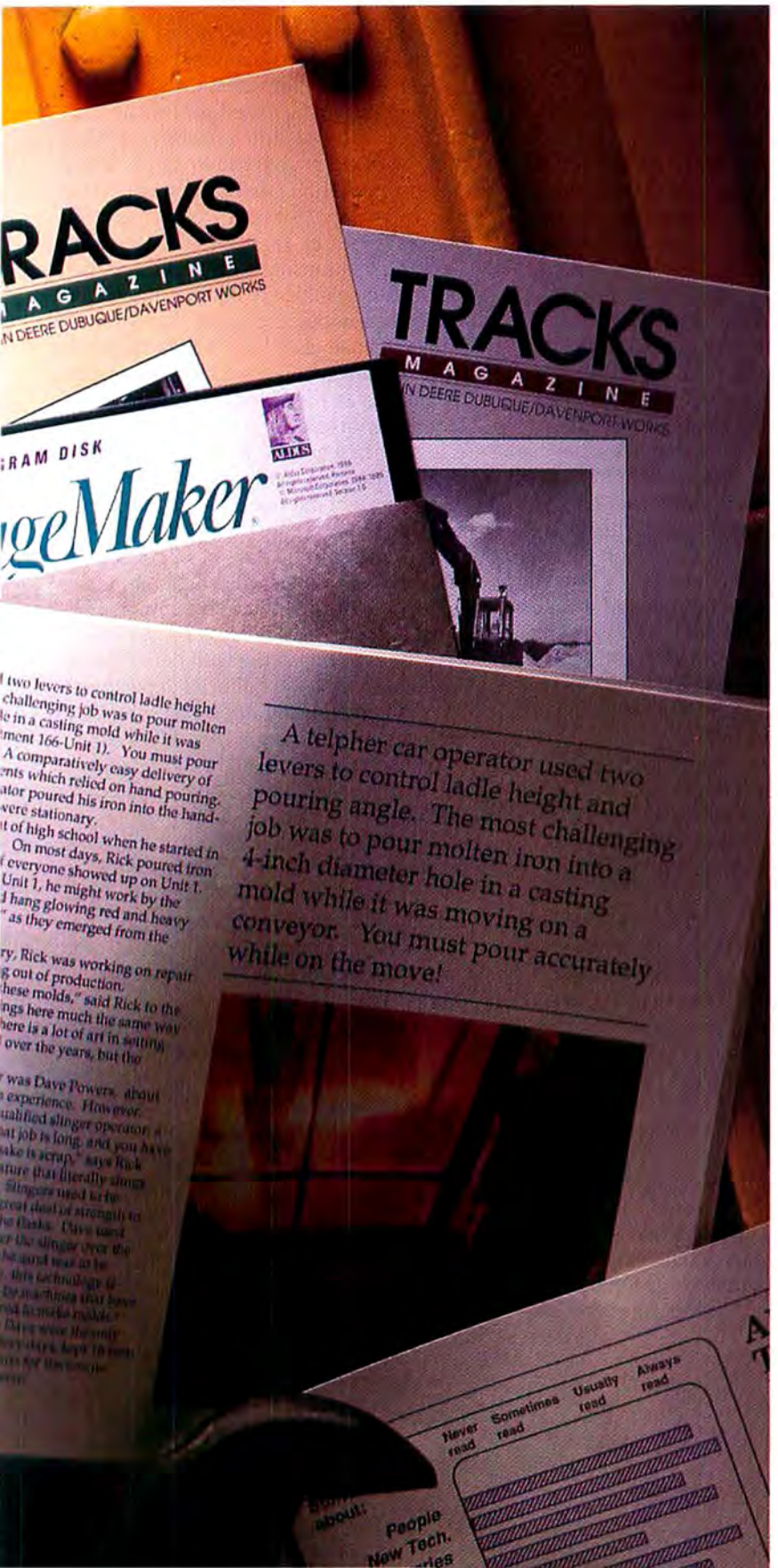
©1987, PCAI/Practical Computer Applications, Incorporated 612/427-4789
Macintosh and AppleTalk are trademarks of Apple Computer, Inc.

Circle 211 on reader service card

We're Helping De



ere Make Tracks.



John Deere's® Gary Olsen was in a quandary.

As editor of employee communications, he wanted to expand the newsletters and magazines he produced for the people who build John Deere construction equipment at the company's Dubuque and Davenport Works. But he also needed to reduce his publishing expenses.

Then Gary Olsen heard about PageMaker® desktop publishing software.

Already he's using it to make *Tracks* magazine, a weekly newsletter, safety updates, business cards, posters—even a four-color book. All for a fraction of the cost of traditional publishing.

But that kind of success should come as no surprise when you consider that more businesses are producing more of their printed materials with PageMaker than with any other desktop publishing software.

So put PageMaker on your staff today. It'll improve your printed work by leaps and bounds.

For a VCR Version of PageMaker, Call 1-800-33-ALDUS.

To see a full demonstration of what PageMaker can do for you, order our 30-minute VHS tape for just $9.95. Or visit your authorized Aldus dealer.

ALDUS PageMaker®

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

©1987 Aldus Corporation. PageMaker and Aldus are trademarks of Aldus Corporation. John Deere is a trademark of Deere & Company.

Circle 306 on reader service card

MiniCad™

Let Others Speak for Us

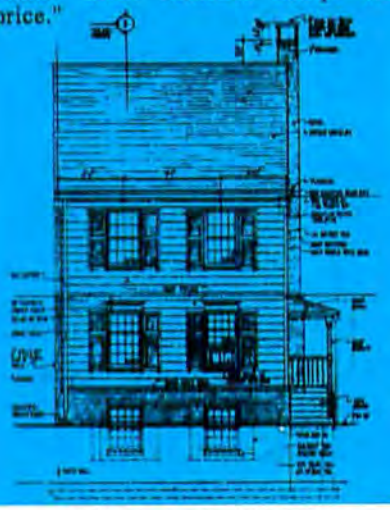
Computer Graphics:
"MiniCad even beats AutoCAD.. it combines 2D and 3D features in one package.. a sophisticated 2D and 3D drafting program that is clearly intended for the professional CAD user."

CAD/CAM Journal:
"A major contendor in the Macintosh CAD marketplace.... MiniCad offers enormous functions for the price."

Graphic Perspective:
"MiniCad... is a wonderful example of one of those pieces of software that slips onto the scene unannounced, quietly surpassing all similar programs that break in on the market with a huge splash."

Personal Publishing:
"MiniCad bridges the gap between everyday drawing applications and professional CAD programs, and it combines the best of both."

MacWorld:
"MiniCad achevies an ideal balance of simplicity and capability.. Don't let the name fool you.. there is nothing "mini" about MiniCad except the price."



Priced at only $495.00

MiniCad™

is developed and produced by

Diehl Graphsoft Inc.

8370 Court Ave.
Suite 202 Ellicott City, Md. 21043
301-461-9488

Circle 634 on reader service card

David Bunnell

Therefore, our reviewing process has become much more sophisticated. For example, we have three certified electrical engineers on the *Macworld* staff, making sure that we're technically up to snuff.

As *Macworld* has matured over the years, we've learned not to be deterred by flak about our reviews. We are accused of all kinds of things by advertisers. We might be accused of having a regional bias by an advertiser in Texas who feels we cover too many California products simply because our offices are here. Small companies say we cover too many products from big companies, and big companies complain that we cover too many insignificant products from small companies.

Obviously, no one welcomes a bad review. But when we do print a negative report on a product, we sometimes get an incredible response from the manufacturer. Interestingly, the most vociferous objections come from smaller companies who chose to use what resources they had for promoting the new product instead of fine-tuning it. They will write letters to the publisher, to the president, to the chairman, and to the editor. They'll also write letters to other advertisers about how they believe they've been injured and wounded. They'll insist that the reviewer wasn't expert enough in the field, or that the reviewer had a bias. They'll even claim that the reviewer was in cahoots with one of their competitors.

None of these claims are true, of course. But we do have to deal with these accusations. We have to stand firm with advertisers, and at the same time be conscious of the economic reality of their situation.

The fact is that a review in *Macworld* carries a great deal of weight. It can stimulate sales in the case of a positive review, or it can suppress sales in the case of a negative review. Sometimes when a product is given a negative critique, the manufacturer may lose some business. Distributors may not want to carry as many of its products. Or the company may lose an important OEM sale.

We are extremely sensitive to the fact that a negative review can be damaging to a company. That's why we put such a high priority on accuracy and fairness.

In a sense, *Macworld*'s reputation itself gives us a great deal of freedom. Ultimately, advertisers realize they're less interested in the editorial opinions of our writers than in knowing our readers. They want to reach those 350,000 people, each of whom influences thousands of dollars in hardware and software purchases every year.

In order for us to serve our readers optimally, we use as many ways as possible to keep tabs on their needs. We do this by conducting sophisticated surveys and focus groups, by attending user-group meetings, by talking to people in corporations, by using bulletin boards and, most important, by being highly involved in the technology ourselves. Because we have a close working relationship with Apple and the Macintosh developers' community, we generally hear about upcoming developments before anyone else does. We also firmly believe in using and advancing the Macintosh technology to the limit. It's not enough to merely report on events and take a passive role. Our first annual Technology and Issues conference, held last June in San Francisco, brought members of the Macintosh technical community together for two highly enlightening days of sessions, demonstrations, and lively discussions.

Most of the Macs we have in our editorial offices are SEs or Mac IIs. We're actively experimenting with networks. *Macworld*'s art and editorial departments are networked using *AppleShare,* and we are connected through *AppleLink* to our outside contributors. All of the art that you see in this magazine has been created on the Mac.

In fact, it would be fair to say that the journalism we practice at *Macworld* is advocacy journalism. We are user advocates. Among other things, we advocate better products, innovation, better pricing, more customer support, and honesty in the marketplace.

Finally, we advocate a strict code of ethics and proper comportment in the field of computer journalism.

Ethics are ethics are ethics. I believe that journalistic ethics are universal. There is no equivocating. The truth, as they say, is the ultimate Finder. □

Ten thousand pages, take it or leave it.

For those of you going places, here's a little something that solves big storage problems in the time it takes to say "who has the Farnsworth financial files?"

Introducing Totem.™

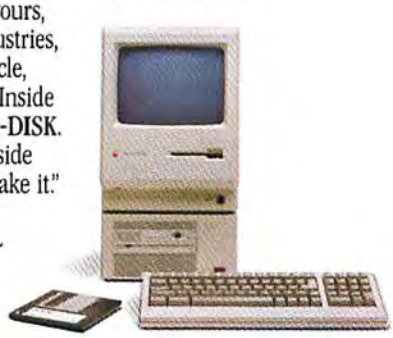
A rather revolutionary Bering 20 mb Bernoulli compact disk drive system for Macintosh computers. And, the first truly *portable* 5¼" system. One that lets you tote around 10,000 pages of data on a sleek cartridge about the size of a piece of bread.

Translated, that's 25 times the storage you get on one standard floppy.

Yet unlike floppies, the Totem is no slouch for speed. It's just as fast as a hard disk. In fact, your computer will think it's a hard disk. You can even share it with co-workers. And its advanced Bernoulli aerodynamics make it resist head crashing. If you've ever used hard disks, you know what a pain that can be.

But the real beauty of Totem is that it fits perfectly right under your Mac. No mess. No fuss. And no extra hardware to buy. To add storage, just pick up another Totem cartridge.

Last, but certainly not least, there's a whole family of Totem drives to choose from. They're all in the brochure. To get yours, write or call Bering Industries, Inc., 280 Technology Circle, Scotts Valley, CA 95066. Inside California, call 800 533-DISK. Call 800 BERING 1 outside California. Just say "I'll take it."



BERING™
A MOUNTAIN COMPUTER, INC. COMPANY

Totem is a trademark of Bering Industries, Inc.
Macintosh is a registered trademark of Apple.

Circle 627 on reader service card

WE HAVE THE BEST VIEW OF THE MACINTOSH WORLD: 1664 x 1200

SIGMA DESIGNS

When they say a picture is worth a thousand words, they're describing LaserView,™ ultrahigh-resolution large-screen monitors from Sigma Designs.

Available for the Macintosh™ SE and Macintosh II in 15-inch and 19-inch sizes, LaserView provides a 1664 x 1200 on-screen pixel display (equal to 11 Macintosh SE screens). And because LaserView is a noninterlaced monitor, text and graphics are displayed virtually flicker-free. Even facing pages.

You can select the default display mode of 1664 x 1200 pixels (2,000,000 pixels). Or choose the standard Macintosh resolution of 72 dots per-inch which yields an on-screen pixel resolution of 832 x 600 (500,000 pixels). You can choose from three cursor sizes and two system font sizes for legibility.

For more information on LaserView, call Sigma Designs today at (415) 770-0100. Or visit an authorized Sigma Designs dealer.

Because for computer-aided engineering, advanced desktop publishing and anything in between, LaserView offers you a totally new point of view.

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

LaserView is a trademark of Sigma Designs, Inc.
Macintosh is a trademark of Apple Computer, Inc.
For commercial use only.

Circle 743 on reader service card

Letters

A forum for Macworld readers

On the State of the Art
After five years of fighting the clones, IBM has found out that the Macintosh has what IBM wanted all along. Big Blue introduced its new systems to combat clones, while Apple's new machines are real advances. The clones had something extra going for them: because IBM owned none of the PC architecture, other companies could build their own PC and sell it at whatever price they wanted. Because Apple owns the Mac's identity, its performance will never be matched.

Alan Johnson
Denton, Texas

Macintosh Archives
I am interested in starting some genealogical research on my family. Is there a program that keeps such records on the Mac?

Cynthia Croucher
Houston, Texas

Correction
Spelling Champion (Reviews, *July 1987*) *automatically makes changes in word processing documents, but that has nothing to do with its transfer function.* Spelling Champion's *transfer utility automatically switches back to the word processor so you can print the corrected document or continue writing and editing.*

The photo of Odesta's Double Helix *was left out of "World Class Macintosh" in the September issue. Our apologies.*

We haven't evaluated any of the genealogy software, but here's a list: Mac Gene *from Applied Ideas, Box 3225, Manhattan Beach, CA 90266, 213/545-2996;* Family Heritage File *from StarCom Software Systems, Windsor Park East, 25 W. 1480 North, Orem, UT 84057, 801/225-1480; and* Family Roots *from Quincept, Box 216, Lexington, MA 02173, 617/641-2930.–Ed.*

Getting It on Your Chest
How do I get a Mac logo T-shirt and other such goodies?

Marx Tait
Ypsilanti, Michigan

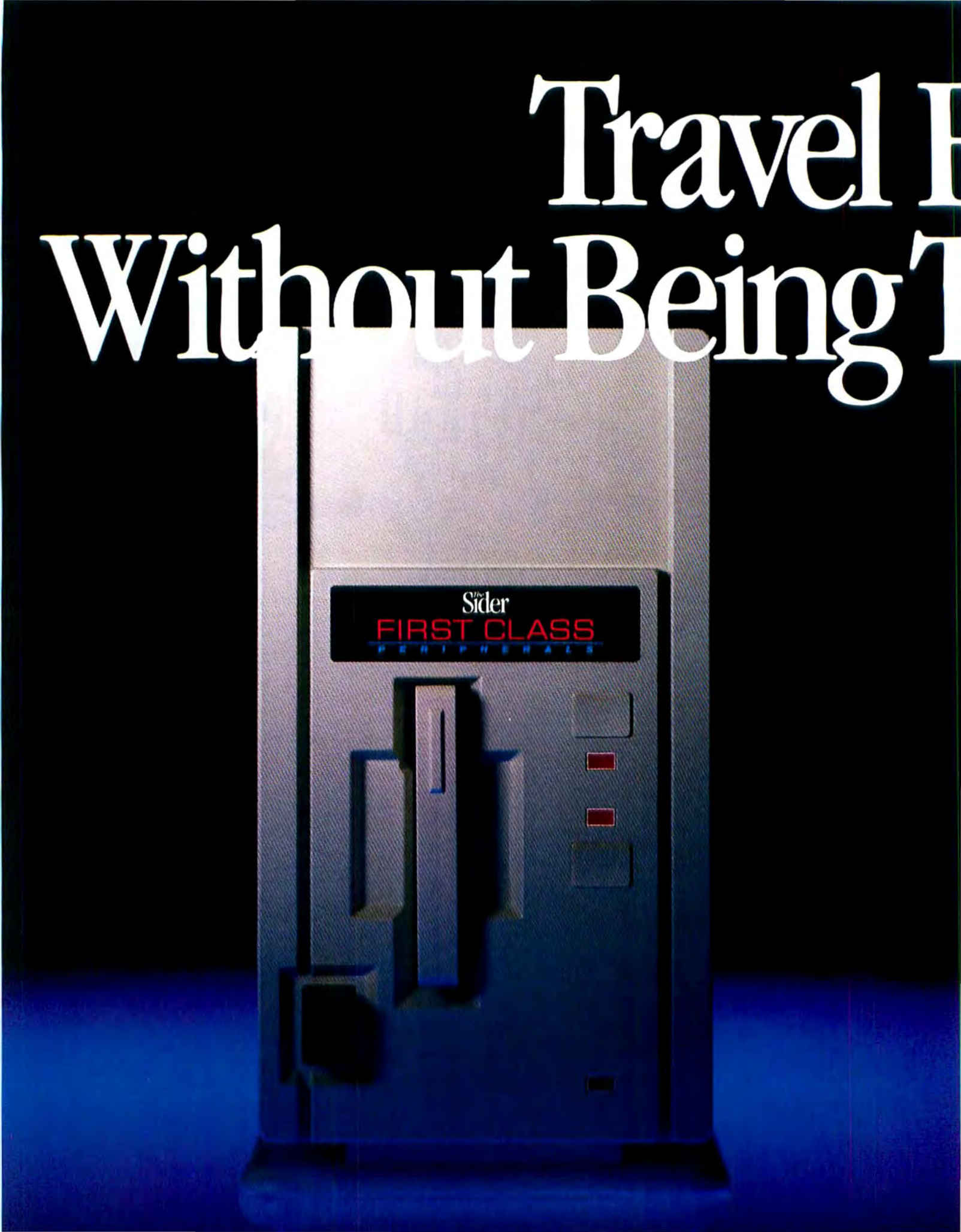
For a catalog, call 800/345-2888 or write to the Apple Collection, P.O. Box T, Gilroy, CA 95021-2249.–Ed.

Copy Protection Mischief
It was nice to see molecular biology included in your article on the Mac in the sciences ("The Labtop Macintosh," October 1986). However, you neglected to mention one "feature" of *DNA Inspector II* that makes it useless for me and many of my colleagues: an unfortunate form of copy protection by which, according to the author, unauthorized copies of the program randomly and without warning insert errors into the output. What would the reaction be if *Excel* were protected by random changes in worksheet formulas?

I have never before heard of a researcher constructing a system designed deliberately to sabotage colleagues' work.

(continues)

Travel F
Without Being T



rst Class
aken For A Ride.

Introducing Our Latest Sider, Model C46. 40 Megs Primary Storage. 60 Megs Integral Tape Backup. $1995.00 Total.

First, The Problem.
Apple is telling the world these days that the power, versatility and compatibility of the new Macintoshes are going to end forever any doubts that these are first-class business machines.

But what kind of business you actually get down to has as much to do with the peripherals you attach as it does the computer itself. Take mass storage. For many companies, serious business means nothing less than 40 megabytes of primary capacity and at least an equal amount of backup — ideally in the same subsystem package.

A few packages do exist with those specifications. But the price tags are absolutely stratospheric — which for many companies anxious to get down to business can be downright catastrophic.

First Class. The Solution.
The Sider Model C46 changes all of that. Sure, you get capacity, speed, performance, reliability, backup and restore. You get a slim, smart-looking, easy-to-install unit that is compatible with the Macintosh Plus, SE and II — and the Apple II+, IIe and IIcs as well. And with our 60 meg tape (not 40 meg, like the competition), you get backup you can lock up for security and, thanks to total Sider cartridge interchangeability, you get data you can pack up and take anywhere.

But what you get that really astounds is a price tag the others can only envy. It reads $1995.

It also reads First Class Peripherals, for those of you wondering how that price could possibly be attached to this product. For years, the names "Sider" and "First Class" have been synonymous with truly affordable, zero defect mass storage among Apple II users.

Now, we intend to establish the same standard in the Macintosh world. With a family of subsystems that includes, besides the Model C46, both a 20- and 40-megabyte hard disk Sider subsystem and a Sider 60-megabyte tape backup subsystem.

Call us toll free for the name of the First Class Peripherals dealer nearest you. And find out for yourself how easy it is to get down the price of getting down to business.

800·982·3232

FIRST CLASS
PERIPHERALS

3579 Highway 50 East, Carson City, Nevada 89701

Circle 445 on reader service card

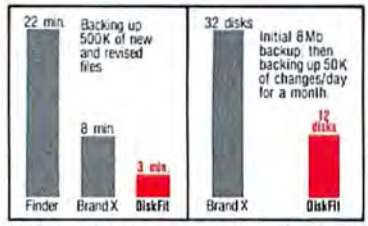
Stop singing the same old song. DiskFit makes backing up easy.

With all that precious data on your hard disk, it certainly makes sense to back up regularly.

So why don't you?

Because your current backup "solution" is so much trouble, you probably can't stand putting yourself through the torture.

Now, there's an easy way to end your backup blues — DiskFit™.



Without DiskFit, backing up a day's work can be so tedious you might be inclined to skip it altogether – and leave your data unprotected.

Unlike other backup programs, DiskFit's backup disks remain a manageable size – even after months of incremental backups.

DiskFit is automatic. DiskFit manages the entire backup process so you don't have to. It scans your hard disk for files that need to be backed up. Then it deletes obsolete files from the backup disks and fits your new files – in standard Macintosh format – into the reclaimed space. Automatically. And DiskFit only asks for the disks it needs. DiskFit even formats your blank floppies, verifies the integrity of the backup, and generates a backup report.

DiskFit is fast. A typical day's work is backed up to floppies in just about three minutes. Backing up from one hard disk to another is even faster.

DiskFit requires fewer backup disks. Other programs are inefficient; they don't reclaim the space left by old files, so they require an ever-increasing number of disks each time you back up.

Not so with DiskFit.

It's smart, so your backup set grows only as much as your files do. And since no directory disk is required, you have nothing to lose. Even if you lose one of your backup disks, DiskFit will recreate it.

And for AppleShare™ – Network DiskFit. Backing up becomes even more crucial when using shared volumes. If losing one person's data is bad, imagine losing an entire workgroup's. Network DiskFit is the only backup utility that restores AppleShare folder ownership and access privilege information automatically, so the network administrator doesn't have to.

Network DiskFit resides on the server volume; each user on the network can also back up their local hard disk as well as their files on the server.

Money back guarantee. We're so confident that DiskFit and Network DiskFit outperform your present backup system that if you are not completely satisfied, return your purchase to us within 30 days for a full refund.

Get DiskFit and stop singing the backup blues.

- **DiskFit: $74.95**
- **Network DiskFit: $395.00**

SUPERMAC SOFTWARE

295 N. Bernardo Avenue
Mountain View, CA 94043
(415) 964-9694

System requirements: Macintosh 512, Plus, SE, or Macintosh II with one or more HFS-format hard disks.

AppleShare is a trademark of Apple Computer, Inc.
© 1987 SuperMac Software.

Letters

Without copy protection, the program could be a useful tool; as it stands, it is dangerous and unacceptable in the laboratory.

Peter Blier, M.D., Ph.D.
Yale University
New Haven, Connecticut

DNA Inspector II's *copy protection allows the owner to make two copies that can be verified by the master disk. The original disables unverified copies in such a way that errors may result, but that's not the goal of the copy-protection scheme, according to Gross. Textco has replaced the program with an upgrade.* DNA Inspector II Plus, *which is HFS compatible, allows making copies onto two hard disks but prevents the program from running on any other hard disk.–Ed.*

WYSIWYG Worries

I want to add a caveat to your article "Font Facts" (February 1987). Installing just a single-size screen font for a font in the laser printer can result in discrepancies between what shows on the screen and what prints. In a document with several font sizes that aren't installed in screen versions, these differences affect on-screen formatting, and in some cases cause different word wraps and leading–even to the point of leaving some material outside the text block so it doesn't print at all.

T. S. Robinson
Batavia, New York

We Stand Corrected

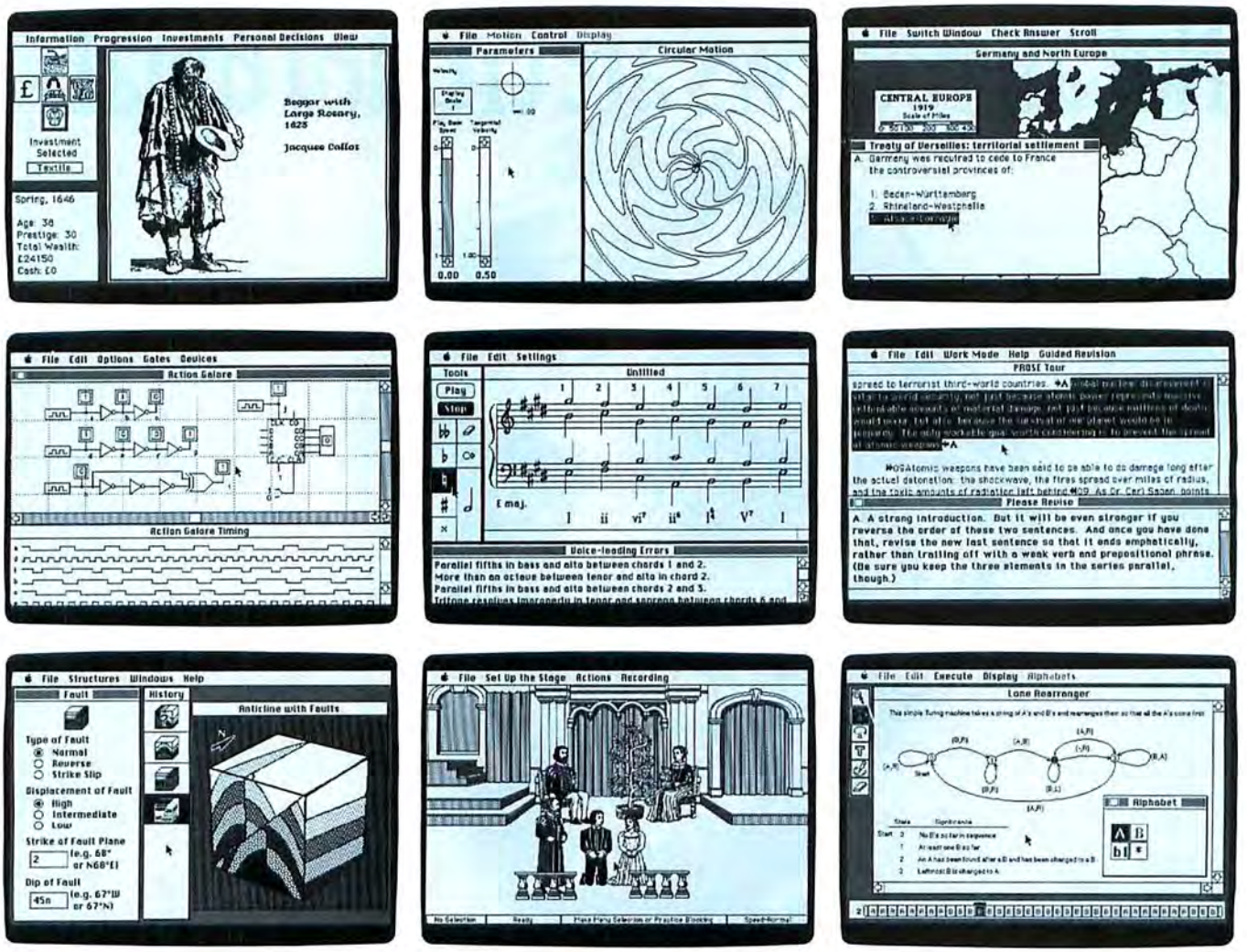
In your mention of Edudisc's *Mentor/MacVideo* system (*Macworld News,* May 1987), you reported that the system "is in place at several colleges and universities, including Boston College." Actually, we have but a single user, who works with only the *MacAuthor* component. While Edudisc has given presentations of its system to staff at this university, we have neither endorsed nor purchased *MacAuthor* or the *Mentor/MacVideo* system.

Paul R. Dupuis
Boston College
Chestnut Hill, Massachusetts

Silence and the Word

As a longtime user of Microsoft products, including *Word* 1.05, I was excited to hear about the release of 3.0. I had never been advised by Microsoft about how to get an upgrade, so I phoned Microsoft Canada and sent in my original disk as instructed.

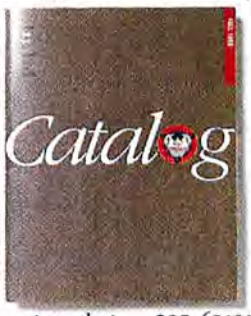
(continues)



Now teachers don't have to go strictly by the book.

For years, textbooks (and an occasional guest lecturer) were all that the faculty needed to implement their teaching plans.

But now that the computer age has reached college age, an entirely new course has opened up for professors: The Academic Courseware Exchange™, which has been developed by Kinko's® Copies.



It's a way for faculty members to incorporate educational software for the Macintosh™ and Apple® II personal computers into their classrooms. At a cost to students that's comparable to textbook prices, from $8 to $40.

Academic Courseware Exchange software has been developed by faculty members for faculty members—to help them teach their chosen subject better. Be it history, chemistry, business, electrical engineering or hotel management. And each program is tested in real classrooms before it's ever offered to the faculty.

Becoming part of the Courseware Exchange is incredibly simple. Better yet, it's free.

Just call Kinko's at (800) 235-6919® for a complimentary copy of the Academic Courseware Exchange catalog. It describes over 100 software titles. And explains how professors can qualify to preview one program at no charge—before deciding if it should become part of their curriculum.

Rest assured, once you do decide to use a particular program, your students don't have to go out of their way to get it. Academic Courseware Exchange software is ordered through Kinko's Copies, at over 300 campus-close locations nationwide. Or, Kinko's will be more than happy to have your software delivered right to your school.

So call for your free catalog today.

If you believe in going strictly by the book, this is one book that could change your mind.

kinko's®
Great copies. Great people.

© 1987 Kinko Service Corp. Kinko's is a registered trademark of Kinko Graphics Corp. Academic Courseware Exchange is a trademark of Kinko Service Corp. Apple is a registered trademark of Apple Computer Inc. Macintosh is a trademark of Apple Computer Inc. In California, call 800-272-6640. Outside U.S., call 805-967-6552.

Not all reviews are created equal.

Some reviews are press releases. Some are synopses. Some are just paragraphs or rating symbols that can't possibly tell you enough. MACWORLD gives you in-depth reviews. Comparative. Analytic. Selective. Solutions-oriented. Precisely the ones you want.

Month after month, our experts work programs thoroughly to give you the information you need to make intelligent, productive choices. MACWORLD, The Macintosh™ Magazine.

MACWORLD GIVES YOU MORE.

MACWORLD

SUBSCRIBE NOW!
SAVE $23.40 OFF THE ANNUAL COVER PRICE

Limited-time offer! Take advantage of Special Savings
Call TOLL FREE 800/524-3200
Visa and MasterCard Accepted

More for less. Honest.

☑ YES, send me one year (12 monthly issues) of MACWORLD for only $24. That's nearly 50% off the annual cover price of $47.40 and $6.00 off the regular subscription rate of $30.00.

SAVE EVEN MORE. ☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

NAME_____
COMPANY_____
TITLE_____
ADDRESS_____
CITY_____ STATE_____ ZIP_____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires March 31, 1988.

MACWORLD

4BM

More for less. Honest.

☑ YES, send me one year (12 monthly issues) of MACWORLD for only $24. That's nearly 50% off the annual cover price of $47.40 and $6.00 off the regular subscription rate of $30.00.

SAVE EVEN MORE. ☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

NAME_____
COMPANY_____
TITLE_____
ADDRESS_____
CITY_____ STATE_____ ZIP_____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires March 31, 1988.

MACWORLD

4BM

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

NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

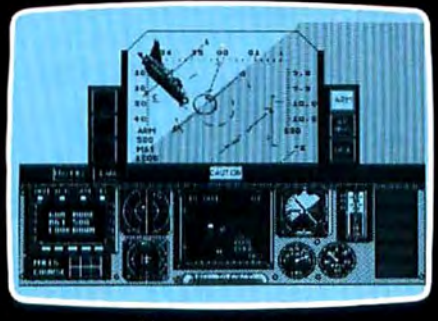
Macworld
Subscription Department
P.O. Box 51666
Boulder, Colorado 80321-1666

FALCON

THE F-16 FIGHTER SIMULATION

Climb into the FALCON cockpit and fly a highly realistic simulation of the F-16A Fighting Falcon. Perform fighter maneuvers while engaging enemy MiG's in dogfight battles OR connect two computers and go head-to-head against another plane piloted by a second person. Realism is captured by use of sound and digitized airplane images, advanced radar mechanisms, and four alternating heads-up displays. Multiple levels and missions challenge even expert pilots. Feel the exhilaration of power, speed, and maneuverability of the F-16 as you claim the skies as FALCON territory!

FALCON - Available on Macintosh 512K (Macintosh Plus compatible) and IBM 256K



Macintosh version

Spectrum HoloByte Inc.™

2061 CHALLENGER DRIVE
ALAMEDA, CA 94501 (415) 522 3584

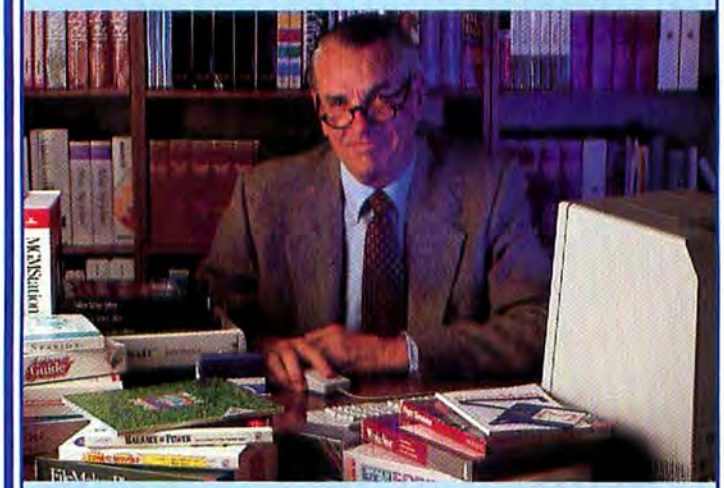
FALCON is a trademark of Spectrum HoloByte Inc.
Macintosh is a trademark licensed to Apple Computer, Inc.
IBM is a registered trademark of International Business Machines Corp.

Circle 398 on reader service card

FREE $20 LIFETIME MEMBERSHIP

SOFTWARE LIBRARY

It's Like
Having An UNCLE
In The SOFTWARE Business!



Software is expensive. So why take chances? Choose from our vast Mac Library and TRY IT FIRST. Join our thousands of satisfied customers . . . just call us and tell us what you want. We'll treat you like family.

SOFTWARE FOR RENT

Over 800 Titles Available Including:

Aztec C68K-c Compiler	87.32	Ready,Set,Go! 3.0	51.25
BPI General Accounting	32.38	Spellswell	9.89
Chessmaster 2000	8.99	Sports Problems I	8.99
Cricket Graph	29.25	StatView 512+	47.98
Dow Jones Straight Talk	12.82	Studio Session	13.52
Fonts for Headlines	10.22	SuperPaint	13.07
In-House Accountant	20.33	SuperSpool	8.99
Jazz	89.75	TopDesk	8.99
KidsTime	8.99	VideoWorks	8.99
Leather Goddesses	8.99	**100's More . . .Just Call & Ask!**	
MacDraft	35.50		
MacMemories Series	51.00	**SUPER SALE**	
MacMoney	12.18	Rodime 20MB SCSI Drive	719.
Mac3D	33.62	Panasonic/Mac Printer	263.
Microsoft (complete line)	Call!	Sony Disks SS/1.05 DS/1.58	
MultiUser Helix	95.50	Ribbons/2.95 Multicolor/10.95	
myDiskLabeler	8.99	PowerMath 2.0	63.44
PowerMath 2.0	13.79	MacOpener™ (tool)	14.36
Profit Stalker II	39.60	Volksmodem 1200	129.72

TRY IT FIRST

RENTAL APPLIES TO PURCHASE

Orders Only **1-800-847-5775**

Customer Service or In Texas **(713) 529-1100**

MasterCard VISA

SOFTWARE LIBRARY
P.O. Box 980305 • Houston, TX 77098

IBM Library Coming Soon!

Letters

For two months, I received no notification of any sort, so I phoned Microsoft again and was told that *Word* 3.0 was out of stock and would not be available until June 20. Let this warn other users that bigger doesn't necessarily mean better.

Bradley S. Logan
Midnapore, Alberta
Canada

You're one of the people caught between the initial 3.0 version and the successor that Microsoft quickly scheduled to quell the cries of "Bugs!" from users. At press time, the 3.01 bug-fix version was due to be mailed in July.–Ed.

Glue in the Works

I have used *Microsoft Works* for five months ("Insights on Microsoft Works," July 1987). The program provides a wide range of functions at a moderate price, it is easy to use, and the integration is smoothly executed overall. However, it also has serious flaws.

Aside from some annoying glitches, it lacks strengths found in other Microsoft products. Perhaps to avoid competing with other Microsoft programs, the *Works* designers have been stingy with keyboard shortcuts. I don't expect the company to sell me *Word, Excel,* and *File* rolled into one and then discounted, but *Works* should at least be a subset of the corresponding full-featured programs. I hope Microsoft will demonstrate its commitment to excellence by correcting this in version 2.

Thomas Auer
Stanford, California

Student Protest

Recently *Macworld* is expending so much effort trying to push the Mac in the business world that you seem to forget where it got its start. My university was among the first to join the Apple University Consortium, and last April Drexel's Mac user group sponsored a large exposition in the Philadelphia area. Engineers from Apple were on hand to demonstrate the Mac II, as well as third-party developers revealing new products for the Mac II and SE.

I never read about campus events like this in your magazine, though I suspect that a considerable number of your readers are college students. I think I speak for

(continues)

WITH PAPER PLUS 500 YOUR LASERWRITER WON'T NEED A BABYSITTER.

If your laser printer needs a babysitter to feed the paper tray every 10 to 15 minutes, you need PAPER PLUS™ 500, the new sheet feeder from the Laser Connection. PAPER PLUS 500 attaches to any laser printer using a Canon® CX engine. This means that if your laser printer is an Apple® LaserWriter™, QMS® Kiss™, QMS PS® 800, HP® LaserJet™ (or others), you can now load up to 500 sheets and keep your printer humming for nearly an hour without taking a break. That's a 400% increase in efficiency! And that's not all, PAPER PLUS 500 handles envelopes too—up to 100 at a time. It comes with it's own high capacity output stacker. PAPER PLUS 500 is easy to set up. Just take it out of the box, plug it in and print! And while you're at it, give your present babysitter a promotion.

For more information, call or write:
The Laser Connection
1-800-523-2696

THE LASER CONNECTION
Enhancement products for laser printers
A QMS® Company

For more information call or write The Laser Connection:
P.O. Box 850296,
Mobile, Al. 36685
1-800-523-2696

Apple and LaserWriter are registered trademarks of Apple Corp., Inc.; QMS is a registered trademark, QMS-PS is a registered trademark, and Kiss is a trademark of QMS, Inc.; HP is a registered trademark and LaserJet is a trademark of Hewlett-Packard, Inc. : Canon is a registered trademark of Canon U.S.A. Inc.

MAX YOUR MAC

SAME DAY SHIPMENT

WOULD YOU PAY $49 FOR A LIFETIME RIBBON SUPPLY?

Epson Ribbon Inker Kit
Call for Prices

Your Bede Tech Ribbon Inker Quickly Pays For Itself!

Motorized Ribbon Inker silently re-inks all ImageWriter I and II fabric ribbons again and again. Print quality surpasses new ribbons—and gets better with each re-inking! Specially lubricated black ink actually extends print head life. 4-oz. ink bottle lasts 50-100 re-inkings. Our customers love the quality, simplicity, and savings!

Bede Tech Bonus • FREE 4 oz. Bottle Black Ink, FREE Roller and Roller Cover

ImageWriter I & II Ribbon Inker Kit
BEDE TECH DIRECT $49 Reg. $67 Value

DO YOURSELF A FAVOR GET DISKORGANIZED!

Is your biggest headache finding the disk you want? Then say goodbye to frustration and wasted time with our exclusive DISKO-TECH™ Disk Organizers. Each holds up to 100 3.5" disks. Includes removable dividers and cover. Durable 200 lb. test corr. bd. with glossy white dirt-resistant surface. Stack for easy access in minimum space.

Bede Tech Bonus • Value Four-Pak $27.95. Reg. $39.80 Value
BEDE TECH DIRECT $7.95 Reg. $9.95 Value

MOUSE PAD

Your mouse will work faster and live longer. Designer blue anti-static surface, 9-3/8" x 7-1/8" with thick foam pad.
BEDE TECH DIRECT $5.95 Reg. $9.95 Value

30-Day Satisfaction Money Back Guarantee • FREE Catalog with Order.

bede tech

Call Toll Free
800-772-4536
8327 Clinton Road, Cleveland, OH 44144
216/631-4214

Member, The Bede Companies, Est. 1976

Circle 490 on reader service card

Letters

other loyal collegiate Mac users when I say that we would love to see our efforts noted regularly.

Scott M. Nichol
Drexel University
Philadelphia, Pennsylvania

Point well taken. There are exciting doings on campuses of interest to all our readers, and we'll cover them more consistently in forthcoming issues.—Ed.

And Now, Even Safer

In your review of *MacSafe* version 1.03 (*Reviews*, June 1987), you pointed out some things we have fixed in the free upgrade (1.08 version) of the program. For example, files can no longer be hidden inside folders in a Safe and accidentally thrown away.

There were some errors in that review, however, and I'd like to correct them. Protected files cannot be thrown away by accident; if you delete a Safe by removing the lock in the Get Info window, a dialog box asks if you are sure you want to delete the System file called Safe. Also, *MacSafe* files can be backed up and restored through a relatively simple procedure disclosed only to *MacSafe* owners. (Registered users can obtain the method by calling 800/325-3587 and asking for Technical Note #14; be prepared to present your serial number.) Finally, the suggested retail price is $149.95.

Andrew M. Utter, President
Kent Marsh Ltd.
Houston, Texas

Iconography

The Macintosh is popular among graduate students in physics here at California State University, Northridge, and several of us want to know how to create our own icons. Can you tell us?

Joseph R. Gonzales
Thousand Oaks, California

Icon Switcher *version 1.2 is available for $19.99 plus shipping from PBI Software, 1163 Triton Dr., Foster City, CA 94404, 415/349-8765.—Ed.*

More Foreign Fonts

In your excellent survey of foreign languages on the Macintosh ("The Polyglot Macintosh," May 1987), you neglected to include fonts designed by Paul Rappoport. His International Roman can be used for more than 100 languages and includes mu-

(continues)

"The type that taught the world to read"

Century Schoolbook Bold

WHEN IT COMES TO TYPE, WE WROTE THE BOOK!

We are KINGSLEY/ATF TYPE CORP. and we trace our roots all the way back to Benjamin Franklin.

If you're into DESKTOP, REMEMBER you can't produce great looking copy if you don't use great looking type!

If you have a MAC and laser printer, we can supply digital fonts of the original ATF typefaces that have been the backbone of the printing industry for 200 years.

Desktop publishing takes a quantum leap. 4 point to *10 inch* characters from any font. Quality that rivals professional typography. GUARANTEED!

SEE

Ultra Bodoni Bold

Spot

Americana

Run

Spartan Bold

$195.00 EACH

Each disc contains caps, lower case and numerals in ROMAN, ITALIC, BOLD AND BOLD ITALIC.

SPECIAL LIMITED TIME OFFER

any 2 FONTS	$360.00
any 3 FONTS	$495.00
any 4 FONTS	$595.00

Kingsley atf TYPE CORP

200 Elmora Avenue, Elizabeth, New Jersey 07202

CALL 1-800-289-TYPE

ASK FOR DICK OR JANE

VISA/MASTER CARD

Circle 123 on reader service card

Trade up to Word, and we'll give you $75 for MacWrite.

You can't go MacWrong.

Microsoft® Word Version 3 is the most powerful word processor available for any PC. Yet moving up to it from MacWrite™ couldn't be easier.

Word reads MacWrite files, so you'll still be able to read and write to your old documents.

Word's "short menus" are almost identical to MacWrite's, so you'll hardly notice the changeover.

And anyway, we're offering you a bribe.

Here's the deal:

You get Word. Then you send us your original MacWrite disk, Word registration card and proof of purchase.*

And we send you $75.

Call us crazy, if you like. But call the number below, or see your local Microsoft dealer.

Before we come to our senses.

1-800-323-3577

Microsoft®

*Minimum purchase price, $200.

This offer is not good in conjunction with any other promotion or upgrade offer and is good in the U.S. only. Offer now extended through October 31, 1987. In Alaska call (206) 882-8088.

Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation. MacWrite is a trademark of Apple Computer, Inc.

sical symbols. He also offers Greek and Cyrillic, and an International Phonetic Font for transcribing phonetically. U.S. $20 for 1 to 3 Macintoshes at one site and U.S. $60 for 4 or more Macs. Order from Dr. Paul Rappoport, 7 Cradock Court, Ancaster, Ontario L9G 3Z5, Canada.

Grant C. Schampel
St. Paul, Minnesota

The Writer and the King

In my review of *The King of Chicago* in the July *Macworld*, there was a line that should have read, "I have never had so much fun *watching* a computer game." An editing gremlin somehow changed it to "I have never had so much fun playing a computer game." I did like the program, but not *that* much.

Steven Levy
New York, New York

Preferential Parking?

I recently purchased a Macintosh SE with the 20MB internal hard disk. Because I travel frequently with my Mac, I worry about damaging my hard disk. Is a protective "park head" program available for the Mac?

Cameron H. Rose
Long Beach, California

So far we haven't heard of such a program. For Lon Poole's solutions, see Quick Tips, *September 1987.—Ed.*

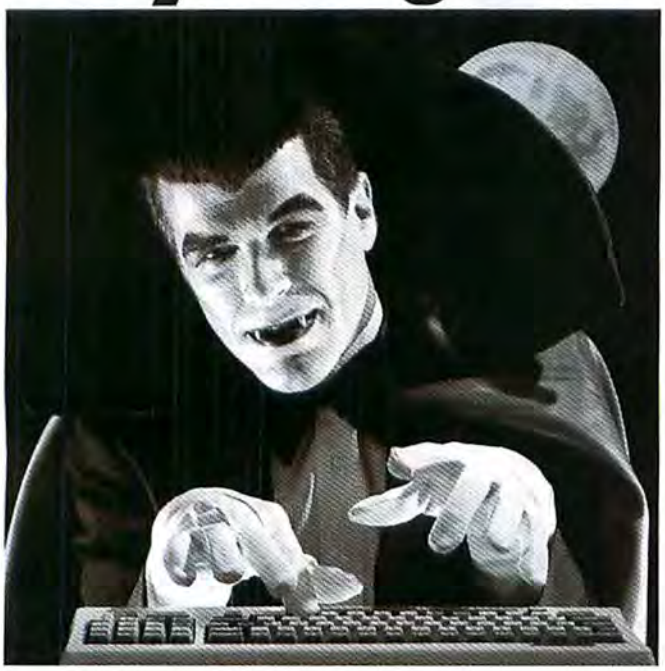
Info on AI

I thoroughly enjoyed your review of *MacScheme* ("LISP in a Shoebox," December 1986). I'll send a list of all Mac artificial intelligence products that have come to my attention to anyone who sends a self-addressed, stamped envelope to me at *Artificial Intelligence Today* newsletter, 104 Frame Rd., Elkview, WV 25071, 304/965-5548.

Roger C. Thibault
Elkview, West Virginia

Letters should be mailed to Letters, Macworld, *501 Second St., San Francisco, CA 94107, or sent electronically to CompuServe 70370,702 or The Source BCW440. Include a return address. We reserve the right to edit letters. All published letters become the property of* Macworld. □

"Computing at night bit into my budget..."



$10.00+ per hour

"With GEnie™ I get more bytes online for less."

$5 per hour

Most online information networks can drain your resources faster than you can say *"Vampire."* Not with GEnie, the General Electric Network for Information Exchange. As part of the world's largest commercially available teleprocessing network of General Electric Information Services Company, GEnie won't bite into your budget.

Evenings, weekends, holidays. Just $5 per hour.

With GEnie, you can make friends, schedule meetings, gather facts and figures, set up travel reservations, get the news, be entertained, even shop for a fraction of what other information services charge.

And you get a lot more for your money.

With GEnie's Coffee MUG ***Round-Table™ Special Interest Group*** you can discuss the latest in Macintosh† products and accessories; download hundreds of public domain software programs, and participate in exciting and informative online conferences. And, uploads are FREE on GEnie!

There's more!

Meet friends old and new with GEnie's ***LiveWire™*** CB simulator or exchange messages with ***electronic mail*** service. Schedule a trip with the ***online travel service.*** Fun and learning for the whole family with ***Grolier's*** electronic encyclopedia.

Play multiplayer and classic games in GEnie's ***Game Room.*** Get the latest in domestic and international ***computing news.*** All this and there's more to come. New services are being added each and every month!

Only $18 to register! Save up to 60%!

Check out the chart. Compare the savings for yourself. You'll find GEnie delivers all of your favorite services for an incomparable price, at incomparable savings.

Compare & Save*	Services						Pricing			
	Travel & Shopping	SIGs/User Groups	CB & Mail	Financial Services	News	Games	Registration Fee	Monthly Minimum	Non-prime time rates 300 baud	Non-prime time rates 1200 baud
The Source	X	X	X	X	X	X	$49.95	$10.00	$8.40	$10.80
CompuServe	X	X	X	X	X	X	$39.95	none	$6.00	$12.50
GEnie†	**X**	**X**	**X**	**X**	**X**	**X**	**$18.00**	**none**	**$5.00**	**$5.00**

**Basic rates and services shown in effect 2/87. †Non-prime time applies Mon.–Fri., 6pm–8am local time, all day Sat., Sun., and nat'l holidays. Subject to service availability. Additional charges apply for 2400 baud and financial services.*

With services and savings like these, now you can get more bytes online without incurring blood-curdling costs. Get online with GEnie. Sign up today!

Sign up from your keyboard today.
4 Easy Steps:

1. Have your Visa, MasterCard 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 **XJM11851,GEnie** then RETURN.

Need help or more information? No modem yet? We can help. Call **1-800-638-9636.**

GEnie™

Stay online longer, for less.

GE INFORMATION SERVICES

General Electric Information Services Company, USA

GEnie rates and services subject to change. Uploads are free during non-prime hours at 300 or 1200 baud. Third-party services offered on GEnie may include additional charges.

† *Macintosh is a trademark licensed to Apple Computer, Inc.*

Circle 475 on reader service card

"Can w

■ Absolutely.

With TOPS,® a PC and a Macintosh™ can really talk together. Simply, transparently, reliably. **In real time.**

And now UNIX®-based computers can join the conversation.

TOPS has been extended to support computers from Sun Microsystems® and Pyramid Technology.®*

And now TOPS for the Mac includes **print spooling** and **file translators.**

■ You can now access Microsoft™ Excel™ files from a Mac SE,™ for example, modify them on your PC AT™ under Lotus 1-2-3,™ and save them on your Sun Workstation.™

TOPS uses no central file server—every machine on the LAN can serve every other. Yet TOPS is so affable that file servers from 3Com,® Novell,™ Banyan™ and AppleShare™ can join right in.

■ According to *InfoWorld* and *PC Week*, TOPS is the easiest to learn and operate Local Area Network yet designed.

With TOPS you have your choice of LANs. Macs can talk solely to Macs, or PCs to PCs, or both can talk to each other or to UNIX-based computers. TOPS brings together parts of your office that until now were barely on speaking terms.

*Call for information on how to buy UNIX versions, available Third Quarter.

e talk?" some more

■ TOPS has over half the Fortune 500 companies talking.

With good reason.

Installation is quick and straight-forward—roughly four minutes for a Macintosh and fifteen minutes for a PC.

And this talk is remarkably cheap. TOPS is $189 per Macintosh and $389 per PC.

■ Our TOPS family is growing. With TOPS PRINT™ (at $189) all your PCs can share Apple's LaserWriter.™ And TOPS REPEATER™ (also at $189) allows you to expand AppleTalk™ and TOPS networks.

TOPS for Macs and PCs, TOPS PRINT and TOPS REPEATER are available at Businessland and other fine computer dealers.

■ Call us at 800-222-TOPS (in California, 800-445-TOPS).

And we'll do just what a Sun workstation, a PC and a Macintosh can now do. **Talk.**

TOPS®
Network

an independent unit of

sun microsystems

MACWORLD WORLD CLASS AWARD 1987

"The top selling communications product."
—CRN, August 3, 1987

PC MAGAZINE

PC Magazine has selected TOPS as the "Best of '86"

TOPS is a registered trademark and TOPS PRINT and TOPS REPEATER are trademarks of Centram Systems West, Inc., an independent unit of Sun Microsystems. UNIX is a registered trademark of AT&T. All other product names are trademarks or registered trademarks of their manufacturers.

Circle 524 on reader service card

"SIMPLY PUT, CIRRUS DRIVES ARE A JOY TO WORK WITH."

"These are powerful drives with powerful software."

"Using Cirrus drives gave us an appreciation of the importance of ergonomic design to performance."

"Cirrus drives are quiet and easy to work with...a plus to their performance rating."

"Very small and lightweight, (Cirrus drives) are constructed of quality materials designed to last."

"The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh."

Michael Day
The Macintosh Journal

From
$449.99

SLOT MACHINE 20, 30, 40, 60
20-60 Mbyte internal Mac SE hard disks

CIRRUS 20, 30, 40, 60
20-60 Mbyte Mac external hard disks

CIRRUS 40T
40 Mbyte tape backup

Systems include drive, cable, software and manual.

and MasterCard accepted.

CALL TO ORDER 1-503-684-0143

s a trademark of Cirrus Development Corporation. Macintosh is a trademark of Apple Computers. Prices and specifications subject to change without notice.
oted are cash prices. Mouse not included. Excerpts reprinted with permission of Mac Journal.

LaCie, Ltd.
16285 S.W. 85th, No. 306
Tigard, Oregon 9720[illegible]

The Macintosh Journal

Cirrus Drives

The Cirrus drives are exciting and excellent performers. They offer impressive speed, flexible software, attractive design and quiet operation.

Ease of Use

Running a Cirrus drive is very simple. It is just a matter of plugging the drive in and turning it on. The drives come pre-formatted and ready to go. The Cirrus has two DB 25 connecters on its case, so its cables are easier to work with than the "standard" SCSI cables that come with some drives. The design of the Cirrus drives contributes greatly to their ease of use.

The software that comes with the Cirrus drives is very flexible. It follows the Macintosh interface closely, and is well done. With the software, users can partition the drives into several volumes, or combine several drives into one single volume. Volume sizes can be changed or new ones added at any time without losing data. Password protection, manual or automatic mounting, automatic head parking, backup utilities, and disk repair utilities are all standard. In addition, the software performs several diagnostic tests including the ability to map out bad sectors and program the drive's interleave. In short, this is some of the most extensive and best written software available for Mac hard drives.

Most of the Cirrus' flexibility comes from their excellent software. However, the physical construction of the drives also contribute to their superior flexibility. Unlike other drives for the Mac, Cirrus drives can be placed vertically or stacked horizontally depending on your desktop requirements.

Performance

Cirrus drives were engineered to perform well in everyday situations. These drives are very fast when performing common operations such as going to the chooser or building the desktop. Reading and writing to and from files is also very fast. Using the Cirrus drives gave us an appreciation of the importance of ergonomic design to performance. For instance, fan noise can increase fatigue in office workers. A drive that is built to be quiet and easy to work with may not increase the data transfer rate, but it will help to get more productivity out of the user. Cirrus drives are quiet and easy to work with which we consider to be a plus in their performance rating.

Because the Cirrus software is so good, users may want to use it to initialize drives from different manufacturers. In our tests, this worked well, and allowed drives of differing origin to be linked together as one volume. Since many of the older SCSI drives came with poor software, this is a good argument for buying a Cirrus drive and chaining it with other drives after they have been initialized with the Cirrus software.

Design and Construction

The Cirrus drives, though very small and lightweight, (about 4 lbs.), are constructed of quality materials designed to last. Their light weight is due to the small number of components in each drive and to their plastic case. The Cirrus drive is both sturdy and durable; the internal power supply is encased in aluminum, and the drives are shock mounted on rubber bearings.

The Cirrus drives have the most exciting, simple and elegant design we have seen in a hard drive for the Macintosh. The modular construction of the drives means that any repair work will be quick and easy. Simply put, Cirrus drives are a joy to work with.

Recommendations

Cirrus drives were designed for the the professional user. They were not engineered to be low cost products, or to be "just adequate performers;" they are built with premium components. These are powerful drives with powerful software. Cirrus drives are an excellent solution for users who demand a lot. Readers should also note that several new products are in the pipeline and that a 40MB tape backup and 30MB hard drive are currently available. We give the Cirrus 20, 40 and 60 drives an excellent rating (8 on a scale of 10) and recommend that other drive manufacturers follow the Cirrus example, and design drives that are simple, elegant and impressive performers. *-Michael Day*

© B and P Publishing

Jerry Bob Says Check It Out

Hot Expo products, Bill Atkinson's reappearance, and technogloom

Your roving editor is tired. Remember the Madeline Kahn routine in *Blazing Saddles* when, dressed as Marlene Dietrich, she dances around and sings "Ach. I'm tired."? Like that.

Perhaps it's technology gloom. This is my second personal computer boom. The 1982/83 period was IBM's heyday, and it looks like the 1987/88 boom has Apple written all over it. So this is the exciting part, right? Well, almost. You see, I have this Mac II in my office that doesn't quite live up to its billing. My company bought it at a computer store—actually that's the good news: we could buy one—and it doesn't have a hard disk. It only has one floppy drive. It doesn't really have enough RAM to allow it to run the MultiFinder or even several of the new applications. I'd love to run color applications, but, uh, someone forgot to finish off the color monitor. So I have to buy or borrow one from SuperMac, which is kind of short because it has to supply all the Mac developers. Technical Editor David Ushijima and I tried mightily to drive a NEC monitor with the Apple video card, but the card we received had only 256K RAM and wouldn't work. I hear from dealers that most of the cards are being shipped only half populated—256K RAM instead of the full complement.

I really like what I've seen so far; in fact, it's whetted my appetite, but I'm getting tired of waiting. And speaking of new product enthusiasm, August's Macworld Expo kindled some light anew.

MICK WIGGINS

Macworld Expo

The biggest show ever—and more hot products than you can shake a stick at. However, Expo organizers Mitch Hall and Associates might take a lesson from a group called AFIPS, whose National Computer Conference has died a slow death partly because of poor choice of venue—let's move the show to a place that will hold everyone. Please? Anyway, back to the good part of the show.

MacroMind's Marc Canter finally got a big public showing of *VideoWorks II*. It was worth the wait. Cricket Software demonstrated *Cricket Present*, a color presentation package that puts IBM software to shame. Comtrex showed a liquid-crystal Mac screen add-on for overhead projectors—wait till you see this thing. It makes presentations on the Mac practical; however, at $1500, it's too steep for personal use. Remember the MacBottom from PCPI, the company in Tampa? Well, PCPI is the second firm in the competition with a video card for the Mac II, and it looks really nice. Jerry Bob says check it out.

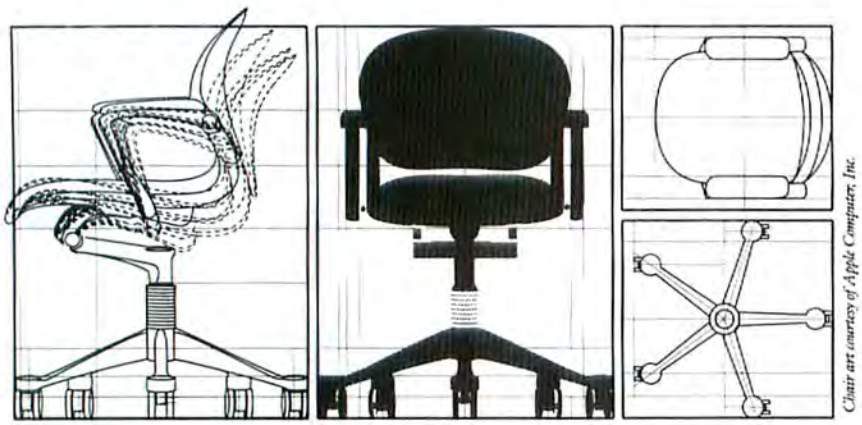
Apple had its share of hot products: a new dot matrix printer, the MultiFinder, *HyperCard*, the fax modem, and AppleTalk extended to Ethernet. I have to admit to being most pleased with MultiFinder—if I can just find enough RAM to upgrade my Mac Plus (attached to a MicroGraphic Images large screen) to about 2MB, I'll be able to have all the applications I use—and the Finder—all open and available on the same screen. The way *Switcher* should have been. Great.

Bill Atkinson Reappears

While we're on the subject of remembering, remember Bill Atkinson, *MacPaint*'s originator? Where the devil has he been? Well, for the last two years he's been developing a new product called *HyperCard*. Trouble is, it takes Bill demonstrating the product to make you appreciate its potential. Thousands of people turned out at the Macworld Expo for standing-room-only demonstrations of this user-programmable database manager. Pretty sexy stuff. Apple carefully explains that *HyperCard* does not perform the types of functions found in database software, but its interface is so

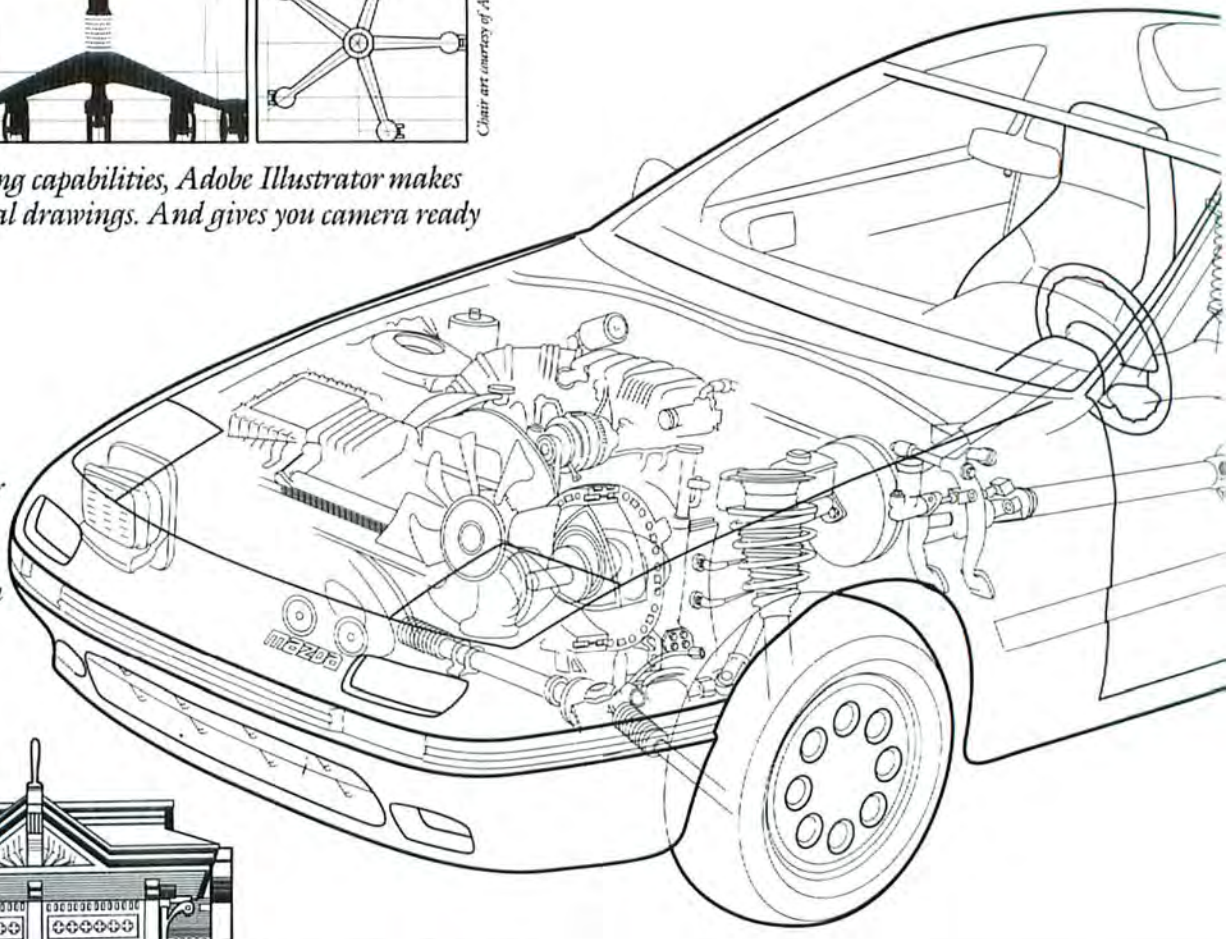
(continues)

Other draw and paint programs also let you add captions. But none of them can put those captions next to the sharpest, cleanest lines and curves on the map.



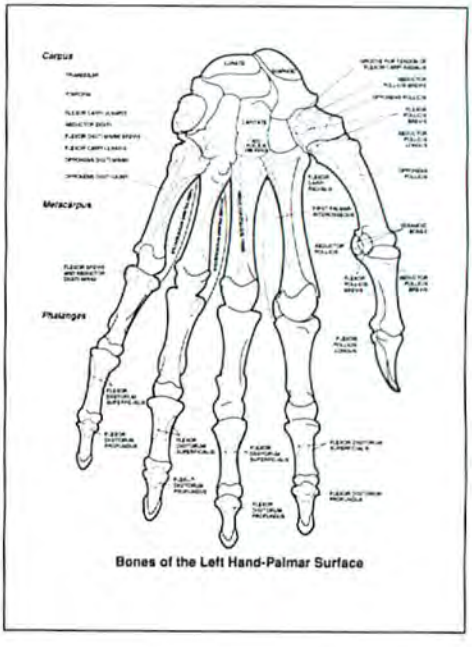
Chair art courtesy of Apple Computer, Inc.

With its powerful curve drawing capabilities, Adobe Illustrator makes short work of the most technical drawings. And gives you camera ready output right at your desk.



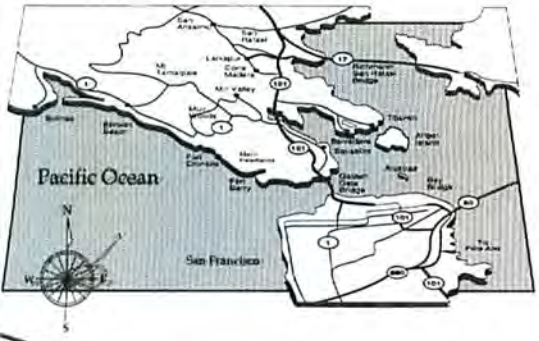
Share your drawing with other users. And if anyone wants to change it—no problem—the Adobe Illustrator can give you another perfect original. Fast.

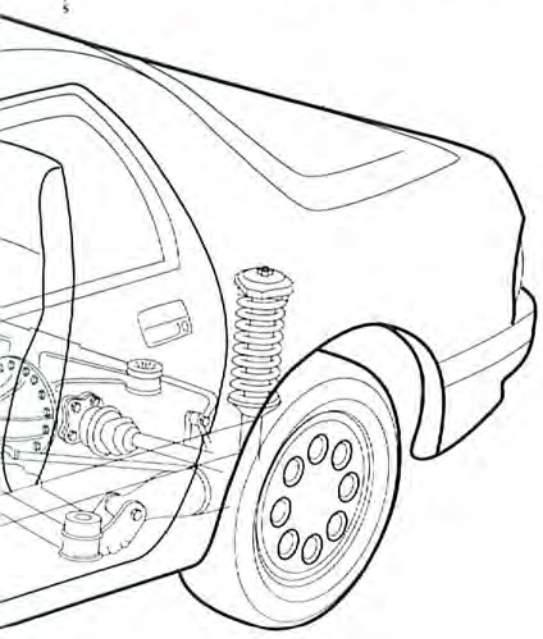
Start with a blueprint or just a dream and the Adobe Illustrator can help you build out the rest. Straight and true.



Bones of the Left Hand-Palmar Surface

For producing the finest details, all kinds of line weights, even typeset captions with precise control, no other program can touch it.





Unlike other draw and paint programs, the Adobe Illustrator uses lines and curves to form an image, instead of dots. So there's really no limit to the ideas you can hatch. Or cross-hatch.

GRAB A BITE TONIGHT

Change is the name of the game in logo design. And the Adobe Illustrator can make changes in a fraction of the time it would take by hand. And not a big fraction, either.

NOW A WORK OF ART DOESN'T HAVE TO BE A LOT OF WORK.

Introducing **Adobe Illustrator.**™ A new software program designed to produce high quality illustration with the smoothness of a french curve, the versatility of a pencil and the speed of a computer.

Here's how it works.

Unlike other programs, the Adobe Illustrator doesn't build an illustration dot by dot. It uses precise *lines and curves* instead.

Secondly, nothing has to be drawn from scratch. You and your Macintosh Plus,™ SE™ or II,™ can start with the scanned image of a photograph, logotype, blueprint, something from your scrap file, even a rough sketch.

Once in the computer, this scanned image becomes your guide. You trace over it to construct the new image. Then, once you have the image you want, you can manipulate it in ways possible only with a computer—scale it, rotate it, even combine it with other Adobe Illustrator images.

From an artistic point of view, then, the Adobe Illustrator is a powerful, new medium.

But it's also a powerful new production tool. One that automates the art production process.

Imagine, if you will, getting camera ready art out of a Macintosh. (We did. You're looking at it.)

Or being able to change that art radically—as easily as you'd edit a letter—and getting new art, literally, within minutes.

Imagine keeping every image in small electronic "art files," and being able to recall, refine, combine or change images, at any time, in any way.

Without any of the usual production headaches.

And just picture what you can do when you combine the Adobe Illustrator with the most popular page layout systems.

It also drives each and every POSTSCRIPT®-equipped printer, from the Apple® LaserWriter™ to Linotype's® Linotronic™ 300 typesetter.

So the problem of getting high resolution has finally been resolved.

To see for yourself, call (800) 29-ADOBE, (800) 85-ADOBE in California, or (415) 852-0271 from Canada for the location of the nearest Adobe dealer. You'll get a demonstration that'll really draw your interest.

ADOBE ILLUSTRATOR™

Adobe Illustrator is a trademark and POSTSCRIPT is a registered trademark of Adobe Systems Incorporated. Other brand or product names are trademarks or registered trademarks of their respective holders. ©1987 Adobe Systems Incorporated. 1870 Embarcadero Rd., Palo Alto, CA 94303

ADOBE

Circle 678 on reader service card

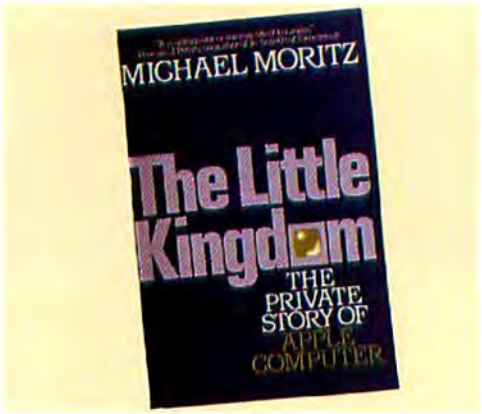
appealing that many people are likely to shoehorn it even into serious business applications.

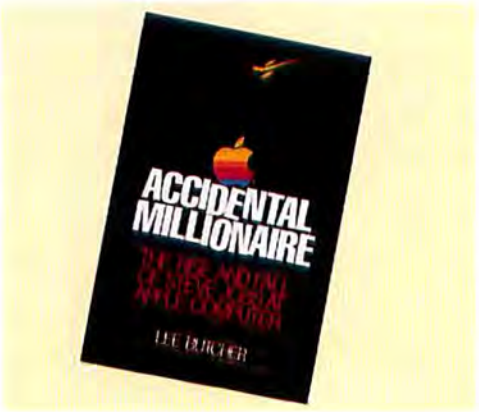
Since *HyperCard* is going to be shipped in every new Mac box and distributed like *MacWrite* and *MacPaint*, if I know Mac users, soon everyone will be using it. Whimsical sidelight: Bill managed to get a revision of *MacPaint* incorporated into the product as a tool. If Apple wasn't going to improve it after three years, by God, Bill was. Danny Goodman, one of our contributing editors, has a book out from Bantam on the product. You'll want to look at it to get an idea of just what *HyperCard* can do.

Accidental Millionaire

Nor was Danny the only author in the Apple environment this summer. Leaving the Mac world for a needed respite, I carried along the latest book on the Apple community: *Accidental Millionaire*. The author, appropriately named Butcher, has produced a fine hatchet job on—yes—Steve Jobs. The book (Paragon House, 1987) does go far in recognizing the role Steve Wozniak played in the foundation of Apple, but one wonders if anyone, particularly Woz, would have much interest in aggrandizement at such a cost. The author's favorite descriptions include *mercurial, arrogant, brooding, loner, unpopular, debilitating, insecure*. Add your own bile and mix thoroughly with public relations to obtain a potential best-seller.

Somebody still needs to write a good book on Apple. Michael Moritz's *The Little Kingdom* (Morrow, 1984), flawed as it was, will have to stand as the most realistic book to date.





What's My Beef?

So why am I so tired? For one thing, it's odd being in a position to see a new group of people grow up in the personal computer boom created by the Mac SE and the Mac II. I'd like to invent a new TV game show, "Punt the Pundits." As guests we'd have all the suddenly knowledgeable people who have been booting up *Excel* for the last couple of years. Or the writers and editors made famous by the last personal computer boom, now cast as wise men. If they lose, they have to get real jobs. □

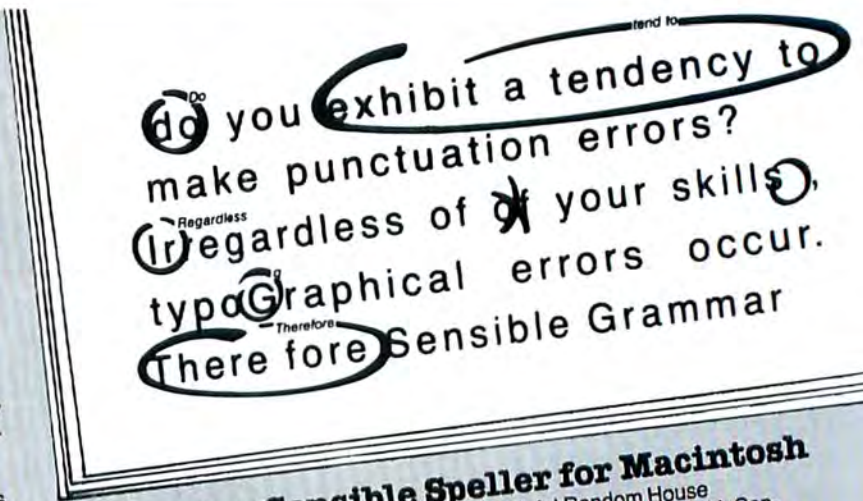
SENSIBLE GRAMMAR NOW FOR MACINTOSH!

One of the most comprehensive writing proofreaders is now available for Macintosh users. Sensible Grammar checks your papers for common and not-so-common writing and grammatical errors. It helps you avoid embarrassment and loss of credibility due to simple typos and mistakes. And it does it all quickly and easily.

Does your current program do all this? Check for grammar errors caused by improper verb tenses and article/noun, verb/modifier and noun/verb agreement? Check mechanics for improper abbreviations and capitalizations, redundancies and properly-formed numbers? Catch incorrect commas, parentheses, periods, spaces and other common punctuation errors? Is writing style checked against over 2,000 commonly misused wordy, racial and sexist phrases and cliches? Sensible Grammar even knows the exceptions to the rules.

And Sensible Grammar never goes against your judgement. It makes "suggestions" which you can ignore, mark, replace with suggested wording or your own or program to correct automatically.

It's the best tool you can buy to improve your writing skills. You can do your job faster and more accurately with Sensible Grammar.



And Now Sensible Speller for Macintosh

Check over 83,000 words derived from the official Random House Dictionary for correct spelling, either while you're typing or after, with Sensible Speller, now available for Macintosh users. It checks spelling, capitalization, abbreviations, doubled words and more, making "suggestions" which you can ignore, mark or replace with your own. Sensible Speller is the smart, reliable way to improve your work.

Black's Law Dictionary™, Sensible Technical Dictionary™ and Stedman's Medical Dictionary™ ($39.95 each), available separately on diskette for use with Sensible Speller.

Sensible Grammar and Sensible Speller, $99.95 each, compatible with PageMaker, MacWrite and Microsoft Word.

Sensible Software, Inc.

335 East Big Beaver, Suite 207, Troy, MI 48083 • (313) 528-1950

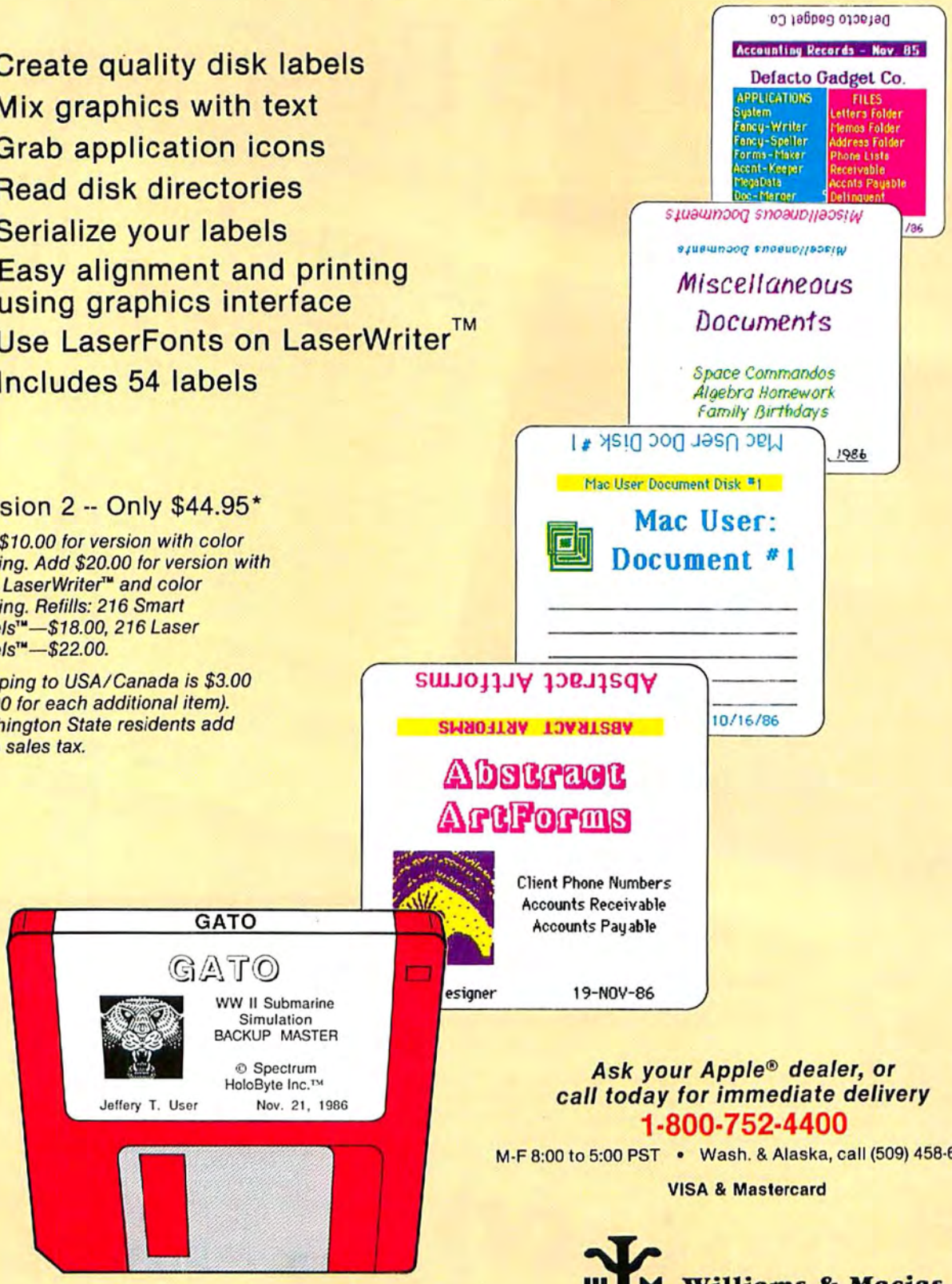
Circle 345 on reader service card

Williams & Macias

myDiskLabeler™

Be as organized outside your Macintosh™ as you are inside

- Create quality disk labels
- Mix graphics with text
- Grab application icons
- Read disk directories
- Serialize your labels
- Easy alignment and printing using graphics interface
- Use LaserFonts on LaserWriter™
- Includes 54 labels



Version 2 -- Only $44.95*

Add $10.00 for version with color printing. Add $20.00 for version with both LaserWriter™ and color printing. Refills: 216 Smart Labels™—$18.00, 216 Laser Labels™—$22.00.

**Shipping to USA/Canada is $3.00 ($1.00 for each additional item). Washington State residents add 7.8% sales tax.*

Ask your Apple® dealer, or call today for immediate delivery

1-800-752-4400

M-F 8:00 to 5:00 PST • Wash. & Alaska, call (509) 458-6312

VISA & Mastercard

Williams & Macias

P.O. Box 19206 Spokane, WA 99219

Apple, Macintosh and Laserwriter are trademarks of Apple Computer, Inc. Spectrum Holobyte is a trademark of Spectrum Holobyte, Inc.

Circle 374 on reader service card

Shopping Icon Review Is Good Business

Hot New Laser Printers

ScripTEN Laser Printers

From Qume Corp.

We're excited! We've finally found a PostScript printer that can compete with the Apple LaserWriter. These ScripTEN laser printers not only cost less than the competition, they're faster — with up to twice the RAM of the LaserWriter Plus, they print even complicated documents in record time! And they're more flexible, supporting 35 resident typefaces, plus up to 20 downloadable fonts. Because they're HP-LaserJet-compatible, they work with your IBM also.

ScripTEN printers deliver high-quality text and full-resolution graphics (300 x 300 dpi). And they're rugged and easy to maintain (we carry everything you need, parts simply snap in).

Quality PostScript laser printing has never been so affordable! Order your ScripTEN Printer today.

Works w/all Macs; requires AppleTalk connection or equivalent (such as PhoneNet) for use w/your Mac; 6-month limited warranty

ScripTEN 2MB Laser Printer ~~$3,895~~ $ 3,599
1996 • *Supports 10 downloadable fonts*

ScripTEN Plus 3MB Laser Printer ~~$4,295~~ $ 3,999
1997 • *Supports 20 downloadable fonts*

LIMITED TIME OFFER! GOOD THRU SEP. 30

FREE
New Fall Catalog

Your Resource for Select Macintosh Products

Is your dot-matrix printer driving you dotty? Qume now offers high-quality PostScript laser printing at a cost that averages 20% less per page than LaserWriter Plus output! Order yours today.

New CMS Drives

- **SC40A SCSI Drive** **$799**
  Quality 40-meg drive at an unbelievably low price!
- **Compact Drives** — 20 & 40 megs, engineered for safe and easy transport
- **MacStack Drives** — Space-saving drives stack under your Mac; available in 20 & 40 megs
- **Mass-Storage Systems** — 140-, 240- & 320-meg models for as little as $16.50/meg
- **Pro-40 SE Internal** — Expand your SE with this easy-to-install 40-meg drive

Tempo $Call

Automate repetitive Mac operations that are tedious or time-consuming; simply record your activities (such as entering text or clicking on commands), then replay the sequence as one command. We use Tempo with PageMaker to automate routine type formatting. By assigning keystrokes to sequences of point size, leading, and tabs, we avoid thousands of tedious manual commands. What will you do with all the time *you* save using Tempo macros?

From Affinity Microsystems *Works w/512K, MacPlus & SE*

MEMBER DIRECT MARKETING ASSOCIATION

Icon Review

800/228-8910
Good anywhere in U.S.

Circle 272 on reader service card

MORE
From Living Videotext

MORE, an outline processor with powerful features, is unprecedented in its ability to create slick presentation graphics by automatically generating bullet or tree charts from outlines. Convert a complex multi-level outline with a simple mouse click. Multiple windows and easy export to many popular programs add significantly to MORE's flexibility. Anyone who needs to create outlines, manage schedules, or transform ideas into presentation graphics will benefit from the powerful idea-processing features of MORE.

1641 • *Works w/512K & Mac Plus (requires 2nd drive), SE & II*

$159

FREE Catalog

Order yours today and save money on more than 300 Mac products.

Call
800/228-8910

MegaScreen & MacTilt

The **MegaScreen**'s 19.5" screen measures 1024 x 900 pixels — five times the Mac's, so there's room for more and bigger windows in any application — ideal for desktop publishing, CAD, spreadsheets, and more. Utility software gives you control over resolution and refresh rate, so you can eliminate annoying screen flicker and enjoy maximum clarity.

MacTilt makes it easy to adjust your screen to the viewing angle most comfortable for you.

From Micrographic Images Retail $1,797
Though installation by a qualified technician is recommended, MegaScreens are designed for easy clip-on installation (no soldering required).

1850 • MegaScreen II — $1,499
Works w/512E & Mac Plus

2096 • MegaScreen SE*M — $1,499
Works w/SE only

1832 • MacTilt for Large Screen — $80
From Ergotron

C.A.T.
From Chang Labs

C.A.T. is an easy-to-use relational database that manages your Contacts, Activities, and Time — perfect for anyone with a multitude of contacts.

C.A.T is specifically designed to manage your Contacts, Activities, and Time. It's an easy-to-use relational database for entrepreneurs, managers, account executives, or anyone with a multitude of contacts. More than just a list keeper, C.A.T. lets you link important events, data, people, and schedules to keep track of the *relationships* in your business. No matter what business you're in, you'll come to rely on C.A.T. to organize all your important information so you spend less time chasing details and have more time for creative problem solving.

1911 • *Works w/512K, 512E, Mac Plus, SE & II (1 meg recommended)*

$219

Orders

800/228-8910

Good anywhere in U.S.

Monday thru Friday 6 am to 7 pm
Saturdays 8 am to 4 pm (Pacific Time)

408/625-0465

GUARANTEE: All products shipped by Icon Review are new and guaranteed by the manufacturer to work. All defective merchandise will be repaired or replaced by the manufacturer. **Icon Review cannot guarantee machine or color compatibility**. Please select your merchandise carefully.

TECHNICAL SUPPORT: Need more information? Icon Review maintains a technical support team for your convenience. Call (408) 625-0465 if you need help — before or after ordering.

CHANGES & CANCELLATIONS: You may change or cancel your order at any time prior to shipment. Subject to availability, orders are usually shipped within 48 hours; priority orders are shipped the same day if received before 2 p.m. PST.

RETURNS: All returns require a Returned Merchandise Authorization (RMA). Phone (408) 625-0465 **within 10 days of product delivery** to receive your RMA. **All returns must be complete**, including all original warranties, manuals, documentation, and packaging. **Please include a copy of your invoice or packing slip and a description of the problem.** Due to software copyright laws, all sales are final.

SHIPPING & HANDLING: A shipping and handling charge will be added to your order.

Domestic Service - 48 States & Canada
We will ship your products by UPS or US Mail Surface unless you specify otherwise; Second-Day Air Service to Hawaii, Puerto Rico, Alaska; Priority Next-Day Air Service, be sure to have our salesperson check stock. Priority backorders are shipped Second-Day Air.

International Service
We serve most European locations (served by UPS) — including U.K., Scandinavia, France, Italy, Germany & Japan — $40.00 minimum shipping and handling charge or 21% of the total purchase price, whichever is greater. We also serve Africa, Spain, Australia, Portugal, Mexico, South America, Philippines, etc. — write or phone for rates.

All prices, specifications, and availability subject to change without notice.

Macintosh is a trademark licenced to Apple Computer, Inc.
Icon Review, 6750 Mid Valley Center, Carmel, CA 93923
© 1987 Icon Review

Why you should buy a mouse with no moving parts.

One simple reason. No moving parts. And that means no problems.

Introducing the A+ Mouse from Mouse Systems. The A+ Mouse is an all optical mouse with no moving parts. It doesn't depend on friction, so there aren't any parts that can slip, get dirty or wear out. It doesn't have a rolling ball, a commutator, little teeny bearings and shafts, or plastic housings housing who-knows-what.

Instead, our mouse uses a mirror-like pad that reflects a tiny beam of light to track your slightest hand movement. No other mouse moves as fast or is as reliable.

Especially when you're moving around in spreadsheets and graphics software or editing text and manipulating data. That's because our mouse gives you up to 200 counts per inch and digital accuracy for exceptional cursor control.

Plus solid state electronics to ensure precision.

No matter what Apple system you have, we have an A+ Mouse that's right for you.

The A+ Mouse is compatible with the Macintosh 512K, Macintosh Plus, Apple IIc and Apple IIe (which requires the Apple mouse card).

The A+ Mouse ADB is ideal for the Macintosh SE, Macintosh II, and Apple IIGS.

The A+ Mouse. The mouse you'll never have to clean, repair or replace. It's so reliable, it's the only mouse with a Lifetime Warranty.*

See your local dealer for a demonstration today.

A+ MOUSE
MOUSE SYSTEMS

*Warranty limited to North America. Contact MSC Technologies, Inc. for details. Apple is a trademark of Apple Computer, Inc. Mouse Systems is a trademark of MSC Technologies Inc.
© 1987 MSC Technologies Inc., 2600 San Tomas Expressway, Santa Clara, California 95051 (408) 988-0211.

Circle 397 on reader service card

Contributors Notes

Jeffrey Bartlett *("The Final Spelling Test") is a free-lance writer based in Berkeley, California. He was* Macworld*'s original copy editor.*

Scott Beamer *("The Final Spelling Test"), an active member of the Berkeley Macintosh Users Group, has spent weeks analyzing Macintosh spelling checkers.*

Danny Goodman *("The Two Faces of HyperCard") has been writing about computers since the 1970s and has used the Mac since before its release. A* Macworld *contributing editor, he is the author of* Hands-On Excel, *published in 1986 by Scott, Foresman & Co., and* The Complete HyperCard Handbook *published recently by Bantam Books.*

Jim Heid *("Getting Started with Desk Accessories") is a contributing editor of* Macworld *and author of* dBase Mac in Business, *forthcoming from Ashton-Tate Publishing Group. Each month he focuses on a different topic in his column on Mac fundamentals.*

Steven Levy *("Which Is the Most Famous Mac of All?") is a* Macworld *columnist and author of* Hackers: Heroes of the Computer Revolution, *now published in paperback by Dell.*

Steve Mann *("The Accounting Software Match Game") is a free-lance writer, product-design consultant, and financial systems developer based in San Francisco. He wrote* Macworld*'s exhaustive "Accounting Software Buyer's Guide" last September. He also contributes a column to the* San Jose Mercury News *about using personal computers for financial-investment management.*

Gordon McComb *("Mac Word Processing Tools"), a contributing editor of* Macworld, *has written three books about the Mac, including* Mastering MacDraw, *published this year by Compute, and* Macintosh Graphics, *published in 1985 by New American Library.*

Jim Morton *("Insights on PageMaker 2.0"), a San Francisco printer and desktop publisher, uses* PageMaker *to produce his* Pop Void *periodical about modern culture.*

Allen Munro *("Choosing a Programming Language") conducts research on intelligent computer-based training at the University of Southern California. He wrote* Mac Power: Using Macintosh Software, *published in 1985 by Scott, Foresman & Co., and is coauthoring* Inside MacApp, *forthcoming next year from Addison-Wesley.*

Lon Poole *("MultiFinder: The Application Juggler") has been educating Macintosh users since the machine was introduced. Every month he answers readers' questions in his* Quick Tips *column. His books include* Mac Insights, *a collection of tips published this year by Microsoft Press.* □

Special Upgrade Offer

REGISTERED THINKTANK OWNERS DESERVE MORE™!

As a registered Macintosh™ ThinkTank™ owner, you can now upgrade to MORE for only $99.*
That's a $196. savings!

MORE is the ultimate productivity tool for managers and decision-makers. You'll organize plans, lists and ideas. You'll manage time, people and projects and you'll be able to transform your ideas into presentations . . . instantly!

What's more, registered MORE customers get the added bonus of a Preferred Membership Card. Card carrying members are entitled to free product support, technical notes, and a free subscription to *Headlines*, the Living Videotext newsletter. Your Preferred Membership Card will have your registration number and the phone numbers of the Product Support and Customer Service departments. In addition, you'll also be notified of special offers made periodically to preferred cardholders only. Because as a member, you deserve more.

Call the number below for more information.

800-822-3700
In CA, 800-443-4310

LIVING VIDEOTEXT
117 Easy Street
Mountain View, CA 94043

*Add $5.00 for shipping and handling. International Orders add $10.00.

ThinkTank and MORE are trademarks of Living Videotext.

Sometimes A Picture Is Worth A Thousand Words.

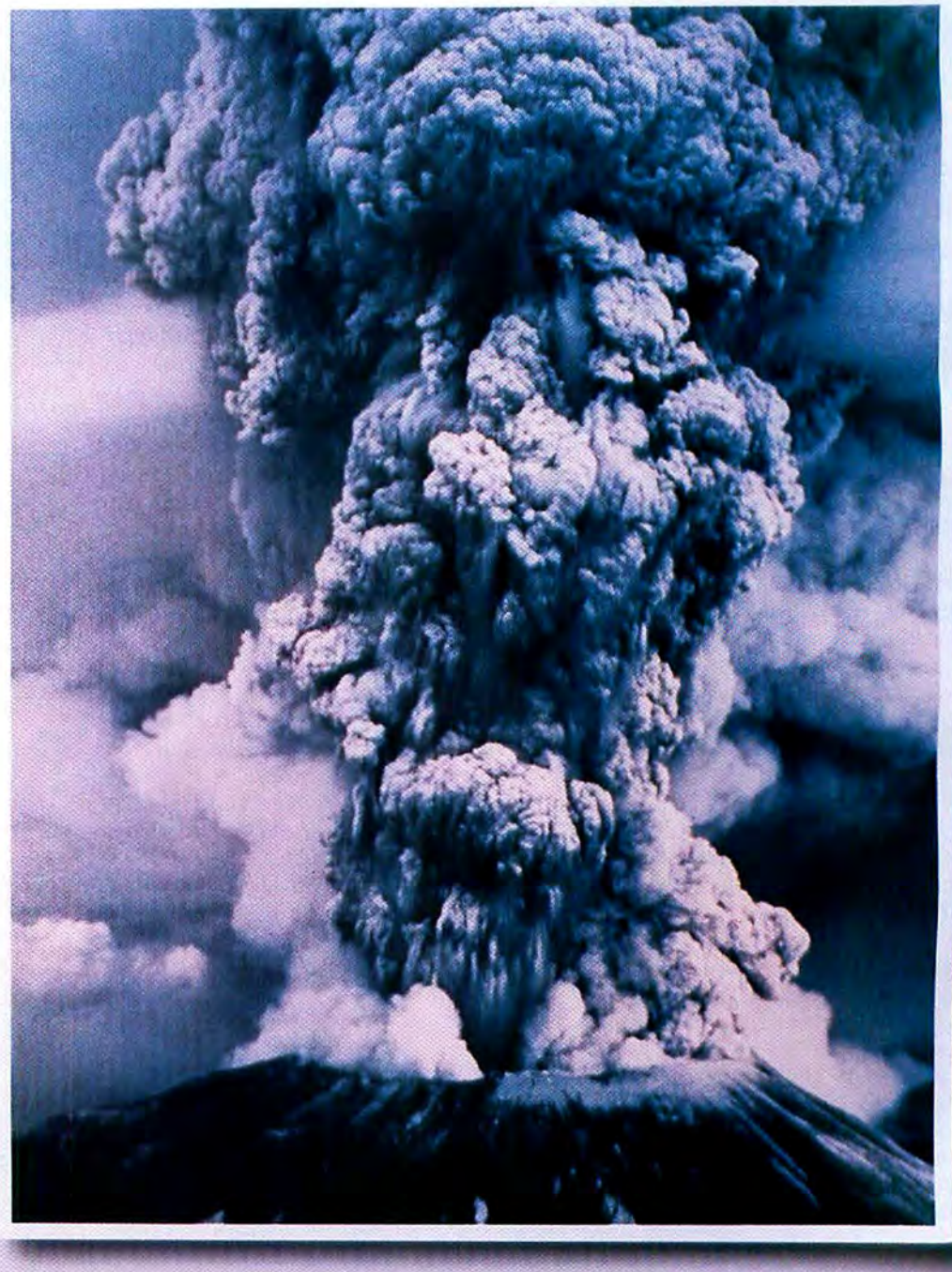
It hasn't taken the desktop publishing world long to get the picture with scanners.

Literally overnight, people who haven't drawn anything but a paycheck since grade school have

been able to generate crisp, professional documents with first-rate photographs, illustrations, mastheads, logos, charts and other graphics.

Our own PC Scan™ scanners are able to scan photos into your Macintosh™ Plus, Macintosh SE, Macintosh II, IBM® or compatible PC in mere seconds. Then, with the help of SuperPaint™ and PC Paintbrush,™ you can annotate them, crop them, embellish them and ultimately transfer them into your desktop publishing program.

Likewise with other images.



And the printouts are stunning. Photographs translate into high-quality pictures with the sharpest resolution possible from your laser printer.

Our scanners also come with high-speed SCSI interfaces and more memory than many PCs.

PICTURES ARE JUST
PART OF THE PICTURE.

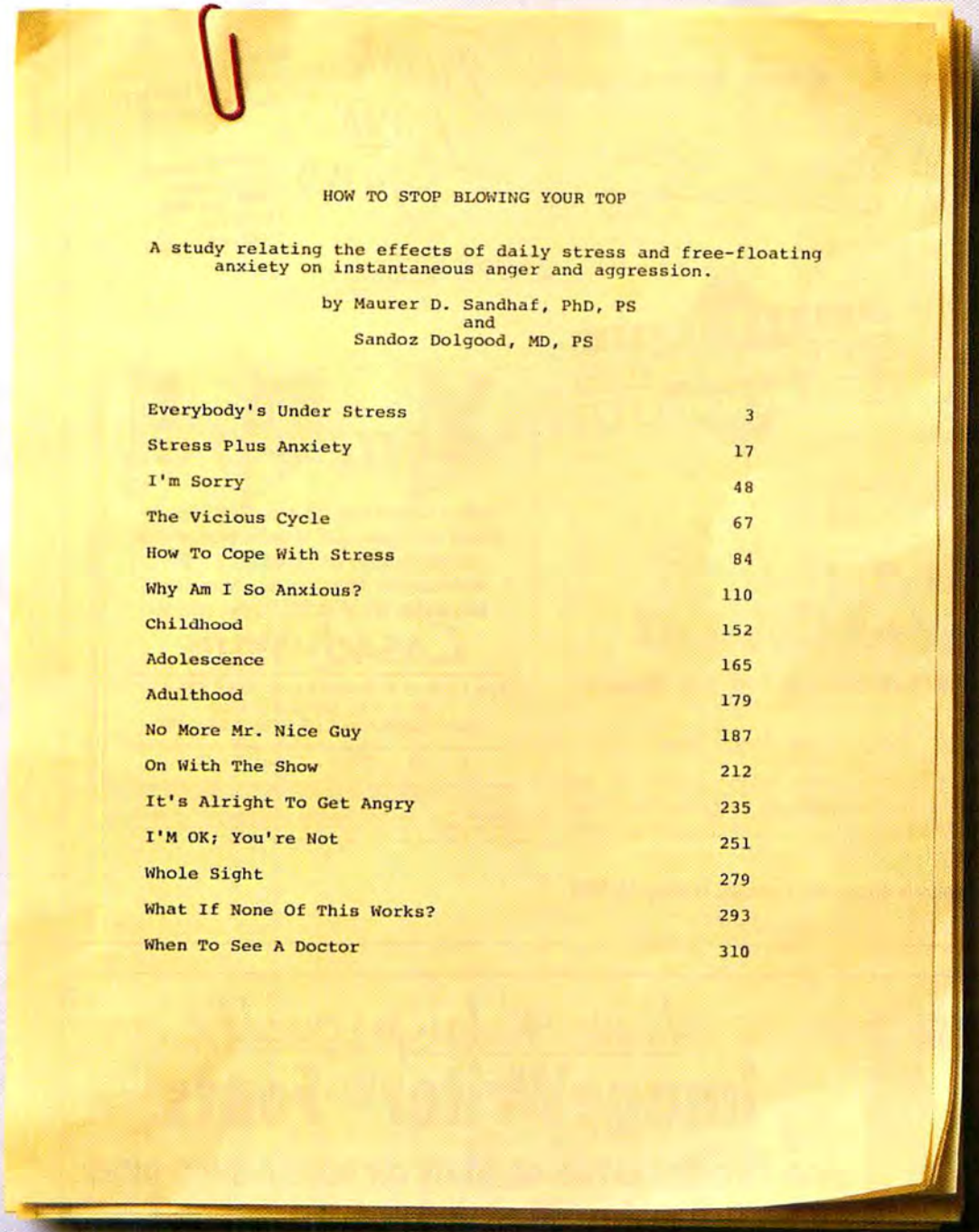
We also scan words. Which happen to account for 80% of most documents.

And when you think about it, that may be an even more valuable asset than our ability to input graphics.

How do you currently enter existing documents into your system? Retype them, right? At 60 or so words a minute?

That's an incredible time drain when you consider that with our PC Scan family, you can scan

Then Again, Sometimes A Thousand Words Are Better.



HOW TO STOP BLOWING YOUR TOP

A study relating the effects of daily stress and free-floating anxiety on instantaneous anger and aggression.

by Maurer D. Sandhaf, PhD, PS
and
Sandoz Dolgood, MD, PS

Everybody's Under Stress	3
Stress Plus Anxiety	17
I'm Sorry	48
The Vicious Cycle	67
How To Cope With Stress	84
Why Am I So Anxious?	110
Childhood	152
Adolescence	165
Adulthood	179
No More Mr. Nice Guy	187
On With The Show	212
It's Alright To Get Angry	235
I'M OK; You're Not	251
Whole Sight	279
What If None Of This Works?	293
When To See A Doctor	310

an entire page of existing text in the mind-boggling time of 25 seconds, average. We read 600 words a minute.

And those words will appear on your screen the same way they do on the page. With the same tabs, same indents, same underlines, same everything.

Then you can take those words, edit them, change their order, fiddle around with the syntax and add your own information.

And then transfer everything into your desktop program and start publishing.

Our desktop scanners read more business fonts faster than any other scanner. Including first-pass dot matrix, laser and daisy wheel.

And they're a snap to use, too. One lone keystroke begins operation instead of the multi-stroke formulas many scanners require.

WE WEREN'T BORN YESTERDAY.

Although desktop publishing is a relatively new phenomenon, we're not exactly neophytes when it comes to desktop scanning.

For the better part of two decades, we've been producing the leading line of scanners for word processing systems.

A background that leaves us uniquely and enviably situated to equal our success in desktop publishing.

If you'd like more information on our desktop scanners, call 800-538-7582 outside California. Or 408-946-7100 inside California.

We'd love to share a few words with you. Not to mention pictures.

DEST

© 1987, DEST Corporation. PC Scan is a trademark of DEST Corporation (not to be confused with PC Scanner, a trademark of Caere Corporation). Other names indicated by ™ or ® are trademarks and/or tradenames of their respective manufacturers.

Circle 615 on reader service card

Who Needs Fonts?

ANNOUNCING LASER FONT Design Contest

Win $1000 MacConnection Gift Certificate

Attention Fongtographer™ Users!

If you've been using Fongtographer, let this contest be your inspiration to design a creative typeface. First prize is a $1000 gift certificate from MacConnection. Outstanding entries will be evaluated for publication.

Write or phone for complete details. Entry deadline February 14, 1988

You Do!

Even a LaserWriter® Plus' font selection is limited when you need to make your printed communications really stand out. Our downloadable fonts are easy to use and reasonably priced at $69.95 per volume.

CASADYWARE

For Orders & Samples Call (800) 331-4321
or in Calif (800) 851-1986
For Information Call (408) 646-4660

P. O. Box 223779 • Carmel, CA 93922

TRADEMARKS: Fluent Laser Fonts—CasadyWare Inc.; Apple, Macintosh, LaserWriter, ImageWriter—Apple Computer Inc.; PostScript, Illustrator—Adobe Systems Inc.; Fontographer—Altsys Corp.; Linotronic—Allied Linotype; PageMaker—Aldus Corp.

FLUENT FONTS™ 2.0

UPGRADE INFO: If you purchased *Fluent Fonts 1.1* after April 15, 1987 you are entitled to a free upgrade. Send us the original disks, dated proof of purchase, and your address. All others may upgrade for $12 U.S. (Calif. residents add sales tax). We accept checks from U.S. banks or complete credit card information for Visa, MC, and AmEx. For all orders outside the U.S. or Canada, send $4 extra for shipping.

New & Improved!
ImageWriter® Fonts

OVER TWO MEGABYTES OF FONTS ON DOUBLE-SIDED DISKS

- **Text fonts for easy-to-read word processing—more sizes**
- **Larger display faces for headlines and graphic arts**
- **Technical fonts for architecture, electronics, math, and science**
- **New borders to enhance a letterhead or to surround your text**
- **Foreign language fonts**

CALL FOR PRINTED SAMPLES
(phone numbers above)

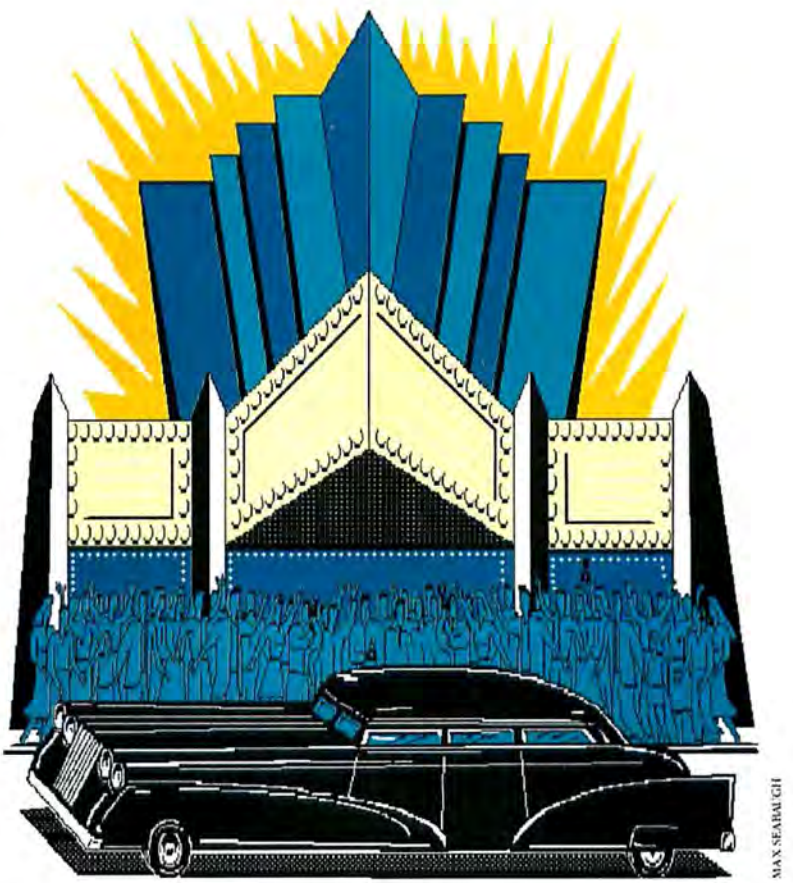
CASADYWARE

Circle 757 on reader service card

Steven Levy

Which Is the Most Famous Mac of All?

Of celebrities and Macintoshes, corporate reports, and cartoons



MAX SEABAUGH

Misery is not the only thing that loves company. Computer owners crave it, too. If you have a Macintosh, you want everyone else to get one, too. For some bizarre reason, you feel cheered to learn that the Peat Marwick accounting firm has bought a lot of them. On the other hand, it always feels like a stinging rebuke when a friend or business associate buys a different machine.

If that same friend or associate buys an identical computer, you are all smiles. Welcome to the club, you say, although the warranty specified nothing about club membership. It is more than camaraderie that moves you; your friend is ratifying your wisdom and foresight in choosing the perfect computer.

We Macintosh users now have daily confirmation that our choice was a wise one. (Unless the power supply blows up.) But we are not immune to the insecurities that come from second-guessing and peer pressure. Face it: as purchasers of the so-called maverick in the personal computer field, we are a minority group, subject to isolation and to ridicule from smug front-runners who decisively outnumber us (though they may be idiots). So we can appreciate it when something happens to demonstrate that maybe we knew what we were doing when we bucked the trend.

Thus the importance of the unpaid celebrity endorsement, the Macintosh in prominent position, a high profile for the machine with the small footprint. No one wants his or her computer to toil in obscurity. We want a computer associated with the bright lights, the fast lane, the big score, and the famous names. Above all, the famous names.

You Don't Know Me, But ...

So you couldn't blame Apple Computer for trying to give the Macintosh a push in the right direction during the first year of the Mac's existence. Some of this was done on an informal basis—Steve Jobs presented Mick Jagger with an early Macintosh for no apparent reason other than it seemed neat to have Mick Jagger using a Macintosh. But there was also a grander experiment of that sort, a large-scale project in concert with Apple's 1984 Corporate Report.

The idea was to ship Macintoshes to a variety of celebrities, show them how they might utilize the Mac to do their work, and then publish the results. The Mac could then be established as the computer for the rich and famous as well as for "the rest of us." The celebrities who posed

(continues)

CANVAS™

...the only way to draw!

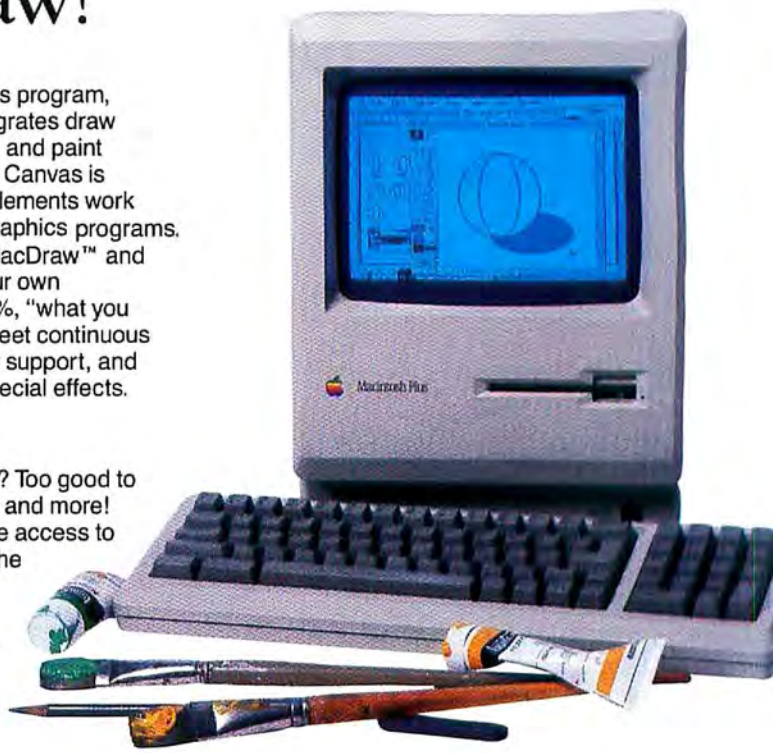
If you have been waiting for the ultimate graphics program, your wait is finally over! Canvas seamlessly integrates draw objects, high resolution 300 to 2540 dpi images, and paint graphics in a single document. In features alone Canvas is clearly superior. Yet, its the way in which these elements work together that sets Canvas apart from all other graphics programs.

In addition to supporting *all* the capabilities of programs like MacDraw™ and MacPaint,™ Canvas also includes: the ability to view and edit your own drawings at any magnification or reduction from 3.125% to 3,200%, "what you see is what you get" WYSIWYG text editing, an extra large 9x9 feet continuous drawing area, multiple page paint drawings, object macros, color support, and powerful alignment and duplication commands for impressive special effects.

Canvas is easy to use yet difficult to outgrow!

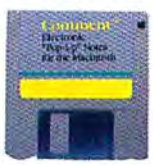
MacDraw™ and MacPaint™ in a desk accessory? Too good to be true? Not so, Canvas DA™ gives you all of this and more! The Canvas desk accessory gives you interactive access to 80% of the advanced drawing features found in the Canvas program including draw, paint, and 300 dpi images. You can create and edit all your drawings without ever leaving your favorite publishing program or word processor.

If you are serious about desktop publishing, you can't do without Canvas DA!



Comment™

...make a note of it!

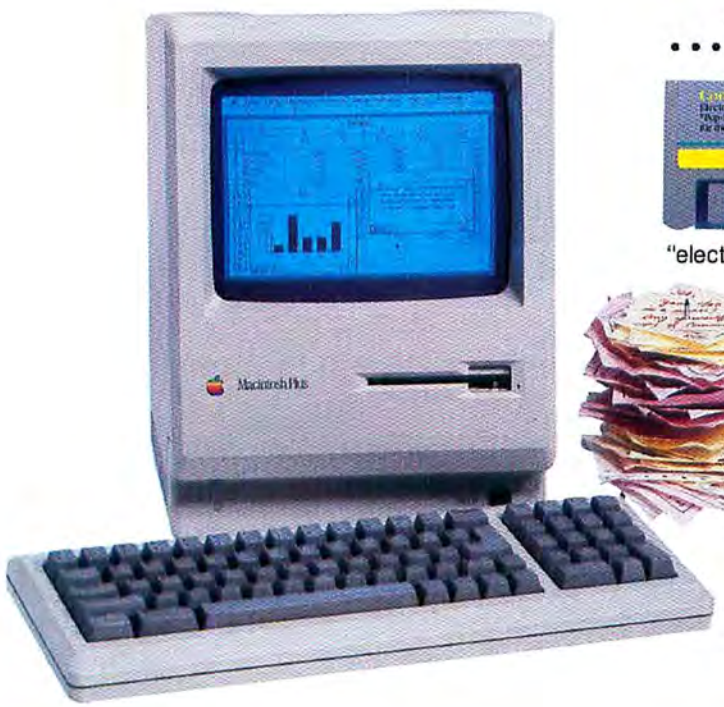


Comment is the original Macintosh equivalent of 3M's Post-It™ notes. Comment lets you to attach electronic notes to cells in a spreadsheet, text in a word processor, windows, documents and to Time itself.

The best way to explain the power of Comment is by showing you just a few of the ways in which it can help you organize your "electronic office." With Comment you can:

- Create notes that automatically "Pop-up" to remind you of important events, appointments and things to do.
- Keep an electronic equivalent of your Rolodex™ which is always just a mouse click away.
- Replace your Scrapbook and Notepad. Comment notes can contain either text or graphics. Text notes are actually mini-word processing documents with features like rulers and control of font, size and style.
- Attach notes containing graphs and explanations to any cell in your spreadsheet. Corporations can create spreadsheets with built-in *hypertext like* documentation.
- Add free form comments to any word processing or desktop publishing document without affecting the original in any way.

Comment is a true breakthrough in personal productivity tools. Once you experience its power and versatility you will not be able to do without it.

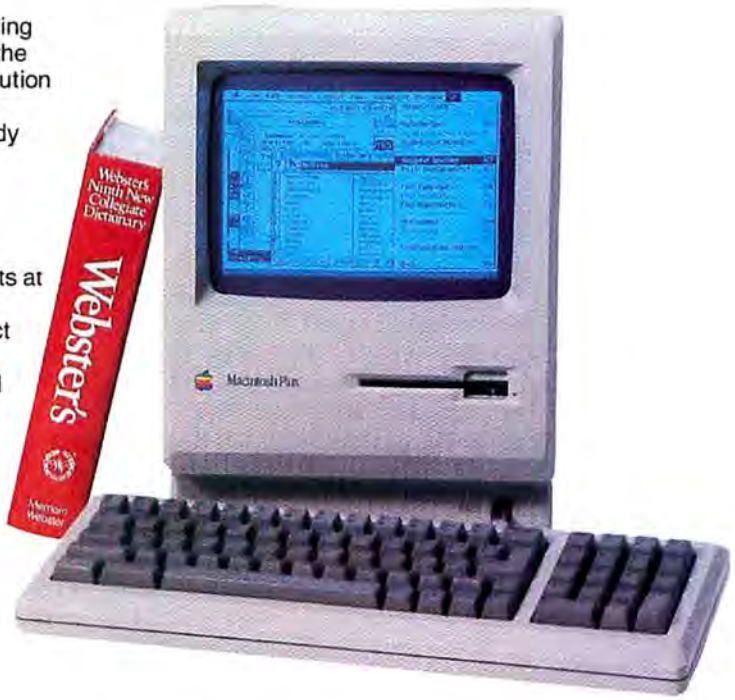


Canvas, Canvas DA, Comment, and Coach are trademarks of Deneba Systems, Inc. MacPaint, MacDraw, and AppleShare are trademarks of Apple Computer, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. More is a trademark of Living Videotext, Inc. Word, Excel, and Works are trademarks of Microsoft Corporation. PageMaker is a trademark of Aldus Corporation. Post-It is a trademark of 3M Corporation. MindWrite is a trademark of MindWork Software, Inc. Rolodex is a trademark of Rolodex Corporation.

Spelling Coach™

Don't write home without it!

Spelling Coach is the third release of Deneba's best selling interactive spell checker desk accessory. Improving on the program that started the interactive spell checking revolution was not an easy task. It took us one year and countless suggestions from over 50,000 users to improve an already superior product. We are sure you'll agree it was worth the wait!



***Spelling* Coach is everything you've been waiting for. And more.**

Here is a brief list of *Spelling* Coach's most important new features:

- Improved interactive (as you type) spelling and grammar checking.
- A new quick and easy batch checking mode that scans your documents at over 150 words per second.
- An improved typo/phonetic correction system that suggests the correct spelling of any misspelled word in seconds.
- Merriam-Webster's new 91,000 word dictionary, 28,000 word Legal and 35,000 word Medical libraries are now standard.
- Built-in interactive and batch hyphenation.
- The ability to add any word to the dictionary. Even words containing technical symbols and foreign language characters.
- Direct support for the new Coach Merriam-Webster 45,000 entry point Thesaurus.
- Improved compatibility with over 95% of all Macintosh software including PageMaker 2.0, MORE,™ Microsoft Works, Word 3.0 and Excel.

Need we say more! Let *Spelling* Coach help you create letter perfect documents every time.

Spice up your documents with the Coach Merriam-Webster Thesaurus. Access the 45,000 entry point electronic thesaurus from your favorite word processor with this easy to use desk accessory.

How easy is it to use? Just highlight any word, and in seconds, a window appears showing you the selected word, its part of speech, a complete definition, the number of different meanings of the word and an extensive list of synonyms. Then with one keystroke, you can replace the original word with any synonym. Instantly!

The Coach Thesaurus allows you to cross-reference any word in its list and maintain a reference trail by displaying every new entry in its own separate window. This makes it easy to take full advantage of the largest name brand Thesaurus available for the Macintosh.

- 45,000 entry points.
- 16,300 unique words.
- Up to 28 different meanings per word.
- Over 245,000 synonyms.
- A separate definition for every synonym group.
- Unlimited number of reference windows open at one time.

The Coach Merriam-Webster Thesaurus is compatible with over 95% of all Macintosh programs including our own Spelling Coach, Word 3.0, WriteNow, MindWrite, PageMaker, and MORE.

Coach Professional is the first *hypertext* spelling and reference system available for any microcomputer! It gives you instant access to Merriam-Webster's Concise 80,000 word electronic dictionary with complete definitions!

Just highlight any word, and in seconds, a window appears showing you the selected word, its correct hyphenation, and all uses and tenses of the word each with its own definition. Just as they appear in Merriam-Webster's book version.

Coach Professional includes all the features found in Spelling Coach and the Coach Merriam-Webster Thesaurus. In addition, a special version is available for use with any AppleShare compatible network where a central Dictionary and Thesaurus can be accessed by up to 31 users simultaneously. Coach Professional is the most comprehensive spelling and reference system available today.

If you are serious about your writing, you owe it to yourself to use Coach Professional.

Visit your local dealer for a complete demonstration of any of our products. Or call us at 1-800-622-6827. In Florida call 1-305-594-6965.

Price List

Canvas (includes desk accessory)	$195.00
Canvas DA desk accessory	$99.95
Comment	$99.95
Coach 3.0	$99.95
Coach Merriam-Webster Thesaurus	$59.95
Coach Professional	$195.00
Coach Professional Network Version	$495.00

Circle 761 on reader service card

Deneba SOFTWARE

7855 N.W. 12th Street, Suite 202 • Miami, Florida 33126

with their free Macintoshes included Ted Turner, Kurt Vonnegut, Lee Iacocca, David Rockefeller, Stephen Sondheim, Jim Henson, and Dianne Feinstein–11 in all, not counting Garry Trudeau, whose contribution was judged too critical of the Reagan administration and was quietly dropped from the project. (He was allowed to keep the Mac.)

Though the stated concept was to see how "great imaginations" would utilize the Mac, the output reproduced in the glossy pages of the 1984 Corporate Report was not uniformly imaginative. For instance, Kurt Vonnegut merely typed out the first couple of pages of his latest novel, and Dianne Feinstein used a database to list her daily schedule. David Rockefeller used it for a speech (they don't call him "Mr. Imagination" for nothing) and Lee "Cut and Paste" Iacocca printed out a report–sans the famous Mac graphics. To be sure, designers Bob Ciano and Milton Glaser were impressively creative, and Jim Henson drew a lot of adorable Muppets, apparently taking advantage of the Copy command of *MacPaint*–but the lasting impression is not what these giants of the imagination produced, but the fact that they were associated with the Mac at all.

This coup was dampened several months later, when Lise Olson, a reporter for the Technology News Service, had the temerity to follow up on the story; she reported that very few of the celebrities used those free Macintoshes after the report was published. Some didn't like to use computers at all; some used IBM PCs. Some kept the Mac in a closet. Kurt Vonnegut wasn't writing his next novel on the Mac, but he did play chess on it. Most embarrassing of all was the case of Peter Martins, the noted ballet master. On the printout displayed in the annual report of an *OverVue* file that presumably maintained his performance information, Martins's name was misspelled.

Real Celebrities Use Macintosh

That pretty much ended Apple's attempts at celebrity image-making; the company's current activities in this realm consist merely of noting when employees report hearing or reading of someone famous who uses a Mac. These range from funnyman Robin Williams to Indianapolis 500 winner Danny Sullivan. But since Mac owners are still eager to identify famous folk who have joined them–even after the machine has attained its present stature as being officially Over The Hump–there is considerable interest in spotting famous Macs. This magazine, in fact, has not been lax in calling attention to well-known people who have joined the club.

In fact, enough information has been gathered for me to feel confident to rate the top four Macintoshes. Sensitive to the pitfalls that Apple suffered when it implied that mere association with a celebrity will do the trick, I have established tougher criteria. I looked for Macintoshes in the public eye, preferably Macintoshes that emphasize the most pleasing characteristics of the machine. Ideally a celebrity Mac evokes a negative response to the question, could it have possibly been a different brand of computer?

So here are the Final Four. Like the MTV Video Countdown and the Miss Amer-

(continues)

EXPAND YOUR IMAGINATION WITH THE IS-300™ SCANNER FROM THE LASER CONNECTION™

Just imagine this... your ordinary desktop transformed into a desktop publishing center. It's a reality when you add the IS-300 scanner to your PC or Mac, laser printer and appropriate software. In 12 seconds or less, a 300 x 300 dpi image is delivered to your screen, ready to be cut, pasted or used as a template. Let your imagination run wild by adding photos, art and illustrations to any document.

Connect the IS-300 to an IBM® PC™/AT™/XT™ or compatible. Add the MacScan™ Interface option and the IS-300 works with the Macintosh™ Plus as well. Your productivity is increased, your work gets noticed and the low price is not a figment of your imagination. Can't imagine how we did it? Visit your Laser Connection dealer and see for yourself!

Hot off the Press! The Sourcebook, your one-stop shopping guide for laser printing enhancements is now available. For more information and your FREE Sourcebook phone The Laser Connection **1-800-523-2696.**

Suggested Retail Price $895.

THE LASER CONNECTION™
Enhancement products for laser printers
A QMS® Company

IBM is a registered trademark, PC, AT, and XT are trademarks of IBM Inc. MacScan is a trademark of New Image Technologies, Inc. Macintosh is a trademark of Apple Corp.

Circle 720 on reader service card

Turn your Macintosh™ into a high fidelity musical tool.

Buy a Bose® RoomMate® powered speaker system with your new Macintosh* and Bose will send you an exciting music software package – FREE.

You never knew your Mac™ could sound so good.

The Macintosh is the professional musician's choice for digital composition.

When you pair your Mac with the Bose RoomMate system, *your whole room is filled with natural, accurately reproduced high-fidelity sound.*

The RoomMate system is ideal for MIDI applications. Have you ever heard the 1812 Overture on a Mac? Try it.

We've taken some of the best features from our top-of-the-line audio products – a 4.5" full-range driver, an active equalizer, distortion limiting circuitry – and put them into a self-contained, affordable system. Simply plug the RoomMate system into the earphone jack of your Mac and hear your compositions in a way you could only imagine before.

The system also brings out the best in portable CD players, electronic keyboards and personal stereos. And with the optional mounting arms, you can mount the RoomMate system practically anywhere.

Choose the Special Edition Platinum RoomMate system.

Because looks are as important as sound, we designed a special edition RoomMate system with a platinum cabinet and grilles to match your Mac.

Get a high quality music software package free – up to a $69.95 value.

If you buy a Macintosh II, Plus or SE and Bose RoomMate system before December 19, 1987, we'll send you one of the following music software packages free – your choice.

Opcode's *Music Mouse*™ – An Intelligent Instrument

Music Mouse offers a truly innovative, immediately satisfying way of making music. And you don't need to have keyboard skills or knowledge of music notation.

Music Mouse interprets how you move the mouse, creating melody and harmony in ways that you direct. Computer logic assists with harmony, letting your musical sensitivity and imagination express themselves. Advanced musicians can experiment with a variety of improvisation options including harmony, transposition, voicing, counterpoint and more.

We chose *Music Mouse* for you as an easy-to-use, fun program. But Opcode Systems also has a complete line of professional musicware for the Macintosh – call Opcode at (415) 321-8977 for more information.

Great Wave's *ConcertWare*™ + *Version 4*

This greatly enhanced new version of the award-winning ConcertWare + program is designed for fun, work and learning.

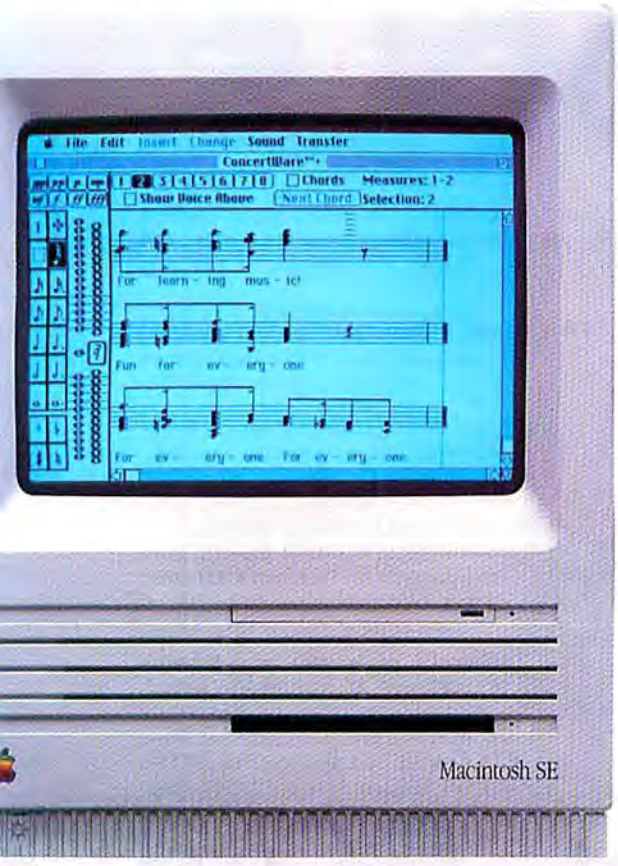
With *Music Writer,* you can enter original or sheet music using the mouse or keyboard. Arrange voices on up to eight different staves, with chords of up to eight notes per voice. Use the Record facility for real time entry to play a voice into the Mac while other voices play along with you.

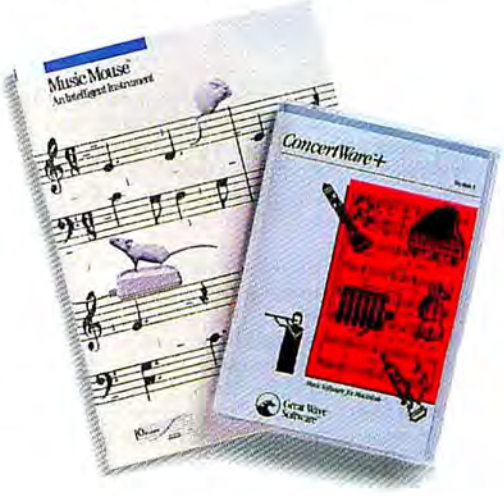
InstrumentMaker™ lets you design your own incredibly realistic instrumental sounds or modify those on the disk. And with *Music Player,* you can play back your full length selections. You can also print out complete or partial scores.

For more information on Great Wave's music programs for the Macintosh, contact Great Wave at (408) 438-1990.

Act now.

Go to your authorized Apple® dealer and audition the Macintosh paired with the Bose RoomMate system. Or order a RoomMate system just by calling (301) 796-3980. But hurry. The Free Software offer expires December 19, 1987.





BOSE®

Better sound through research.

© Copyright 1987 Bose Corporation. All rights reserved. Covered by patent rights issued and/or pending.
Features and specifications subject to change without notice.
Apple and the Apple logo are registered trademarks of Apple Computer, Inc.
Macintosh is a trademark licensed to Apple Computer, Inc.
Mac is a trademark of Apple Computer, Inc.
Bose and RoomMate are registered trademarks of Bose Corporation.
Music Mouse is a trademark of Opcode Systems.
ConcertWare, InstrumentMaker and Great Wave are trademarks of Great Wave Software.
*Offer is good with the purchase of Macintosh II, Macintosh Plus and Macintosh SE.

Software: *ConcertWare + Version 4* by Great Wave™ Software.

Circle 394 on reader service card

ica Pageant, I will proceed in reverse order for maximum suspense.

Fourth Place goes to the Macintosh looked at so askance by members of the Enterprise crew during their time-travels in the movie *Star Trek IV.* The Mac makes a swell sight gag.

Third Place is awarded to the Mac on the television show "Moonlighting." I hear that in the 1987/88 season those wisecracking yuppie gumshoes will have their Mac custom-painted by a company that does avant-garde decorating of the computer's plastic shell. At press time I had no confirmation of this, but if the rumor proves accurate, I'll have to bump that Mac off the list. (I know it's brutal, but I still haven't recovered from Apple's changing the color from beige to "platinum.") Its spot can be filled by the Macintosh that Ronald Reagan allegedly used as a TelePrompTer during a speech. (My sources are not unimpeachable here, so consider this possibly apocryphal.)

Second Place? Definitely the computer owned by Jerry Garcia, lead guitarist of the Grateful Dead. There is a delightful symmetry about the ultimate psychedelic band jamming on a Mac Plus. I read in an old *Macworld* that Captain Trips got the idea for the song title "Aztec Blanket" by looking at patterns on his Mac screen. Perfect. Garcia told me back in 1982 that "technology is the new drugs," and I guess he meant it.

The Top Banana

The Number One celebrity Mac, though, did not make its mark in music, movies, or television. I found it in the funny pages.

The comic strip is "Bloom County," an extremely popular feature centered around a boarding house whose denizens include a penguin named Opus. The strip often delivers pithy political criticism, and at its best crosses that seldom-traversed line between joke-mongering and philosophy. Its author is an irreverent Coloradan named Berke Breathed. He is no student of computing, but one of his characters is a whiz kid named Oliver Wendell Jones and, face it, in the 1980s a kid can't be much of a whiz without a computer. So millions of readers of the nearly one thousand newspapers that carry "Bloom County" were delighted to see Oliver Wendell Jones unpacking his new computer.

It was not called a Macintosh. It was called the Banana Junior 6000. It had a box-like body with built-in screen, a detachable keyboard with a wavy wire, and a slot under the screen on the right-hand side for floppy disks. The screen said things like "Hello" and "IBM Sucks Silicon."

It *was* a Macintosh.

Accosted by telephone, Breathed came clean. Yes, the Banana Junior 6000 was based on the computer we know and love. "There's no question about it," he says. "Part of the genius of the Macintosh was its aesthetic design. When I first saw the thing, I thought it was going to stand up and walk away."

Which explains why the Banana Junior 6000 has Robby-the-Robot-style legs and feet. And why it stands up and walks away.

It also has a personality that is even feistier than the Mac's. As Oliver Wendell Jones is reading from the instruction manual that the Banana Junior 6000 "com-

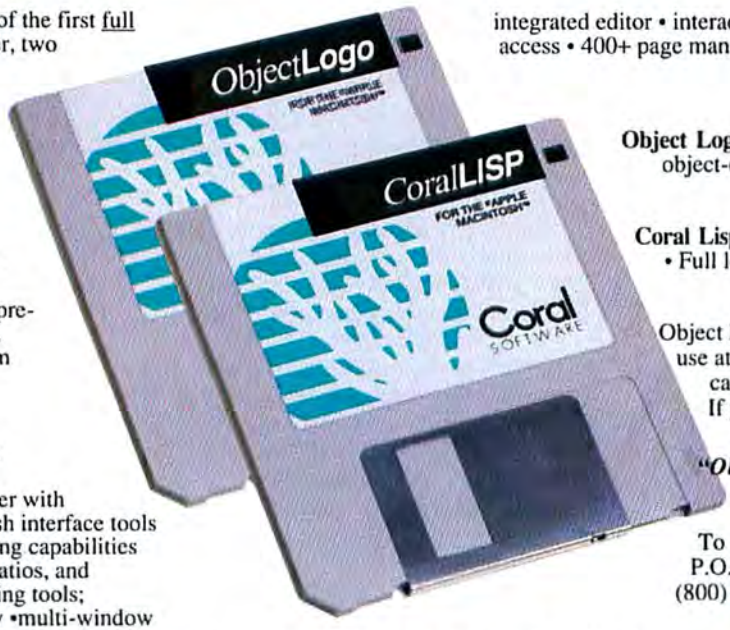
(continues)

POWER TOOLS.

From Coral Software, the developer of the first full Common Lisp for any microcomputer, two languages which bring advanced symbolic programming to the rest of us: Object Logo and Coral Lisp.

Logo and Lisp, two of the most advanced programming languages available, are now available on the Macintosh, in efficient, high-quality, low-cost implementations.
Object Logo and Coral Lisp offer unprecedented opportunities for education, exploration, AI research, and program production.

Both languages offer:
•multiple inheritance object-oriented programming system
•fast incremental native-code compiler with dynamic linking•high-level Macintosh interface tools •advanced symbolic and list processing capabilities •advanced math package; bignums, ratios, and complex number arithmetic •debugging tools; source-code stepper and trace facility •multi-window integrated editor • interactive low-level Macintosh Toolbox access • 400+ page manual, with complete cross-index and comprehensive examples



Additional Features
Object Logo • Turtle graphics with multiple object-oriented turtles • Macintalk objects • Apple Logo compatibility

Coral Lisp • File Compiler •Dialog objects • Full lexical closures, dynamic variables, separate function and value cells.

Object Logo and Coral Lisp are already in use at the Apple Vivarium project. They can be yours for less than $100 each. If you want to explore new worlds of programming, call or write today.

***"Object Logo* is truly breakthrough software at a bargain price."**
–MacWorld

To order call or write: Coral Software, P.O. Box 307, Cambridge, MA, 02142. (800) 521-1027, in MA, (617) 547-2662.

Object Logo and Coral Lisp: Where limitations are left behind.

Coral SOFTWARE

Apple is a registered trademark of, and Macintosh is a trademark licensed to Apple Computer, Inc. Object Logo and Coral Lisp are trademarks of Coral Software Corporation

Circle 611 on reader service card

Back to Basics. Thousands sold at $525. Now just $199!

FOR THE BEST SELLING ACCOUNTING SOFTWARE LOOK FOR THE PEACHTREE LABEL

Peachtree Software®

Get Back to Basics™

Peachtree's Back to Basics is the most popular accounting system on the market today. And it's no wonder why.

Back to Basics is simple to install, easy to use, and priced in line with what small businesses can afford.

But don't take our word for it. Software Digest, a leading consumer organization, rated Back to Basics number one in overall usability when compared to products costing as much as $995 and, for the past two years, Back to Basics has won the ***A+ Magazine Software of the Year Award*** for Macintosh business accounting systems thanks to the votes of over 20,000 Apple users.

No Experience Required

Back to Basics assumes you're an expert in only one business—your own.

- Installation of Back to Basics is painless — read only seven pages in the manual and *spend 30 minutes* using our screen menus.
- If you need to brush up on your accounting, use our accounting primer and tutorial, written by Harvard Business School Professor, Robert N. Anthony, plus our business section on how to handle everyday accounting dilemmas.

$199

Back to Basics Accounting System became a best seller priced at $525. Now, as a result of reduced expenses, we are able to offer all three modules — General Ledger, Accounts Receivable and Accounts Payable — in a complete set for just $199.

Proven Power

Peachtree has long been the first name in accounting software and the powerful features we've included in Back to Basics prove we understand what you're looking for.

- Complete integration of General Ledger with Accounts Receivable and Accounts Payable.
- Single transaction entries up to $999,999.99 and year-to-date totals up to $21,000,000.
- Journals and reports updated as each transaction is recorded.
- Void transaction facility automatically creates reversing entry.
- *More than 30 reports* can be viewed on screen or printed.

Macintosh Specific

Back to Basics was written specifically for the Apple Macintosh, not simply converted from another computer version. It uses the Macintosh interface (mouse and visual icons) for system operation and groups functions into on-screen "file drawers" for organization and ease of use.

Back to Basics was a featured accounting system in Apple's initial ads for the Macintosh and is backed by Peachtree's outstanding support, labeled by *InfoWorld* as "the finest in the industry". Support is available as you need it, at a nominal charge directly from Peachtree or through our network of local authorized support centers.

Money Back Guarantee

When you purchase Back to Basics directly from Peachtree Software you're protected with a 30-day, money back guarantee (an option even the most expensive accounting products don't offer).

If you're not satisfied, simply return the complete product in saleable condition within 30 days and your purchase price will be promptly refunded. For full details, call the toll-free telephone number below.

Invoicing Coming Soon

Back to Basics Invoicing will soon be available for the Apple Macintosh at an introductory price of $95.

Hardware Specifications

- IBM Personal Computer, PC/XT, PC/AT with two floppy disk drives or one floppy disk drive and a hard disk.
- Apple II+, IIe, IIc, IIgs with 128K and two disk drives or hard disk.
- Apple Macintosh 512K or Plus with two disk drives or hard disk.

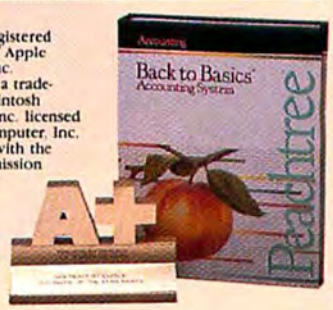
Features That Made Back to Basics A Best Seller

GENERAL LEDGER
- On-line help displays Chart of Accounts.
- MTD and YTD show on income statements.
- Allows automatic Journal entries.
- Check processing and printing capability through Cash Disbursements.
- Optional cost of sales ranges.
- User modifiable Chart of Accounts included.
- Allows up to 3 checking accounts.
- Up to 10 departments with separate income statements.

ACCOUNTS RECEIVABLE
- Calculates receivables on balance forward basis.
- Prints statements and mailing labels.
- Allows automatic posting to General Ledger.
- Accepts partial payments.
- Calculates finance charges.
- Up-to-date customer information can be scrolled for review at any time.
- Customer ID's can be alpha or numeric.
- Verifies customer credit limit.
- Calculates up to 3 sales taxes per entry.

ACCOUNTS PAYABLE
- Up to 10 vendor payment terms.
- Calculates cash discounts.
- Accepts partial payments.
- Automatic posting to General Ledger.
- Prints vendor mailing labels.
- Up-to-date vendor information can be scrolled for review at any time.
- Customer ID's can be alpha or numeric.
- Prints computer checks or processes hand-written checks.
- Invoices automatically or manually selected for payment.

Apple is a registered trademark of Apple Computer, Inc. Macintosh is a trademark of Macintosh Laboratory, Inc. licensed to Apple Computer, Inc. and is used with the express permission of its owner.



Call now to order or for a dealer near you

1-800-247-3224

In Georgia, call 1-404-564-5800

To order by mail send $199 plus $5 shipping to:

Peachtree Software

4355 Shackleford Road, Dept. MAW-10, Norcross, GA 30093

"The Best Mac Deal" $795

HOT NEW PROGRAMS!

Editor's Choices

All on one disk — 12 top-rated programs from MacWorld!
☐ **86** Best of P.D.—communications, utilities, games, DA's . . **$9**

Featured in July '87 Issue of MacWorld
☐ **125** FKeys Manager, Keystrings and selected Fkeys **$9**

*****Four Star Rated in MacUser*****
☐ **7** Switcher, disk dump **$9**
☐ **29** Red Ryder communications w/doc **$9**

Business
☐ **76** PageMaker—40 templates for cards, signs, letterhead, envelopes **$9**
☐ **135** Best of Business & Home Finance . **$9**

Communication
☐ **122,123** World War IV—Setup BBS (hard disk recommended, shareware) . . . **$18**

Desk Accessories
☐ **102** Best of DA's—Games, utilities, terminal emulator, Transfer **$9**
☐ **132** Mac's Headroom, 27 DA's, fonts, demos, docs **$9**

Fonts
☐ **90** Boston II—laser qlty on Imgwtr . . . **$9**
☐ **133** Beverly Hills—Sharpest, Imgwtr I,II . **$9**

Games
☐ **103** Best Games—Billiards, Megaroids . **$9**
☐ **126** Star Trek—funny adventure w/sounds + graphics **$9**
☐ **128** Challenging road race—1000 miles, plus more games! **$9**
☐ **129** Float in Zero Gravity: graphics, sounds **$9**
☐ **134** "Wheel of Fortune": digitized sounds **$9**

Graphics
☐ **116,117** Clickart, Sideshow, Viewpaint . . **$18**
☐ **120** Mac-a-Mug create millions of faces . **$9**
☐ **144** Videoworks movies, player, docs . **$9**
☐ **151** Artisto—MacPaint-like DA, + more . **$9**

Nudes
☐ **49** Girls! Adults only pictures **$9**
☐ **66** MacNudes: Digitized photos **$9**

Programming
☐ **51,52,53** Modula2 language w/doc . . **$27**

Science
☐ **154** Earthplot—draw detailed 3D globes **$9**

Utilities
☐ **5** Code Cracking w/doc, FEdit **$9**
☐ **6,89** ResEdit: edit fonts & icons, w/doc . **$18**
☐ **87** BASIC Compiler **$9**
☐ **130** Disk Catalogger—organize disks . **$9**
☐ **131** New Packit,2 RAMdisks, Hard Disk backup (512K only) **$9**
☐ **Book:** 150 pg. directory of disks **$7.95**
☐ **1 Yr. Membership:** book, quarterly bulletins, plus many discounts . . . **$20**
☐ **Library:** Complete set—150 disks **$895**

SPECIAL OFFER!
Any 5 Disks + Book + Bulletin
***ONLY* $39.95** (+$4 S/H)

Add $4 ($10 foreign) for shipping & handling or $2 ($5 frgn) if ordering book only. CA orders add sales tax.

Enclosed $_____ by ☐ Check ☐ VISA ☐ MC
Card No. _____ Exp _____
Signature _____
Name _____
Address _____
City _____ State _____ Zip _____

THE ◆ PUBLIC ◆ DOMAIN EXCHANGE

CALL
2074C Walsh Ave., Dept. 110 800-331-8125
Santa Clara, CA 95050 In CA 408-496-0624

Circle 334 on reader service card

LASER PRINTER LABELS!

Avery. The world's first supplier of labels specifically designed for **desktop laser printers.** Available wherever computer and office supplies are sold. Ask for product numbers 5260, 5261 and 5262. Call (800) 535-3232, X30 for the nearest dealer in your area.

AVERY

Circle 67 on reader service card

putes! sorts! prints! draws! figures! doodles! slices! dices! whistles! whimpers! dances! prances!" we see Banana Junior high-kicking like a Rockette. As the Banana Junior watches television and Mr. Rogers asks if it can say "painter," the silicon smart aleck says, "rhinoceros." (I wonder if Banana was running Mindscape's non sequitur–ware, *Racter.*) Ever the critic, Banana Junior has a habit of spitting out cheap software. This last problem is so vexing that Jones called up Banana Electronics, Inc., to complain. The Banana Electronics support person asked Jones to put the computer on the phone, and then bullied the recalcitrant computer into submission by threatening to recycle its ROM chips. "Toaster ovens!" he warned, "Did you hear me? Programmable toaster ovens!"

All this without a BananaCare service warranty. Apple should take note.

The "Bloom County" appearances of Banana Junior were very, very good for the Macintosh. Breathed says that he received a lot of attention and praise from Mac owners, and those in Mac circles certainly buzzed with pride and delight each time Banana did its thing. Some were moved to turn on their computers and devise an homage to this appealing little guy. An anonymous software hacker came up with a Banana Finder you could download from CompuServe that offered a desktop with icons depicting "Bloom County" characters.

Throughout the third-party Macintosh community, you'll still spot countless yellowing "Bloom County" strips featuring Banana Junior on bulletin boards and walls of work carrels.

There was even an unauthorized product introduced to allow people to change their Macintoshes into Banana Juniors. For $24.95, a firm called Unique Idea Company offered a Banana 6000 Upgrade Kit consisting of legs and feet that clipped on to the Mac. A clever idea, but one of limited utility. Even Berke Breathed, who is careful about licensing his comic strip creations, did not think this a plausible target for litigation. "I think they sold about four," he notes. Indeed, the Point Roberts, Washington, phone number listed in the advertisements has been disconnected.

Unhappily, this tribute to the Banana Junior will have to stand as its eulogy. Yes, to the dismay of its fans, Breathed has dropped the Banana Junior 6000 as a "Bloom County" character. "An idea gets

(continues)

exhausted," explains Breathed, "and you're careful not to drive it into the ground." But, Berke, did you have to stuff it into a garbage can? Because at Banana Junior's last sighting, Oliver Wendell Jones was doing exactly that to the poor machine. Judging from Banana's kicking, screaming, and vile insult-mongering, this form of disposal was not to Junior's liking. "The Banana Jr. 6000 does not face obsolescence with great poetic dignity," Jones notes, and Macintosh 128K owners will appreciate the sentiment. But in the following day's installment, we learned that obsolete computers eventually accept the inevitable. Banana Junior made its exit graceful, though typically melodramatic, by reciting some of Katherine Hepburn's lines from *On Golden Pond*.

But this most notable of Macs will not be soon forgotten. Berke Breathed admits holding a soft spot in his heart for the character. "One of my favorite strips came out of it," he says, and any fan of the Banana Junior 6000 will know exactly the one he means. In this strip, Banana Junior is the only character. He starts off his soliloquy slowly, repeating Descartes's statement, "I think. Therefore, I am," thus stating not only the foundation of Western philosophy, but that of artificial intelligence theorizers as well. By the third panel, he is awhirl with the exhilaration of consciousness, spouting poetry like some mad microchip bard. But we also see that his animation is pulling his electric plug out of the socket. In the final panel he is lying facedown, inert ... all is silent. In four panels, Berke Breathed has managed true eloquence; it is a statement worthy of a much longer, and less effective, statement by any number of philosophers, scientists, and cracker-barrel commentators.

I couldn't imagine that performance coming from the rigid, unfriendly contours of a competing computer. It is not only unmistakably Banana, it is unmistakably Mac. This is why the Banana Junior 6000 is the All-Time Number One Celebrity Macintosh.

Oh, and here's one more celebrity who currently uses a Macintosh: Berke Breathed. He doesn't draw with it, but he uses it for word processing and something he calls "tabletop printing." He's quite happy with it.

You expected a Compaq, maybe? □

INTRODUCTORY OFFER *$1,595* Call Now!

The Zericon Model 3600-D Plotter Astounding price and performance for only $2295.

Zericon dares to compare value

- Price: a full $1,000 less than our nearest competitor.
- Compatibility: operates with all popular CAD software supporting DMPL™.
- Speed: at 7 inches per second, the 3600-D offers the best price-performance ratio in its class.
- Resolution: .004 inches assures you of drawing quality you can be proud of.
- Unique: X & Y axis scaling allows you to calibrate to 1 part in 10,000. Ideal for applications where scale is critical.

CALL NOW AND WE'LL SEND YOU A FREE SAMPLE PLOT.
(415) 490-8380

Dealer inquiries invited

ZERICON
4423 Enterprise Street
Fremont, CA 94538

Circle 726 on reader service card

Clip Art

Illustrations In PostScript and Encapsulated PostScript

Now you can have high quality professional illustrations for all of your graphic desk top publishing requirements. Click & Clip™ is designed and illustrated to meet your needs. Each issue includes topics of business, seasonal, sports, borders and other timely illustrations. Each illustration can be changed by resizing proportionately, distorting unproportionately or crop any portion of the illustration when placed into page make up systems that support the Encapsulated PostScript® files. But if you want to open up the world, combine Click & Clip™ and Adobe Illustrator™ together and the changes become unlimited!

Quality, speed and creativity is now placed at your finger tips.

With output on every PostScript®-equipped printer.
Ask about our special Click & Clip™ and Adobe Illustrator® package offer and save.

Bitmap

ORDER TODAY!

❑ PostScript ❑ Encapsulated PostScript for Macintosh
❑ 1 issue $39.95; ❑ 2 issues $67.00; ❑ 4 issues (full year) $124.50
Type of Macintosh_____

New! Click & Clip Art Department (for Newsletters)
❑ $49.95 per issue, ❑ twice a year $95.00.

Name_____Address_____
City_____State____Zip_____Phone_____
Send Check to: Studio Advertising Art, P.O.Box 18432-52, Las Vegas,Nevada 89114
Orders Only Call (800)235-6646 ext. 227; in Calif. (800)235-6647 ext.227

Circle 93 on reader service card

Programs & Peripherals

Picks of the Month

FONTastic Plus by Altsys Corporation

FONTastic Plus is the premier bitmap font editor for the Mac. It gives you the power to *change any screen font. FONTastic Plus* can create special symbols in seconds and helps you to make your own letters. You can also edit several fonts at once, create true kerning pairs, print samples and use guidelines. Everything you need to make fonts is at your fingertips with *FONTastic Plus.*

FONTastic Plus ..... **45.**

MicroPhone 1.1 by Software Ventures

MicroPhone 1.1 is the best-selling telecom software for the Macintosh. It offers fast and reliable communications with other PCs, minis, mainframes and info services. *MicroPhone* allows you to automate log-on sequences, data transfers and electronic mail. With the unique Watch Me features, script creation is a snap so you don't need to learn a new language. *MicroPhone* now comes with an on-line text editor and includes *Glue* for desktop publishing. Get in touch with other computers by using *MicroPhone 1.1.*

MicroPhone 1.1 ..... **109.**

MindWrite 1.1 by MindWork Software

MindWrite is the best idea organizer for any professional who writes. It allows documents to evolve naturally from notes, through an outline into finished text. *MindWrite* moves easily between writing and outlining, automatically tracking revisions for you. A special search function allows you to abstract all references to a certain topic into a new document. In addition to all this, *MindWrite* automatically renumbers sections and lists, creates table of contents, counts characters, words, and paragraphs and displays as many windows as memory allows. If you have writing on your mind order *MindWrite* now!

MindWrite 1.1 ..... **179.**

Desk Accessory Programs

Affinity Microsystems Tempo	55.	**Imagine Software** Smart Alarms & Appointment Diary	38.
Batteries Included Battery Pak *(9 Desk Accessories)*	32.	Smart Alarms & Appointment Diary Multi-User	99.
Borland SideKick V2.0	59.	**Solutions, Inc.** SmartScrap & The Clipper	
Cortland Top Desk *(7 New Desk Accessories)*	34.	*(New Scrapbook DA)*	41.

Utility Software

Berkeley System Design Stepping Out *(Macintosh Screen Extender)*	59.	**Personal Computer Peripherals Corp.** HFS Backup V2.0	29.
Central Point Software Copy II Mac *(Includes MacTools)*	20.	**Softstyle** Printworks	47.
FWB Software Hard Disk Util	56.	Laserstart Plus	89.
Hard Disk Backup or Hard Disk Partition	38.	**SuperMac Software** SuperSpool *(ImageWriter Print Spooler Utility)*	39.
Ideaform Mac Labeler *(Version 2.2)*	29.	Diskfit *(Backup & Restore Utility)*	49.
DiskQuick *(Disk Librarian)*	29.	SuperLaserSpool	99.
Infosphere MacServe *(Network Software)*	165.	Multi-User SuperLaserSpool	259.
LaserServe *(LaserWriter Print Spooler)*	65.	Sentinel	49.
ComServe *(Modem Sharing Software)*	195.	**THINK Technologies** LaserSpeed *(Single User)*	65.
Olduvai Software DA-Switcher *(Switch Multiple Sets of DA's)*	26.	LaserSpeed Office Pack	279.
Icon-It! *(Assign Icons to Menu Items)*	39.	**Williams & Macias** myDiskLabeler	24.
		myDiskLabeler w/Color	33.
		myDiskLabeler w/LaserWriter Option	37.
		Working Software, Inc. Findswell *(Document Finder)*	32.

Languages

Apple Computer MacPascal	99.	Microsoft Basic Compiler 1.0	119.
Borland Turbo Pascal	59.	Microsoft Fortran Compiler 2.2	169.
Consulair Macintosh 68000 Development System	59.	**THINK Technologies** Lightspeed C	119.
Mainstay V.I.P. *(Visual Interactive Programming)*	85.	Lightspeed Pascal	79.
Microsoft Microsoft Basic Interpreter 3.0	64.	**TML Systems** TML Pascal V2.0	68.
		TML Source Code Library	58.
		TML DataBase Toolkit	64.
		Zedcor, Inc. ZBasic 4.0	64.

Communications Software

Apple Computer MacTerminal	99.	**Software Ventures** Microphone 1.1 *(Includes Glue)* Special	109.
Compuserve Compuserve Starter Kit	24.	**Think Technologies, Inc.** InBox-Starter Kit V2.0 *(3 Personal Connections)*	219.
DataViz MacLink Plus with Cable	149.	InBox-Additional Personal Connections	79.
Hayes Microcomputer Smartcom II	88.		

to Polish Up Your Mac...

with Special Pricing!

Rags to Riches 3 Pak GL/AR/AP Version III by Chang Laboratories

Rags to Riches Version III provides users with more choices in their accounting selection, setup, operation and reporting! Each module has more options to let you customize the operation to the way YOU do business. It gives you more flexibility to format reports, invoices and statements to suit your personality. This is the fastest accounting package available for the Macintosh. Success in accounting can be yours with *Rags to Riches Version III.*

Rags to Riches 3 Pack *(GL/AR/AP)* Version III ... **279.**

RecordHolderPlus by Software Discoveries, Inc.

The original RecordHolder data manager drew rave reviews: "powerful, easy-to-use" and a program that "outclasses most programs costing four times as much." Now ***RecordHolderPlus*** adds *color* and *graphics* capabilities. You can store pictures in your database and print text or graphics in color on the ImageWriter II. Mailing labels can be sorted by Alpha or ZIP and printed as multiple labels across or multiple identical labels. Order *RecordHolderPlus,* the "easiest-to-use" data manager that lets you show your true *colors*!

RecordHolderPlus ..... **45.**

Turbo Mouse by Kensington Microware

Turbo Mouse does everything a Mouse can do and more! It is quicker, quieter and easier to use than a standard mouse by turning mouse technology upside down. With the mouse ball on top rather than on the bottom, you move only the ball and not the whole mouse. *Turbo Mouse* is compatible with the Macintosh and the Macintosh Plus. Avoid all the old desktop "mousetraps" by using *Turbo Mouse.*

Turbo Mouse ..... **79.**

Micro Planner Plus by Micro Planning International

Micro Planner Plus is the most powerful yet easy-to-use project and resource management software available on any Micro. You can save time and money by minimizing delays. Choose to have customized Pert, Gantt and other management reports drawn for you with the option for embellishment in MacDraw. You can transfer information to and from other Mac applications. Bring your projects in on time and on budget with *Micro Planner Plus*!

Micro Planner Plus ..... **289.**

Deluxe Music Construction Set 2.0 by Electronic Arts

Deluxe Music Construction Set 2.0 is the ultimate Macintosh music tool for composing, performing and publishing. For composing, *DMCS* has complete input, editing and notation. For performing, there is an enormous variety of playback options utilizing the 27 instruments. Desktop music publishing is now a reality — *DMCS* supports Adobe Systems' *Sonata* font for professional quality sheet music. Get in tune with your Mac with *Deluxe Music Construction Set 2.0*!

Deluxe Music Construction Set 2.0 ..... **62.**

Positively A Plus!

PROGRAMS PLUS

800/832-3201

Circle 194 on reader service card

Positively A Plus!

Disk Drives/Hard Disks/Upgrades

AST Research
AST fAST-20 — 859.
20 MB External Hard Disk for Macintosh Plus, SE and Mac II.
AST-2000 — 1399.
20 MB External Hard Disk with 20-MB Cartridge-Tape Backup for the Macintosh Plus.
AST-4000 — 3699.
74 MB External Hard Disk with 60-MB Cartridge-Tape Backup for the Macintosh Plus.
Central Point
Central Point 800K External Drive — 185.
Dove Computer Corporation
MacSnap Model 524 *(512K to 1MB Upgrade)* — 139.
MacSnap Model 524S *(512K to 1MB Upgrade w/SCSI Port)* — 239.
MacSnap Model 548 *(512K to 2MB Upgrade)* — 359.
MacSnap Model 548S *(512K to 2MB Upgrade w/SCSI Port)* — 459.
MacSnap Plus 2 *(MacPlus to 2MB Upgrade)* — 249.
MacSnap Toolkit *(Wrench, Case Cracker & Grounding Set)* — 14.
Ehman Engineering
Ehman 800K External Disk Drive — 189.
IOMEGA
Dual Cartridge Drives
Bernoulli Box *(Dual 10MB w/SCSI)* — 1419.
Bernoulli Box *(Dual 20MB w/SCSI)* — 1849.
MacMemory, Inc.
All MacMemory products carry a full two year warranty!
MaxPlus *(2MB Upgrade w/MaxRam/MaxPrint/MaxChill)* — 329.
MaxPlus 2x4 *(2.5MB Upgrade with 1MB Chips-Hyperdrive Compatible)* — 519.
MaxPack *(MaxPlus and MaxSave Bundle)* — 379.
MaxPort *("SCSI" Port for your Mac 512K)* — 139
Mirror Technologies
Magnum 800K External Drive *(Available in Beige or Platinum)* — 209.
Personal Computer Peripherals
Available in Beige or Platinum Color
MacBottom HD-21 *(20+Mb SCSI Hard Disk)* — 859.
MacBottom HD-45 *(45Mb SCSI Hard Disk)* — 1285.
MacBottom 20 *(20+Mb Serial Hard Disk for Mac 512k & MacPlus)* — 859.
Rodime Systems
Rodime 20 Plus Hard Disk *(MacPlus SCSI)* — 759.
Tecmar
QT-Mac40 *(Standalone 40BM Tape Backup w/SCSI)* — 1139.
Western Automation Labs
Dasch External RAMdisk *(2048KB)* — 429.

Blank Media

Single Sided 3½" Diskettes
BASF 3½" SS/DD Disks *(box of 5)* — 8.
Bulk *(Sony)* 3½" SS/DD Disks *(10)* — 12.
Sony 3½" SS/DD Disks *(box of 10)* — 14.
Centech 3½" SS/DD Color Disks *(box of 10)* — 16.
Fuji 3½" SS/DD Disks *(box of 10)* — 14.
Maxell 3½" SS/DD Disks *(box of 10)* — 13.
Verbatim 3½" SS/DD Disks *(box of 10)* — 13.
3M 3½" SS/DD Disks *(box of 10)* — 14.
C.Itoh Color Disks SS/DD *(box of 10)* — 22.

Double Sided 3½" Diskettes
BASF 3½" DS/DD Disks *(box of 5)* — 9.
Bulk *(Sony)* 3½" DS/DD *(10)* — 16.
Centech 3½" DS/DD Color Disks *(box of 10)* — 19.
Sony 3½" DS/DD Disks *(box of 10)* — 19.
Fuji 3½" DS/DD Disks *(box of 10)* — 20.
Maxell 3½" DS/DD Disks *(box of 10)* — 20.
Verbatim 3½" DS/DD Disks *(box of 10)* — 20.
3M 3½" DS/DD Disks *(box of 10)* — 21.
C.Itoh Color Disks DS/DD *(box of 10)* — 25.

Modems

Hayes Microcomputing
Smartmodem 1200 — 299.
Smartmodem 1200 Mac w/Smartcom II & Cable — 359.
Smartmodem 2400 — 449.
Transet 1000-128K — 269.
Transet 1000-512K — 359.
Transet 1000 Mac Accessory Kit — 29.
InterBridge *(Connect Appletalk Networks)* — 599.
Migent
Migent Pocket Modem *(ext. 300/1200 Baud)* — 169.
Prometheus
Promodem 1200 *(Hayes Compatible)* — 239.
Promodem 2400 *(Hayes Compatible)* — 309.
Mac Pack w/Procom M and Cable *(Specify Mac or MacPlus)* — 49.
U.S. Robotics
Courier 1200 (Hayes Compatible) — 199.
Courier 2400 *(Hayes Compatible)* — 349.
Courier 2400E *(Hayes Compatible)* — 409.
Courier HST 9600 *(Hayes Compatible)* — 689.

Digitizers

AST TurboScan *(Optically Scans & Digitizes at 300 Dots-Per-Inch)* — 1399.
Impulse Impulse *(MacNifty)* Audio Digitizer V2.0 w/SoundCap — 149.
Koala Technologies Corp.
MacVision *(Digitizer)* — 175.
New Image Technology
Magic Digitizer *(Mac 128/512k or MacPlus Version)* — 249.
MacScan *(High Speed Image Scanner at 300 [DPI])* — 1399.
Summagraphics
MacTablet 6x9 size — 289.
MacTablet 12x12 size — 379.
ThunderWare
ThunderScan V4.0 with Power Port *(Mac 512K, 512K Enhanced, MacPlus, and Macintosh SE)* — 199.

Accessories

A.M. Products
3½" Head & Computer Cleaning Kit — 18.
Bech-Tech
Fanny Mac — 69.
Cambridge Automation
Numeric Turbo — 99.
Curtis Manufacturing
Diamond-Surge Suppressor-SP-1 — 29.
Emerald-Surge Suppressor-SP-2 — 36.
Ruby-Surge Suppressor-SPF-2 — 55.
Sapphire-Surge Suppressor-SPF-1 — 47.
Ergotron
MacTilt or MacTilt SE *(Platinum Color)* — 74.
Mouse Cleaner 360° — 15.
MacBuffer *512K* — 329.
MacBuffer *1024K* — 429.
I/O Design
Mac Luggage Available in Navy or Platinum Gray
Macinware Plus Carrying Case — 69.
Macinware SE Carrying Case — 79.
Imageware II Carrying Case — 49.
Kulmar Designs
Teakwood Roll-Top Disk Cases:
Micro Cabinet *(holds 45 disks)* — 14.
Double Micro Cabinet *(holds 60 disks)* — 21.
Triple Micro Cabinet *(holds 135 disks)* — 29.
Kensington
External Disk Drive Cover — 8.
Mouse Pocket — 8.
Mouseway *(Mousepad)* — 8.
ImageWriter or ImageWriter II Cover — 9.
Macintosh (Plus) Dust Cover — 9.
Mouse Cleaning Kit w/Pocket — 17.
Disk Case *(holds 36 Mac disks)* — 19.
Disk Drive Cleaning Kit — 20.
Tilt/Swivel — 22.
Universal Copy Stand — 24.
Polarizing Filter — 34.
Surge Protector — 34.
Printer Muffler 80 — 39.
Printer Muffler 132 — 52.
Starter Pack *(includes Tilt/Swivel)* — 59.
Control Center — 64.
System Saver Mac *(Beige or Platinum)* — 64.
A/B Box *(MacPlus Only)* — 64.
Turbo Mouse — *Special 79.*
Moustrak
MousePad 7"x9" Size — 8.
MousePad 9"x11" Size — 9.
Ribbons Unlimited
Available in Black, Blue, Brown, Green, Orange, Purple, Red, Yellow, Silver & Gold
ImageWriter Ribbon-Black — 4.50
ImageWriter Ribbon-Color — 5.
ImageWriter Rainbow Pack *(6 Colors)* — 25.
ImageWriter II-Four Color Ribbon — 12.
SoftStyle
MacEnhancer — 169.
The Madison Line
Professional Series Carry Cases In Black Ballistic Nylon
Mac(Plus) Carry Case — 79.
ImageWriter I (II) Carry Case — 75.

PROGRAMS PLUS

75 Research Drive
Stratford, Connecticut 06497
800/**832-3201**

Orders Only 800/832-3201 In Connecticut call 378-3662 or 378-8293, Customer Service (203) 378-3662
Business Hours— 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. For fast delivery, send cashier's check, certified check, or money order. With MASTERCARD and VISA orders include card number and expiration date. Connecticut residents add 7.5% sales tax.
- UPS Next Day Air & 2nd Day Air available.
- Sorry, we cannot accept COD orders.

Shipping

- **Software Only:** Continental US: $3.00 min. charge for Shipping & Insurance. APO/FPO orders shipped 1st class mail, add 3% *($5.00 min)* **Hawaii:** Add 10% *($15.00 min)* **Alaska:** Add 6% *($10.00 min)* **Canada:** Add 12% *($15.00 min)* **Foreign Orders:** Add 20% *($35.00 min)*
- **Hardware Items:** Please call for shipping charges.
- All goods are new and are guaranteed by the manufacturer, but we cannot guarantee machine compatibility. Due to software copyright laws, all sales are final. 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.

© Copyright 1987 Programs Plus, Inc.

& Phenomenal Prices . . .

DataBase Management

Blythe Software Omnis 3 Plus 259.
Omnis 3 Plus Multi-User *(MacServe, Tops Network, Corvus, or Appleshare Network)* 499.
Borland Reflex 59.
Chang Laboratories
C.A.T. Contacts•Activities•Time 239.
Forethought FileMaker Plus 159.
Microsoft Microsoft File 1.05 110.
Nantucket Corporation McMax *(Run dBase Programs on the Mac)* 189.
Odesta Double Helix 275.
Multi-User Helix 429.
ProVUE Development OverVUE 2.1 149.
Software Discoveries MergeWrite 32.
RecordHolderPlus *Special* 45.

Business Software

Apple Computer MacProject 159.
Batteries Included
Isgur Portfolio System 125.
Time Link 32.
Bravo Technologies MacCalc 85.
Cricket Software
Cricket Graph 125.
Data Tailor
Trapeze *(Spreadsheet/Color Report Generator)* 169.
Deneba Software Comment *(Attach Electronic Notes to Files)* 64.
Forethought PowerPoint 209.
Layered
Notes For Excel, PageMaker, Microsoft Works or Word 3.0 *(each)* 42.
Legisoft/Nolo Press
WillWriter V2.0 31.
Lotus Jazz *(Version 1.A)* 179.
Micro Planning Software
Micro Planner Plus *Special* 289.
Microsoft
Microsoft Works 1.0 189.
Microsoft Multiplan 1.11 110.
Microsoft Chart 1.02 72.
Microsoft Excel 1.04 224.
Satori Software
Legal Billing 359.
Legal Billing II 519.
Project Billing 429.
Bulk Mailer 3.0 89.
Bulk Mailer Plus 3.0 219.

Word & Outline Processors

Ann Arbor Softworks
FullWrite Professional 169.
Apple Computer MacWrite 99.
Firebird Licensees Laser Author 105.
Living Videotext More 149.
Microsoft Microsoft Word 3.01 239.
MindWork Software
MindWrite 1.1 *Special* 179.
OWL International Guide 79.
Guide Envelope System 99.
Symmetry Acta V1.2 37.
T/Maker Company WriteNow 98.

Spelling & Grammar Checkers

Aegis Development
Doug Clapp's Word Tools 42.
A.L.P. Systems MacProof V2.0 *(Requires MacPlus)* 99.
Batteries Included
Thunder! *(Interactive Spelling Checker)* 32.
Deneba Software Spelling Coach 3.0 *(Webster's/Medical/Legal/Hyphenation)* 64.
Spelling Coach 3.0 Professional *(Adds Definitions & Thesaurus)* 129.
Coach Merriam Webster's Thesaurus 2.0 39.
Lundeen & Associates WorksPlus Spell 38.
Microlytics, Inc.
Word Finder *(Synonym Finder)* 39.
Working Software Inc.
Spellswell Spelling Checker & Proofreader V1.3 44.
Spellswell Medical Dictionary *(35,000 Medical Terms)* 57.
Lookup *(Makes Spelling Suggestions)* 32.

Desktop Publishing

Aldus Corporation
PageMaker 399.
Boston Publishing Systems
The MacPublisher III 149.
Letraset Ready, Set, Go! 3.0 249.
Ready, Set, Go! 4.0 289.
Postcraft International, Inc.
Laser FX *(Typographical Special Effects for Desktop Publishing)* 119.
Solutions, Inc.
Glue *(Adds "Print to Disk" Capability)* 41.
Super Glue *(Graphics Integration Package)* 59.

Accounting Packages

BPI
BPI Entry Series-General Accounting 135.
Chang Labs
New Enhanced Version III Modules!
Rags to Riches GL, AR, or AP 125.
Rags to Riches Three Pack-*(GL/AR/AP)* *Special* 279.
Inventory Control 243.
Professional Billing 243.
Professional Three Pack-GL/Professional Billing/Payables 349.
Digital, Etc.
Turbo Maccountant V2.0 259.
Migent
In House Accountant 99.
Monogram
Dollars & Sense 81.
Peachtree
Back To Basics Three Pack *(GL/AR/AP)* 129.
Survivor Software
MacMoney *(Financial Planner)* 42.

Statistics Packages

BrainPower
StatView 512 Plus 179.
Cricket Software Statworks 77.
Systat
Systat 3.1 *(Specify Mac 512K, MacPlus, or Mac II)* 459.

Graphics Software

Altsys Corp. FONTastic 27.
FONTastic *Plus* *Special* 45.
Fontographer 2.2 245.
Ann Arbor Softworks Full Paint 53.
Apple Computer MacPaint 99.
Broderbund Print Shop 39.
Toy Shop 32.
Casadyware
Fluent Fonts 2.0 *(Two-Disk Set)* 29.
Fluent Laser Fonts Vol. 1-15 *(ea)* 48.
Deneba Software
Canvas 1.0 *(Graphics Capabilities of MacPaint & MacDraw)* 129.
Canvas DA 1.0 *(Desk Accessory Version)* 64.
Dubl-Click Software
World Class Fonts! Vol. 1 or Vol. 2 28.
World Class Fonts! *(Both Volumes)* 49.
WetPaint Vol. 1 or Vol. 2 28.
WetPaint *(Both Volumes)* 49.
Enzan-Hoshigumi USA
MacCalligraphy 2.0 115.
Japanese Clip Art Scroll 1 *"Heaven"* or Scroll 2 *"Earth"* 59.
LaserWare, Inc. LaserPaint 319.
LaserWorks 199.
Miles Computing Mac The Knife Volume III, IV, or V 27.
Mindscape ComicWorks 48.
GraphicWorks 1.1 64.
Olduvai Software
Post-ART *(Three Disk Set)* 34.
Silicon Beach Software
SuperPaint 54.
Silicon Press 41.
Springboard Certificate Maker 35.
Certificate Maker Library #1 21.
Symmetry PictureBase V1.2 44.
T/Maker
Click Art Letters I, Letters II, Personal Graphics, Publications, Effects, Business Image, or Holidays *(each)* 28.
Click Art Laser Fonts: Plymouth, Bombay, or Seville *(each)* 46.

CAD Products

Apple Computer MacDraw 159.
Challenger Software
Mac 3D *(Enhanced Version 2.0)* 119.
Cricket Software
Cricket Draw 175.
Enabling Technologies
Easy 3D 69.
Professional 3D 199.
Innovative Data Design
MacDraft *(Updated Version 1.2)* 159.

Educational/Creative Software

Addison Wesley Puppy Love 14.
Bogas Productions Studio Session 59.
Broderbund Sensei Geometry 64.
Calculus & Physics 64.
Davidson & Associates
Speed Reader II 39.
Math Blaster or Word Attack! 28.
Electronic Arts Deluxe Music Construction Set V2.0 *Special* 62.
1st Byte/Electronic Arts
Kid Talk, Speller Bee, First Shapes, or Math Talk 31.
Mathtalk Fractions, First Letters & Words, or Smoothtalker 31.
Great Wave Software
KidsTime or TimeMasters 28.
Concertware+ 4.0 45.
Concertware+ MIDI 4.0 95.
Hayden MusicWorks 29.
Score Improvement System for the SAT 59.
Micro: Maps
MacAtlas Paint Version *(MacPaint Format)* 32.
MacAtlas Professional *(PICT/MacDraw Version)* 129.
Mindscape Perfect Score SAT w/The Perfect College 46.
Rubicon Publishing
Dinner at Eight-Silver Palate Bundle 52.
Simon & Schuster
Typing Tutor IV 38.
Paper Airplane Construction Set 24.
Spinnaker Typing Made Easy 32.
Springboard
Early Games for Young Children 28.
Easy as ABC 28.

Game Software

Accolade Hard Ball 24.
Activision
Shanghai or Hacker II 24.
Hacker 16.
Portal 32.
Tass Times In Tonetown 21.
Artworx Bridge 5.0 20.
Avalon Hill
Mac Pro Football 30.
Broderbund
Ancient Art of War 27.
Bullseye Software
Fokker TriPlane Flight Simulator 34.
Ferrari Grand Prix 34.
Electronic Arts Starfleet I 37.
ChessMaster 2000 30.
Archon, One-On-One, Patton vs Rommel, Pinball Construction Set, Seven Cities of Gold, Software Golden Oldies or SkyFox *(each)* 15.
EPYX Winter Games or Sub Battle Simulator 24.
Firebird Pawn 27.
Hayden Software Sargon III 29.
Infinity Software, LTD.
Grand Slam Tennis II 34.
World Cup Soccer 27.
Go 23.
Infocom
Ballyhoo, Beyond Zork, Bureaucracy, Hollywood Hyjinx, Leather Goddesses of Phobos, Moon Mist, Nord & Bert, Stationfall, The Lurking Horror, Trinity, or Zork I *(each)* 25.
Hitchhiker's Guide to The Galaxy 19.
Zork Trilogy 45.
Microsoft
Flight Simulator 1.0 32.
Miles Computing Inc.
The Fool's Errand 27.
Downhill Racer or Harrier Strike Mission II 27.
Mindscape
Balance of Power or Crossword Magic 32.
Deja Vu: A Nightmare Comes True 32.
King Of Chicago or Shadowgate 32.
The Uninvited 32.
Practical Computer Applications
MacGolf 2.0 or MacRacquetball 36.
MacCourses 34.
Psion
Psion Chess *(3D & Multi-Lingual)* 31.
Sierra On-Line
Space Quest 32.
Black Cauldron 25.
King's Quest I, II, or III *(each)* 32.
Silicon Beach Software
Enchanted Scepters 21.
Dark Castle 28.
World Builder 41.
Simon & Schuster
Star Trek *(The Kobayashi Adventure)* 24.
Sir-Tech Mac Wizardry 35.
Sphere, Inc.
GATO, Orbiter, or Falcon 26.
XOR Software
NFL Challenge 69.

QUALITY PRICE.

(Quality and price are inseparable at Warp Nine.)

Quality. And price. Not a match made in heaven. It's a match made at Warp Nine.

Just look at these prices. They're about 40% lower than you'd expect because we sell directly to you, eliminating the dealer's mark up. And dedicated as we are to low prices, we're even more dedicated to quality. In fact, we're so convinced of our quality that if after 30 days you don't absolutely love our product, return it for a complete refund.

Our commitment to a well-built machine is further reflected in our Quality and Assurance Report. It details every step of production and is signed by the person responsible for each step. Plus, there's a full one-year warranty available for the asking. And when you buy from us, you get an unlimited toll-free number to our technical support team for any questions you may have—something our competition doesn't offer.

So get your drive from Warp Nine. And you'll get more than you bargained for.

PHOTON 20, 30, 40 AND NEW 80.

$569 $699 $949 $1349

A 21, 31, 41 or 81MB external SCSI hard drive. Fast, dependable, rock-solid performers. HFS and MFS compatible. Daisy chain up to seven SCSI devices. Photon 20, 30, 40 and 80 prices: For MacPlus—**$569.00, $699.00, $949.00, $1349.00.** *For 512k with our PlusPort—**$699.00, $829.00, $1099.00** and **$1479.00.**

MEMORY UPGRADES FOR YOUR 512 AND PLUS.

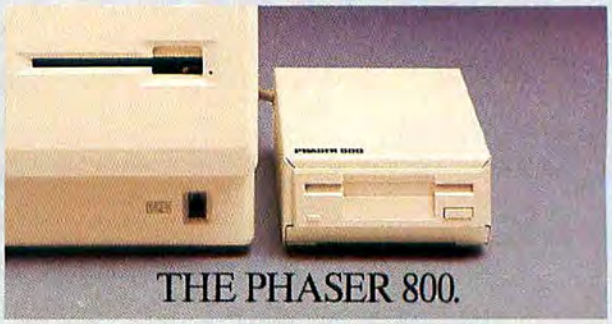
Simply clip on with no modifications necesssary. Fully compatible with all your software.

WarpRam—Upgrade for Mac 512k to 1024k RAM. For 512E with 128k ROM-**$179.00.** For 512 with 64k ROM-**$189.00.**

DataRam—2Mb upgrade for MacPlus. **$259.00**

MonsterRam 2.5—2.5 Mb upgrade for MacPlus. Uses 1 **megabit chips** and **SIMM technology.** Compatible with internal hard drives and large screens. Low power consumption. **$595.00**

MonsterRam 4—4Mb upgrade. Same technology as MonsterRam 2.5. **$1190.00**



THE PHASER 800.

$189.00

Whisper-quiet 800K double sided disk drive. Compatible with 128K, 512K, MacPlus and SE. No hardware or software modifications necessary. Distinguishes 400K and 800K diskettes and will read and write to them accordingly. Features push button and automatic electronic ejection. Cable included. All models. **$189.00**

OUR SOFTWARE PRODUCTS.

New! LaserSprint. The best Print Spooler for the LaserWriter. Never have to wait for the printer. Manages all jobs while you work. Observe all work in printing queue. All spool documents protected. Works with Pagemaker. Compare at $149.00 **Our price $59.95.**

FullBack. Hard disk backup program. Backs up text and graphics from hard disk to floppy disk. Volume, file-by-file, incremental. **$39.95.**

PrintSprint. A great Imagewriter spooler. **$29.95**

Special Bundle Prices. Buy any Warp products and save. FullBack/LaserSprint, **$79.95.** FullBack/PrintSprint, **$39.95.**

THE TRANSPORTER 20 AND THE PHOTON 2001.

$799.00 $1399.00

The Transporter is a stand alone 20Mb tape drive. The 2001 a single unit that combines a 20Mb hard drive/20Mb tape drive. The hard drive in the 2001 delivers all the speed, dependability, and flexibility of our Photon 20. Both tape drives will backup and restore data and applications safely onto cassette tapes. Tape drives feature volume, file-by-file and incremental backup. Can backup daily files in as little as three minutes. Transporter and 2001 prices: For MacPlus: **$799.00, $949.00** For 512k*: **$1399.00. and $1549.00.**

INTRODUCING THE MACINTOSH II 50 AND 80MB INTERNAL HARD DRIVES.

Macintosh II 50 **$949.00**

Macintosh II 80 **$1295.00**

Comes with everything you would need to mount into your Mac II in less than five minutes. Includes our 30-day-to-love-it warranty. Uses the quantum drive found in original Mac II's.

*The Warp Nine PlusPort adapter puts a MacPlus type SCSI port on the back of your Mac 512K. It is included with each 512K price. This adapter allows you to connect our SCSI hard drive and tape back up to your 512K and transfer data at the high speed that the MacPlus does. No modifications. No soldering. Just Clip on. Very simple to install.

Macintosh, Mac SE are trademarks of Apple Computer, Inc.

INTRODUCING THREE INTERNAL HARD DRIVES FOR THE MAC SE.

If you're planning to get a Mac SE, buy it with dual 800k floppies. Then order one of our 20, 30 or 45Mb internal hard drives and install it in place of one of the 800k drives. This gives you a floppy and a hard drive for hundreds less than you'd pay with Apple. And it's very simple to do.

Just remove the 4 screws that hold the 800k in place and replace it with our drive using the same screw holes. In 30 minutes you're done. Plus we'll send you an easy-to-follow manual and a toll-free technical support number should you have any questions.

What's more, our hard drives come with three features that Apple doesn't offer. Ours have 4 shock mounts to absorb the bumps and grinds of everyday usage. You can easily turn termination on or off if you need to chain hard drives or tape drives. And you can quickly change SCSI address to add another hard drive or tape backup.

P20i (20Mb)–**$499.00****

P30i (30Mb)–**$649.00****

P45i (45Mb)–**$899.00****

***This price includes a rebate of $100 if you return the 800k floppy drive to us in our pre-supplied box. P20i, P30i, and P45i without rebate $599.00, $749.00 and $999.00 respectively.*

EASY TO ORDER. FAST DELIVERY.

1-800-654-5294

1-800-328-6795 ext. 433

In MN, call collect **(612) 426-9769.** We accept Visa, MasterCard, prepaid or C.O.D. orders.

MasterCard VISA

WARP NINE ENGINEERING INC.

1751 W. County Road B. Suite 107, St. Paul, Minnesota 55113

Circle 439 on reader service card

PRESS YOUR EXCEL ADVANTAGE TO THE LIMIT.

Introducing MacSQZ!™ for Microsoft Excel. MacSQZ!, a combination desk accessory and application, makes Excel even better by making spreadsheets smaller and safer. Smaller because MacSQZ! shrinks the size of your spreadsheets on disk by as much as 95%. Automatically, as you use Excel. You get 95% more use from your disk space. With almost 0% effort. Safer because MacSQZ! adds effortless backup and file-level password protection to Excel. It also shows a history of spreadsheet changes and lets you see which spreadsheets are linked together. With MacSQZ! your numbers are safe and secure, and better documented. It helps Excel work harder, so your work is easier.

For only $79.95, MacSQZ! is the small wonder that gives Excel users a bigger advantage. See your dealer, or call for info or to order with a 30-day money-back guarantee. Excel more with less. With MacSQZ!.

(800) 556-1234 Ex. 526
(800) 441-2345 Ex. 526 in CA

L IS COMPACT,
, SECURE AND
ER DOCUMENTED
H MACSQZ!.
ONLY $79.95.

SAVE UP TO 95
ON DISK SPA
BACKUP TIME A
COMMUNICATIONS COST
ADD PASSWORD PRIVA
HISTORY, AND MOR

A Better Way To Excel.

Turner Hall Publishing
A Division of Symantec
10201 Torre Avenue
Cupertino, CA 95014 • (408) 253-9600

Circle 248 on reader service card

Verbatim

An interview with Philippe Kahn, president of Borland International

Philippe Kahn was born and raised in Paris. He received a master's degree in mathematics from the Université de Nice and worked as a mathematics professor until he abandoned academia for Silicon Valley in 1982. In 1983 he founded Borland with only $20,000 in capital; last spring the company leapfrogged Software Publishing to become the fourth largest microcomputer software company in the world. In July Borland merged with Ansa to further increase its stature.

Despite the success, Kahn and Borland are not yet major forces in the Macintosh arena. Recent annoucements of new products, though, suggest greater thrust behind the company's efforts on the Mac. Known to IBM PC-compatible users as an outspoken, independent figure, Kahn now offers Macintosh users his plain talk about software, companies, and competition.

How did you decide to come to the United States?

I wanted to change my life and do something new. I had been teaching mathematics for three years at the university level.

Why did you choose to develop personal computer software?

To make money, but also because I got tired of teaching. I had $2000 when I left France. I had been reading *Byte* magazine, looking at the ads. I telexed 110 companies in the States before I left, asking for job interviews, and received 11 invitations to interview. So I came to San Jose.

Where did you start?

My first job was with OSM, a company that was building a multiuser CPM machine in Mountain View. OSM wanted to sell its products in Europe. I had no experience with sales, but I said I could do it. I spent two months in Europe setting up distributorships for OSM and then came back here.

In November 1982, I rented an office in San Jose and started work on a Pascal product using CP/M-80 system. I'd do anything to stay alive then. I consulted, repaired computers, worked for Adam Osborne on a product then code-named Vixen. I wrote the front end of the code for its operating system. Adam still owes me money for that work.

What was your big break?

I had developed *Turbo Pascal,* but none of the companies I showed it to–Microsoft, Digital Research, and others–recognized the potential of Pascal as a language for teaching programming. So I made up business plans and waited in the lobbies of a lot of venture capital firms. Finally I decided that I couldn't sell the product or find funding, so I tried direct mail.

By August 1983, I had moved into Scotts Valley. I got tired of the hustle in Silicon Valley. I started the company in a room above a car-repair garage.

I knew I would have to change the mail-order process to succeed. I bought a book that said the big breaks for product costs from mail-order purchasers came at prices like $49, $99, and so on. So the price for *Turbo Pascal* became $49.95. I put an ad together and managed to get it into *Byte*.

What happened then?

We sold $150,000 worth in the first month that the ad ran. I was doing labels for the software at night, phone support during the day, hiring people. I didn't know how to deal with it. It was totally unexpected. Soon we were at $400,000 per month. Next we created *SideKick* for DOS machines in June 1984. It was an immense success. Since then we've done lots of IBM PC products.

When did Borland enter the Mac market?

We released our first product in June 1985: *SideKick* for the Mac. It is a collection of desk accessories.

What did you think of the market in 1985?

The big break came with the Mac Plus in 1986. And now again with the Mac II and

(continues)

PHOTOGRAPHS BY WILL MOSGROVE

We've been covering computer and human errors

3M data cartridge

DON'T LET THE MACINTOSH SCREEN CONFINE YOU!

Introducing Stepping Out™ The Macintosh™ Screen Extender

Now it's possible to see and work on a full page, without having to go to the expense of buying a large screen monitor!

You won't be confined by your Macintosh screen anymore. Choose your screen size. Zip across entire pages in a single mousestroke. View the full page reduced with a simple key command. You can even zoom in and work on details.

Stepping Out is the ideal program for desktop publishing, engineering, design... any application that is enhanced by a full page display.

Best of all, Stepping Out is only $95.

To find out more, visit your local computer dealer or call:

Berkeley System Design
1708 Shattuck Avenue

berkeley system design

Verbatim

Until 1986 the machines were underpowered–the first Mac was its own worst enemy.

the SE. Until 1986 the machines were underpowered–the first Mac was its own worst enemy. The Plus and the SE are the Mac's best proponents.

How successful was the original *SideKick* for the Mac?

It was not an innovative product on the Mac. But we have a commitment to improving all our products. Version 2.0 is not a technical innovation but a useful tool, and it's selling very well.

What will you bring out next?

Our current push is for the new version of *Reflex,* our relational database, which we showed at the Macworld Expo in August. It has had problems, but some are due to the market. A lot of people have not taken the product seriously at $99.95. Look at *FileMaker Plus*–$295. And Apple discourages developers from selling cheap software for the Mac. So we'll correct that with the next version, adding a new price and lots of new features.

All together we'll have the new version of *SideKick, Eureka* (a formula-calculation package for engineers and scientists), *Turbo Tutor* (a tutorial for *Turbo Pascal*), and two Pascal development tools–a database toolbox and a numerical methods toolbox.

What direction will Borland take in the Macintosh market?

Reflex 2.0 is a tremendous relational database, more user-oriented than *4th Dimension. Eureka* has had success on the PC. We think it will open up desktop engineering for the Mac. That market has a lot of potential. The new Macs have a lot of power and promise.

Beyond that?

What do you think of Apple's new software company, Claris?

In general it will reinforce the identity of the Macintosh market. I know Bill Campbell, but I don't know his ability to market software. The company will have resources, dollars, commitment from Apple, market savvy, and access to Apple. But its software marketing talent is unproven.

Is there resentment about this offshoot from some of the small developers and publishers?

Yes. For Borland it's not a problem because we're primarily developers, and publishers second. It takes more than resources to build good software. I believe in competition–it gives users a better deal.

Look at the PC market. We compete with Microsoft for the language market. That benefits the users. On the Mac there has been no real competition for Microsoft products like *Excel.* Now there will be.

What are your feelings about Apple's new directions in marketing and sales?

I would not try to give advice to Apple; I don't know if I could do better. But IBM doesn't do any better either. People may not like Apple dealers, but they like the machines. The Mac has no gray market, and Apple has control of its dealers. That's clearly better for developers.

Has Apple made any goofs with its products?

The only error I see was releasing the Mac with 128K of RAM and no development tools. That stigmatized the Mac for a long time. It is a sign of the company's strength that it has remarketed the machine. Jean-Louis Gassée criticized the Mac and was promoted–that's another sign of strength

INTRODUCING 101 MACROS™ FOR EXCEL™

Instead of This...

You Can Do This...

MAKE EXCEL EASIER — *AND* MORE POWERFUL

Now you can have your own on-disk library of shortcuts, utilities, keystroke savers and *mousestroke* savers that will work with *ANY* Excel worksheet. No more dull, repetitive operations, no more pulling down and clicking through multiple menus, no more hours wasted with manual input that could be automated.

Introducing the ultimate collection of 101 pre-typed, ready-to-use, all purpose macros on disk. Imagine being able to:

- Automatically double space and print a worksheet
- Set up and maintain data bases with a single command
- Create slide show presentations
- Add menu-driven financial functions
- Automatically overlay and clean up all the worksheets on the screen with a single keystroke

— Plus 96 more features to save time and multiply the power and ease-of-use of Excel.

With *101 MACROS FOR EXCEL* you can save keystrokes & mousestrokes, save menu steps, save time and automate your worksheet. Whip through complicated menus and worksheet setups with a single keystroke. Eliminate repetitive operations with macros that will move down columns or across cells, changing each cell to your specifications. Operations that previously required several mousestrokes, like swapping columns or inserting rows, can now be done with single keystrokes.

With This. $69.95 Sugg. Retail

ELIMINATE FRUSTRATION

How many times have you had to go back to the manual to learn how to do some simple function that seems overly complicated in Excel? How often have you waded through charting, database operations and building tables? How often have you wished that you didn't have to wear out your arm reaching for the mouse to perform just about every operation? The macros in *101 MACROS FOR EXCEL* help you out with everything from simple mousestroke and keystroke savers, to sophisticated, interactive macros which "walk you through" more complicated Excel operations.

EASY TO USE

These macros are extremely easy to use. Just load the macro sheet called 101 into Excel and you'll have all 101 macros available for instant use at any time.

By pressing the option key, the command key and a single letter, you can insert new rows that copy data automatically. Or enter long phrases instantly. You can even toggle the gridlines and headings on and off with a single keystroke combination.

EASY TO LEARN

101 MACROS FOR EXCEL comes complete with a comprehensive, step-by-step manual that includes a short tutorial chapter and explains each of the macros and how to use them. The macros are fully documented, so they're easy to review, change and learn from — which gives you an excellent starting point for writing your own custom macros.

Circle 653 on reader service card

FREE! HANDY REFERENCE GUIDE

Act now. For a limited time you get not only a complete collection of 101 macros with User's Manual, you will also receive a handy reference guide listing all 101 macros and their call-up keystrokes.

"Outstanding... the ultimate macro library."
— P. Antoniak, President, Solar Systems Software

"A must-have for Excel users."
— E. Sharp, President, Clarity Glass Inc.

"A great idea... what a time-saver!"
— A. Stein, President, Studio Silicon

ORDER 101 MACROS FOR EXCEL today!

NOT COPY PROTECTED
60-DAY MONEY BACK GUARANTEE

CHECK YOUR LOCAL DEALER

101 MACROS FOR EXCEL

YES! I want 101 shortcuts, utilities and keystroke savers!

Send me ___ copies @ ~~$69.95~~ 49.95 plus $2.50 shipping ($12.50 outside U.S.A.) CA residents add $4.90 sales tax.

☐ I enclose _____

—or—

Please charge my ☐ VISA or ☐ MasterCard

Credit Card Exp. Date _____ / _____

Card # |_|_|_|_|–|_|_|_|_|

|_|_|_|_|–|_|_|_|_|

Name _____

Phone _____

Company _____

Address _____

City _____ State ____ ZIP _____

MACROPAC
INTERNATIONAL

19855 Stevens Creek Blvd., Suite 168 • Cupertino, CA 95014

1-800-624-0077
or 1-800-832-7766 (in CA)

Excel is a registered trademark of Microsoft Corp.

Jean-Louis Gassée criticized the Mac and was promoted—that's a sign of strength in a company.

in a company. Now Apple has restored the promise of the machine with the Mac II.

Compare the Mac II to the IBM PS/2.

We give Mac IIs to our developers, and I choose it over the PS/2. The Mac II is an innovation, whereas the PS/2 is only an AT with a different bus, different packaging, and a new graphics adapter. Microsoft and IBM have pulled off a big market hype. They're selling the PS/2 as a new generation of the PC, but I see it as the last of the old generation of machines.

IBM hates Borland at times, but they love us, too, because we tell them what we think. We don't owe them anything. That's the difference in the Mac and PC markets—IBM does not control the PC buying channel.

How do the new System and Finder stack up against IBM's OS/2? IBM has announced many features that Apple does not yet have.

That's true, but Apple does better by announcing products instead of just features. The new operating system for Macs may lack features IBM boasts for its OS/2 announcements, but there won't *be* an OS/2 until at least August 1988. Apple's new system is out now. There won't be any software under OS/2 for two years. By then Apple will have a 68030 machine, which is ideally suited for real multitasking applications.

And as for the crossover to OS/2 for products designed under *Windows,* it is not going to be easy. It will take a year to move a product from one to the other. It's not just a recompilation, but rewriting of code.

Are there sales trends in Mac products, from retail to direct mail?

That shift may have to do with the small selection of software products that retail stores are able to stock. But usually you can't buy a Mac by direct mail. Apple has no competition, no discounters, so margins are good for Apple dealers. Service for Apple's computers should be better than in the PC channel; if it isn't, something is wrong.

Your company earned its reputation as an innovator by developing direct sales by mail. How do you deal with that now?

Originally 99 percent of our business was sales direct to the customer. Today it has slipped to 5 percent. The distributor buys from us at a large discount and then sells at a low price to direct-mail companies such as MacConnection. So the products cost less, and people don't buy direct from us. Some buy through mail order, and others buy from dealers, bookstores, and so on—channels that reach people that direct sales don't.

One issue in personal computing is that we do more than ever with our machines, but their reliability is questionable.

If we can't control this issue it will kill the technology. Quality control is a key. Borland has a quality assurance staff as big as Microsoft's, yet Microsoft is 10 times bigger. I predict Microsoft will have problems developing OS/2 as well. It's 1½ million lines of code—30 times more than *Microsoft Word.* With software the complexity grows up to 10 times faster than the code does. So with OS/2 there could be, say, 300 times more problems than with a 300K program.

Is vaporware becoming a problem?

IBM and Microsoft are the only two companies that can get away with vaporware.

(continues)

The Adobe Type Library Gives You More Ways To Make A Difference.

Now the Adobe Type Library is easier than ever to use. Plus we are constantly adding new downloadable fonts so you have more ways to communicate effectively.

Here are new faces you can order today. Each package contains several typefaces from the families listed below.

30 News Gothic
31 ITC Tiffany
32 **Cooper Black**
33 **STENCIL** *Brush Script* Hobo
34 **Aachen** University Roman **Revue** *Freestyle Script*
35 Carta

And here are more downloadable Adobe type fonts you may want to add to your own type library.

1 Palatino®
2 ITC Bookman®
3 *ITC Zapf Chancery® Medium Italic*
ITC Zapf Dingbats®
4 ITC Avant Garde Gothic®
5 New Century Schoolbook
6 Optima®
7 ITC Souvenir®
8 ITC Lubalin Graph®
9 ITC Garamond®
10 ITC American Typewriter®
ITC MACHINE®
11 ITC Benguiat®
ITC Friz Quadrata
12 Glypha®
13 Helvetica® Light
14 Helvetica® Condensed
15 Trump Mediæval®
16 Melior®
17 ITC Galliard®
18 ITC New Baskerville®
19 ITC Korinna®
20 Goudy Old Style
21 Sonata™
22 Century Old Style
23 ITC Franklin Gothic®
24 ITC Cheltenham®
25 *Park Avenue*
26 Bodoni
27 Letter Gothic
28 Prestige Elite
29 ORATOR

See your nearest Authorized Adobe Dealer or call (800) 29-Adobe. In California, (800) 85-Adobe. *Make a difference with the Adobe Type Library.*

ADOBE SYSTEMS INCORPORATED

All products are registered trademarks and trademarks of their manufacturers

Circle 552 on reader service card

Craftsmanship in the electronic age.

In today's computerized world, the concept of craftsmanship is still very much alive.

At Adobe, man and computer work as a team to craft type true to the originals.

Because at Adobe, we still strive to meet time-honored standards.

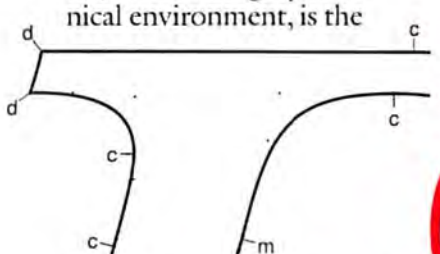
A good example is the Adobe Type Library.

The Adobe Type Library is created in a modern setting, using sophisticated computer software. And

To ensure that each type face in the Adobe Library is true to the original, we carefully study a wide range of historic type reference material.

the people who perform this task are much like the "punch cutters" of another era... each letter in a type family is painstakingly examined, manipulated and refined until, at last, it's as close to the original as humanly possible.

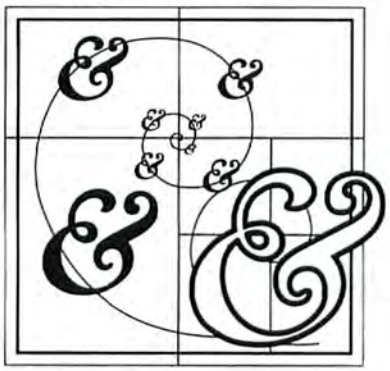
Indeed, the human factor, even in a highly technical environment, is the



The weight, curve, and overall appearance of a letter is painstakingly examined, manipulated and refined by Adobe craftsmen using specialized software.

driving force in creating a type library that is true to the originals.

Naturally, this takes time. But it's time well spent because you can be sure that each Adobe typeface not only looks and feels like the original, it reproduces perfectly,



Regardless of type size or resolution of the PostScript printer you use, Adobe type faces are always true to the originals.

regardless of the resolution of your PostScript printer.

We often do not realize how much time is spent to achieve perfection. At Adobe, we spend hundreds

Type is to read.

Ask for our free calendar, "Type is to Read." It illustrates many fine points on the art of type, design, and craftsmanship. Just call Adobe at 415-852-0271.

of hours practicing an art that has been performed for centuries.

Craftsmanship does have a place in the electronic age. Because at Adobe we practice it every day.

ADOBE SYSTEMS INCORPORATED

Adobe Type Library for PostScript® Printers. The Original.

PostScript is a registered trademark of Adobe Systems Incorporated.

Circle 552 on reader service card

MOTOROLA

File Edit Scaling CLUT Convert Special
motor
68020
Macintosh II

Apple picked our brains.

And so did hundreds of other companies.

Before millions of people picked Macintosh,™ Apple® picked Motorola's M68000 Family—the brains behind one of the most successful computer products ever launched.

Now Apple has tapped the brainpower of the Motorola MC68020 microprocessor for the Macintosh II, bringing the high performance of a graphics workstation to business desktops everywhere.

72% of all 32-bit systems ever shipped included at least one MC68020. That's more than half a million high-performance systems.

The high-performance business solution.

The MC68020 is not just the overwhelming choice in workstations—it is now setting new performance standards in the office—where it is essential to the computation, graphics and communication necessary for interconnected systems.

While Apple's choice of the MC68020 was a smart move, there's no license on genius: the '020 is the microprocessor of choice in advanced business system designs by such

industry leaders as Altos, Alpha Micro, Casio, C.Itoh, Fujitsu, Honeywell Bull, NEC, NCR, Olivetti, Plexus, Ricoh, Sanyo, Sharp, TI, Toshiba and UNISYS.

The graphics solution.

The M68000 family helped Apple implement the visionary "point and click" graphic workstyle that has driven productivity up while driving training costs way down. Businesses of all sizes are discovering dramatic productivity increases in office computing through innovations such as desktop publishing.

The software solution.

Among programmers and designers dedicated to creating the best, most innovative applications, the M68000 architecture has been the leading choice by far—with over *seven million M68000* systems installed since 1979.

Meanwhile, the MC68020, on the market now for three years, is already backed by *two billion dollars worth* of 32-bit software. This is more 32-bit software than all competitive products combined!

The Brain Trust: Where M68000 microprocessors predominate.

Engineering Workstations
Apollo, Hitachi, HP, Sony, Sun, Tektronix.

Laser Printers
Apple, Canon, HP, IBM, QMS, Ricoh.

Departmental Computers
Fujitsu, Honeywell Bull, NEC, NCR, UNISYS.

PBX and Telephone Systems
AT&T, Northern Telecom, Siemens.

Fault Tolerant Systems
IBM, NCR, Stratus, Tandem.

Supercomputers
Alliant, BBN, Caltech, Fifth Generation.

Factory Automation
Allen-Bradley, ASEA, Bailey Controls, GM, Mitsubishi, Square D.

Join the Brain Trust.

Challenge us to persuade you of the sound business and technical reasons to join the M68020 Brain Trust. Write to us at Motorola Semiconductor Products Inc., P.O. Box 20912, Phoenix, AZ 85036.

We're on your design-in team.

Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc.

MOTOROLA

Verbatim:

IBM hates Borland at times, but they love us, too, because we tell them what we think.

We've been hearing about *Windows* since Comdex in 1983–more vapor, considering the number of its users, than any other product in existence. Developers are ruled by the laws of the market. Companies with vaporware will go out of business.

In talking to you I detect competition between Borland and Microsoft.

In the PC market we compete heavily. When we go against a company that's ten times bigger than we are, we have to be better. We keep Microsoft honest on the PC side. But on the Mac side we don't compete yet. They preannounced *Word* 3.0 by six months and then shipped it with bugs. It's difficult to understand why they feel that they have to do this when they have so many customers. It doesn't build customer loyalty.

What you have called committee software–is this a real problem?

Oh yes. We never have more than three people on a development team. You need a narrow focus to do software, otherwise you end up with committee software. Lotus's *Jazz* is an example: too many people worked on it. Four programmers make a team 10 percent less efficient, five programmers make the team 20 percent less efficient, and it goes downhill from there. There are actually two problems here; software that is designed by committee and software that is implemented by committee. Neither works.

How do you encourage innovation in software?

I meet with our software teams regularly. And none of our products is designed around a boardroom table. My previous house had a hot tub, and we designed several products there. It's not necessary to work in an office from nine to five to make the best software.

What do you think about desktop publishing?

It is a paradox. I remember when everyone was describing the new personal computers. We dreamed of the myth of the paperless office. It is an incredible irony that we have turned these machines to desktop publishing–they are now used to generate more paper! DTP is not the main application of personal computers. You'll see there are better ways to use personal computers.

(continues)

DEFORMED.

Forms deformed? If producing a presentable form has always been a formidable task, you'll appreciate the scene on the far right. It's TrueForm™—the first and only Macintosh™-based system that lets you deftly deal with any form you feed it.

TrueForm is not just another forms software package, although it does offer you a choice of 20 ready-made forms to use. And it's not just a design-your-own-forms program, yet it lets you do that, too.

If you fill out lots of forms, lots of different kinds of forms or forms supplied by other people, TrueForm will transform your working world.

Feed any form into TrueForm's Image Scanner, and it's transmitted to your screen. Complete with logo and graphics. In seconds.

Next, you teach your computer how to fill out the form. You can supply information from your keyboard, or merge information from any database, or use TrueForm as an incredible forms-oriented spreadsheet.

Then print your perfect form with your LaserWriter® or ImageWriter®. Print the information on an original form. Or produce the entire completed form—graphics and all—on blank paper. Eliminate the problem of obsolete or out-of-stock forms inventories. Plain paper may be the only form you'll ever need again!

TrueForm makes it easy to set up a form, choosing the type font, size and style for each field. And with TrueForm you can capture and store both the forms you use and the data on them. Recall and reuse them. Save hours every day.

Service for Apple's computers should be better than in the PC channel; if it isn't, something is wrong.

Is there a real need for multiuser capacity on personal computers?

There's no doubt that people need multiuser capabilites most in small business; accounting applications, like accounts payable or accounts receivable, need multiuser access to files. Personal computers in small business have to serve these people.

The most important issue is whether there is *reliable* multiuser software. It is difficult to do because in word processing the environment is not suited for multiple users. There are some multiuser database applications, but most personal computer applications are for the single user and will remain so for a long time. Even in large corporations, each unit or group has the problems of a small corporation. The thrust of the PC is personal; the best example of multiuser applications today are E-mail and things that work with modems, such as MCI.

Why have the French had such an influence on the Mac market? Alain Rossman at Radius. Jean-Louis Gassée and Didier Diaz at Apple. Marylène Delbourg Delphis, publisher of *4th Dimension*. You.

I don't know. Perhaps the personal computer industry appeals to the French attributes of being imaginative and of controlling one's own destiny. The Mac has not done especially well in the U.K. or Germany. However, it's really successful in France and Sweden. Gassée made Apple France the company's most successful subsidiary. So perhaps it's due to his success in France.

What important events do you recall in or around the personal computer industry?

There is a big difference between technological advances and an application like the personal computer, which made a revolution. The biggest event was the Apple II; it was not the first personal computer, but it was the first machine to have an installed base of a significant number of customers. That was the start of the personal computer in the eyes of many people. It allowed the 8080, DOS, and the Mac to succeed. Otherwise the PC world would be terminals to large mainframes, which is what IBM would have liked it to be.

Are there people in the industry whom you particularly admire?

Yes, people who have done things for the industry that others don't know about, like Alan Kay and George Morrow.

(continues)

TRUEFORMED.

The TrueForm system consists of the TrueForm software package, Image Scanner and MacScan™ software. It's just $1,995 with an unconditional 30-day money-back guarantee.

You can buy the TrueForm software separately for $495, and design your own forms with any of a variety of Macintosh graphics programs. Or Spectrum Digital Systems will scan your forms.

TrueForm works with the Apple® Macintosh 512, Macintosh Plus, Macintosh SE, and Macintosh II. (Scanner requires a SCSI interface.)

Don't deform another form. Reform today with TrueForm, from Spectrum Digital Systems.

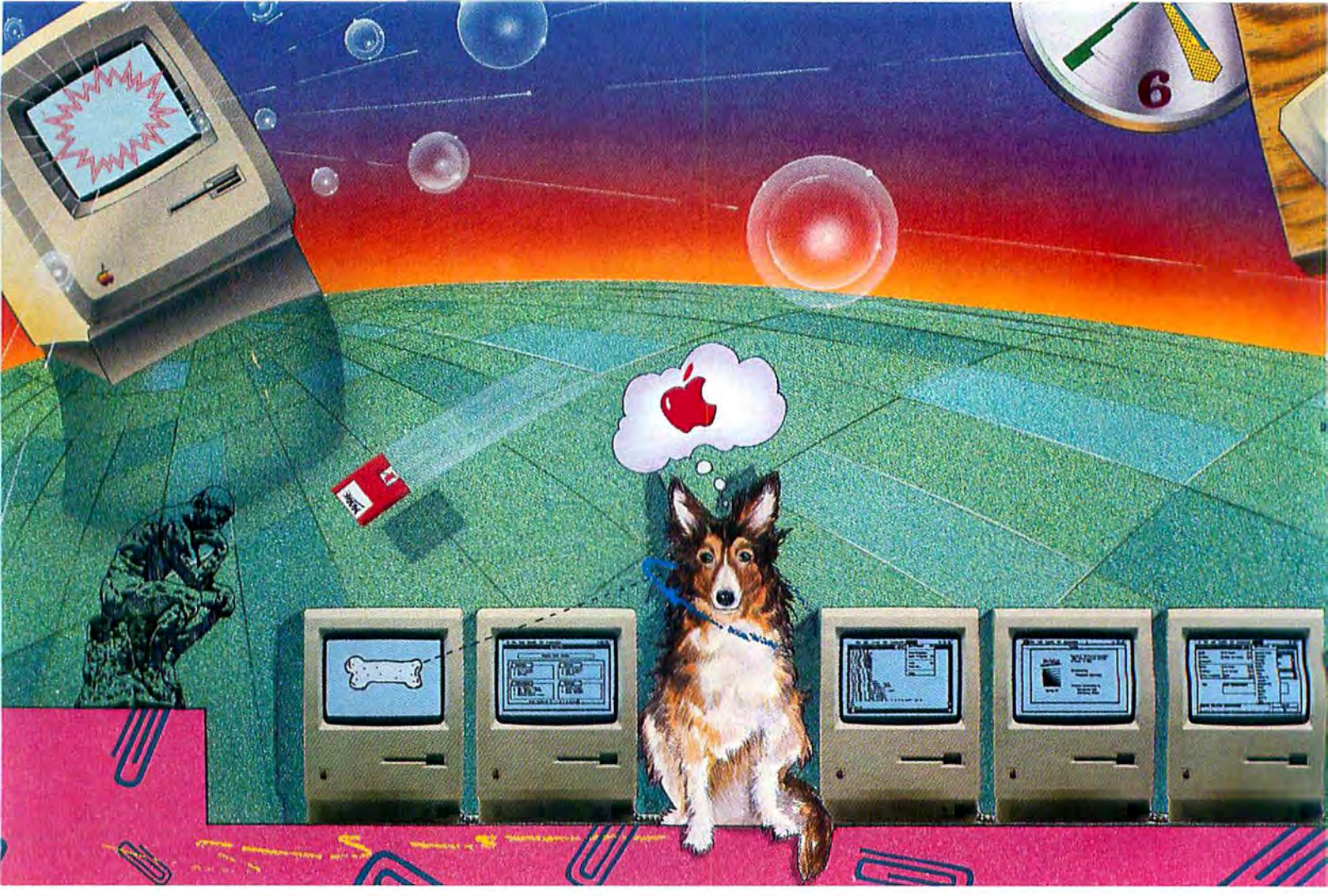
To order, or for a free full-color brochure, call toll-free: (800) 541-6661

SPECTRUM™ digital systems

2702 International Lane
Madison, Wisconsin 53704-3122
(800) 541-6661; (608) 244-4300 (in WI)

Spectrum Digital Systems, Inc. and TrueForm are trademarks of Spectrum Digital Systems, Inc. MacScan is a registered trademark of New Image Technology, Inc. Apple, Macintosh, ImageWriter and LaserWriter are trademarks of Apple Computer, Inc. © 1987, Spectrum Digital Systems, Inc.

Circle 731 on reader service card



Your future

Nantucket®

is history.

The business software you've wanted for your Macintosh has been running on the IBM PC for years. It's written in dBASE, but now you can run it on your Macintosh.

With McMax.™

McMax runs dBASE programs up to 10 times faster and gives you an outstanding choice of existing applications. Accounting, order entry and inventory control systems. Time billing, estimating and taxes. Payroll, personnel and mailing lists. Just transfer what you need to your Mac and it's yours.

If you'd rather do it yourself, you'll find that McMax is just what you need. Pull-down menus and an Assist mode help you manage your data with no programming experience. And whenever you want to, you can take control with a rich set of English-like commands that you use interactively or in your own custom programs.

Whatever your mind can conceive, McMax makes it easier to achieve. It's the business database management standard, made better. To learn more, write Nantucket Corporation, 12555 W. Jefferson Blvd., Los Angeles, CA 90066.

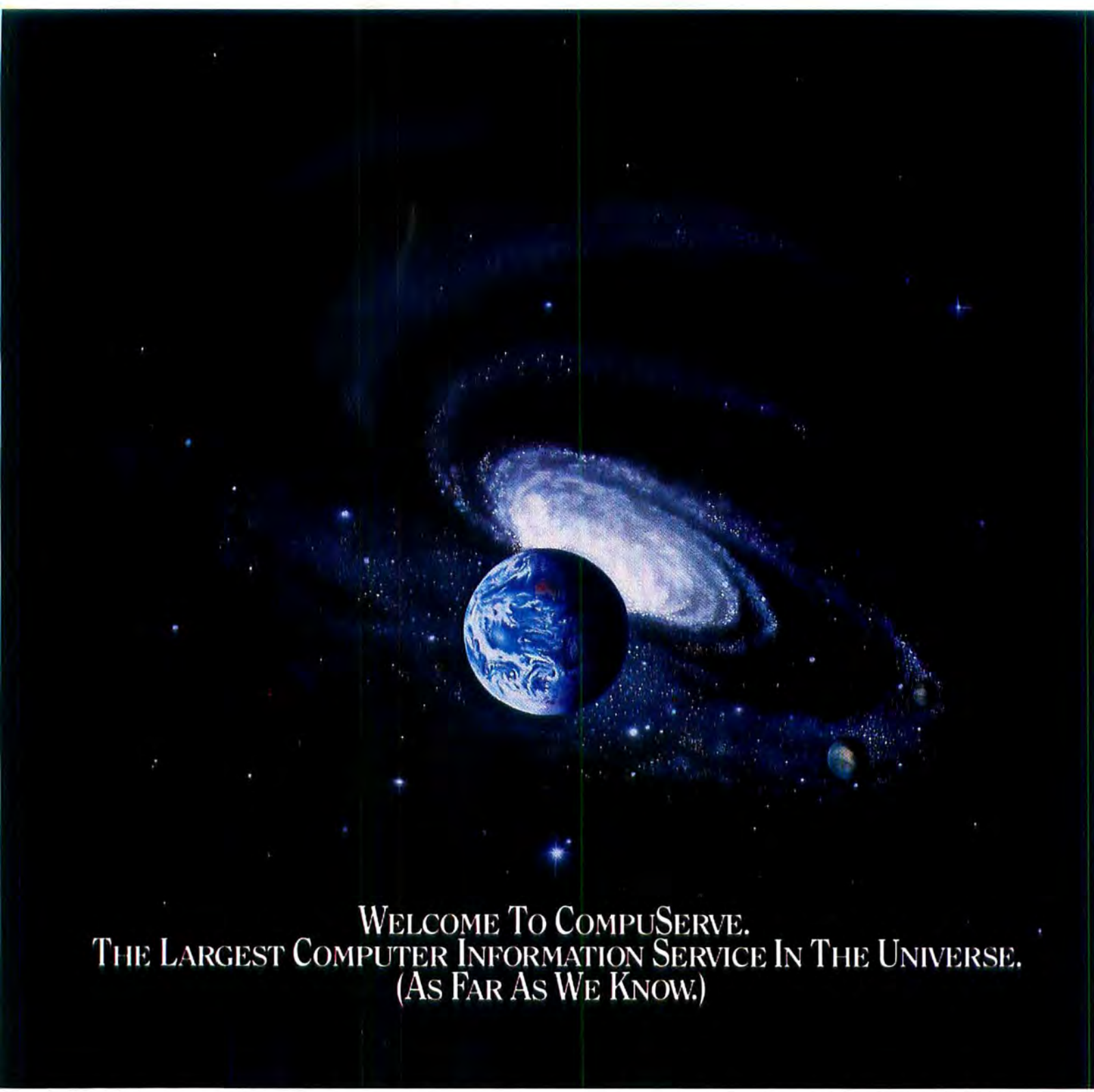
Or call (213) 390-7923 today. Because today, McMax means business.

McMax™

means business.

©Nantucket Corporation 1987. McMax is a trademark of Nantucket Corporation; dBase isn't.
In Europe: Nantucket Corporation (Europe), 2 Bluecoats Avenue, Fore Street, Hertford, Herts SG14 1PB. Telephone 0992 554621.

Circle 633 on reader service card



WELCOME TO COMPUSERVE.
THE LARGEST COMPUTER INFORMATION SERVICE IN THE UNIVERSE.
(AS FAR AS WE KNOW.)

More people use CompuServe than any other online computer information service on Earth.

Over 375,000 members access hundreds of information, communications and entertainment services online.

Thousands with similar interests and special expertise converge regularly and exchange ideas on an ever-expanding list of special-interest Forums.

They have access to a combination of more financial information, a greater variety of shopping services, and deeper research resources than any other online computer service. Anywhere.

Of course, it's conceivable that there's a service like ours somewhere that could give you more for your money. But you may have to travel a few light-years to find it.

Instead, all you have to do is visit your nearest computer dealer today. To order CompuServe direct, or for more information, write: CompuServe, 5000 Arlington Centre Blvd., Columbus, Ohio 43220. Or call 800 848-8199. In Ohio and Canada, call 614 457-0802.

CompuServe®

AN H&R BLOCK COMPANY

Circle 330 on reader service card

DATA FILE

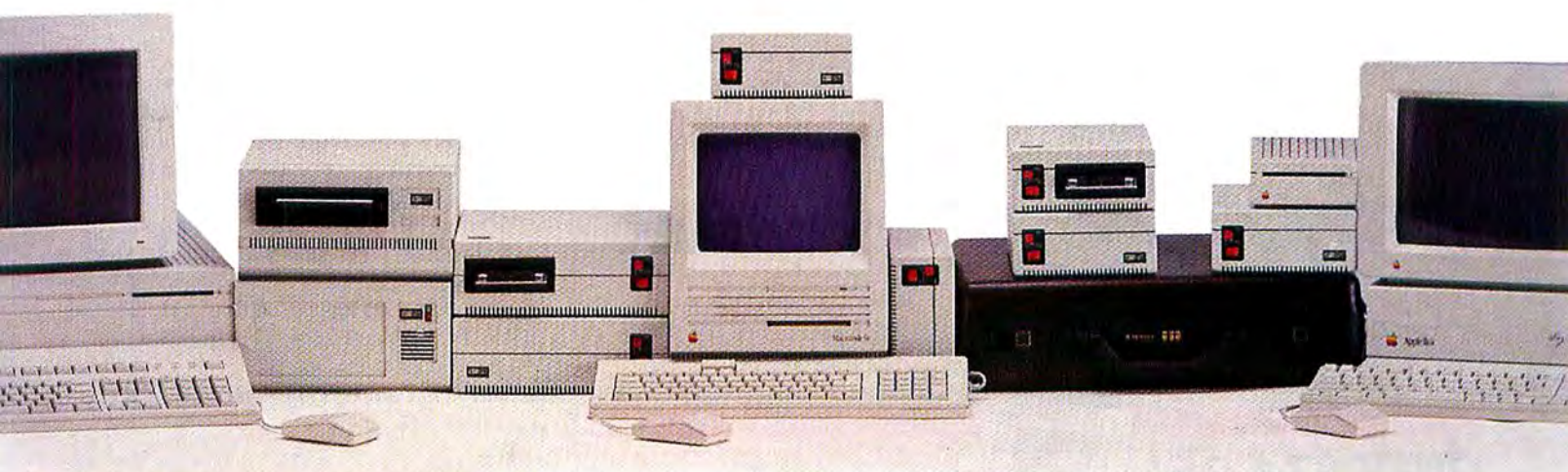
NEW!

YOUR MOST COMPACT BACKUP SOLUTION

RELIABLE Get the security you need by storing in a low noise, triple shielded Data File. Our high quality low noise fan and heat sink case reduces VLSI hot spots and promotes long life. Data File's superior hardware/software with complete error correction capability gives you unsurpassed reliability.

VERSATILE Data File's compact size allows operation on top, next to or under your Macintosh. Even small enough to fit inside your briefcase. Functional in either 110V or 220V modes. Data File allows you the convenience of operation anywhere in the world.

FRIENDLY The newest in archival software provides volume backup and restore for file by file from any volume to any other volume. Data File works like a hard disk you are familiar with. Simple and easy to use, Data File ends the hassle of swapping diskettes.



NuDATA

3206 Scott Blvd.
Santa Clara, CA 95054
(408) 727-1049
(800) 8-DATA-NU

Media Winchester Ltd.
Scotts Valley, CA
(800) 824-7385
(800) 824-7386 CA

Statewide Electronics
Lombard, Illinois
(800) 882-8311
(312) 932-5650

Circle 737 on reader service card

Get Your Mac Back with SuperSpool™!

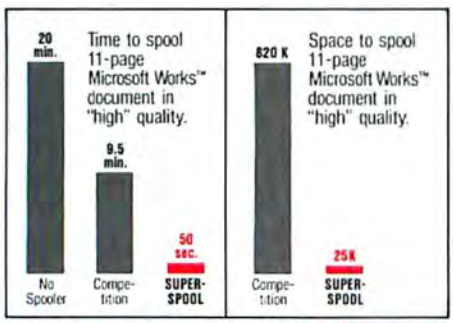
It's a real crime that when your ImageWriter™ is printing, you can't use your Mac. So work grinds to a halt until you get your Mac back.

Now, SuperSpool comes to the rescue.

It "captures" (spools) the files to be printed, commands the ImageWriter to print them *in the background* and returns the Mac to you — almost instantly.

With SuperSpool, you can print and work on your Mac *at the same time!*

SUPERFAST. SuperSpool is, by far, the fastest print spooler available. This chart shows just how much faster you can get your Mac back. The competition takes 6 to 10 times longer. Now you can finish your business plan *while* your spreadsheet is printing. Think of all the time saved!



Lightning fast. *Compared to SuperSpool, the competition takes 6 to 10 times longer to give your Mac back.*

Warning: *Running out of disk space is a real problem with the competition's spool files. Not so with SuperSpool.*

SUPER COMPACT. Other spoolers require the storage capacity of a hard disk. SuperSpool doesn't. It's so efficient, floppy-disk systems can use it.

SUPER FRIENDLY. SuperSpool works with *all* major Macintosh applications (such as Excel and PageMaker).

It is totally transparent; you launch it and forget it.

You can send a continuous stream of documents to be printed and SuperSpool will queue them automatically. You can view all the jobs in the print queue, change their order, delete jobs, pause the printer, and receive extensive on-screen help — without leaving your application program. SuperSpool will even let you switch between applications without disrupting your printing.

MONEY BACK GUARANTEE: We're so confident that SuperSpool outperforms every other ImageWriter spooler that if you are not completely satisfied, return it to us within 30 days for a full refund.

If you print to an ImageWriter, you need SuperSpool. At $74.95, it's a small price to pay to get your Mac back.

SUPERMAC SOFTWARE

295 N. Bernardo Avenue
Mountain View, CA 94043
(415) 964-9694

ONLY $74.95!

Macintosh (Mac) and ImageWriter are trademarks of Apple Computer, Inc. ©1986 SuperMac Software.

Verbatim

Is UNIX important to the Mac?

In many ways UNIX is the antithesis of the Mac; it's a user-hostile operating environment. It's powerful, but people like the simplicity of the Mac, and UNIX won't help there. But then I'm not business oriented like scientific or technical users, or universities, where they use it quite a bit. I think if you want UNIX you should use the personal computer as a terminal to connect to a UNIX machine like a VAX.

Do you foresee competing personal computers merging into similar machines?

No. There will be several worlds with different standards. Each product will have its own operating system, but more software will work together on a network basis. The network version of *SideKick* will run on both the PC and the Mac. Multiuser scheduling of events and conferencing will be done on the Mac. And in other areas where it is not obvious, we will end up with the ability to transparently access a VAX, IBM 370, or PC.

What are the burning technical issues in the market?

Multiuser capability is one. Another is the fashion for more powerful machines. There should almost be a moratorium on building new machines with more hardware performance. Software can't keep up. It takes one month to design a single-board 68030 computer, but three years to make software for it. All the fun is in the software, and all the advances of the machines come from there as well.

What legacy do you want to leave?

I hope people will think that I've helped to create useful products for thousands of users. I see Borland as a tool maker, like an ancient swordsmith. We have trade secrets, we build the best blades you can find, and it takes a lot of work to produce them. Somehow this will survive when I leave the industry. Borland will continue making blades.

Better to leave that than a Hearst Castle. I don't want to be Citizen Kahn. □

Interviewed by Jerry Borrell

FINALLY, A $2600 LASER PRINTER THAT PRINTS LIKE A $5000 LASER PRINTER.

WHICH WAS PRINTED ON A $5000 LASER PRINTER? WHICH ON OURS FOR $2600?

To the thousands of Macintosh™ users who find themselves wishing there was a personal printer that lived up to their personal computer.

Including the executives, entrepreneurs, academics and other professionals looking for an affordable entree into the world of desktop publishing.

General Computer presents the reassuring paradox illustrated on these pages: the first affordable laser printer that prints like it costs thousands more.

INTRODUCING THE PERSONAL LASERPRINTER.

As the documents shown here demonstrate, the General Computer Personal LaserPrinter™ (PLP™) concedes nothing in printing capability to systems that sell for twice its price.

If that still seems hard to believe, consider this. Until now, anyone who bought a laser printer was also buying a computer. Because laser printers have always needed a processor, memory and other expensive hardware to create a printable page.

Our laser printer, on the other hand, eliminates much of this expensive hardware in favor of ingenious software.

Software that allows the printer's imaging to be performed by the computer you already own: the Macintosh. (Either the Macintosh Plus, Macintosh SE, or the Macin-

*In Illinois call (800) 854-9737 In Canada, (800) 263-1405 ©1987 General Computer Corp The General Computer logo is a registered trademark of General Computer Corp Personal LaserPrinter and PLP are trademarks of General Computer Corp. Microsoft is suggested retail price $2599 For dealer inquiries call (617) 499-4961 or (617) 499-4962. The documents above were created with PageMaker 1.2.

for editing and revision by others.

Then, once all the revisions are complete, the PLP quietly provides extraordinary finished output.

Near-typeset quality presentations, newsletters, memos and reports produced with software like Microsoft's Word and Aldus' PageMaker.® All printed with a new generation of laser technology that turns out richer contrasts than ever before.

AN INVITATION TO SKEPTICS.

In other words, the PLP does for printed communications what the Macintosh did for personal computing.

It provides a sophisticated, yet affordable tool for anyone who needs to manage large amounts of information—and wants to work smarter and more creatively in the process.

So to answer the question we began with: the PLP printed the document that appears on the right. But you don't have to take our word for it.

We invite you to make your own comparisons through a PLP demonstration at any authorized General Computer dealer. Where you'll also be able to compare another pair of documents that are far easier to tell apart:

A Personal LaserPrinter price tag. And that of any other laser printer of equal quality.

For the name of the dealer nearest you, call (800) 634-9737.*

tosh II equipped with any hard disk.)

This arrangement also means the PLP is more compact than other laser printers. (An almost diminutive 16″x16½″x9″.) And having fewer parts, much less likely to need repairs.

THE PROOF IS IN THE PRINTING.

As you can see, a case could easily be made for buying the PLP on economics alone. But that would be selling it short.

Because the ultimate measure of any printer is how well it prints.

Like vastly more expensive laser printers, the PLP allows you to print scanned photos and illustrations, high-resolution graphics created with software like MacDraw® and Microsoft's® Excel, and otherwise juggle words and pictures until you have them exactly where you want them.

But it also provides assistance even these vastly more expensive printers don't.

Including a choice of Bitstream® fonts limited only by your hard disk's capacity to store them. (Fonts you can easily adjust to any point size, or fraction thereof.)

A preview feature that lets you review each page before you print it.

And a draft mode that lets you rapidly print out works-in-progress

GENERAL COMPUTER

a registered trademark of Microsoft Corp. PageMaker is a registered trademark of Aldus Corp. Bitstream is a registered trademark of Bitstream Inc. MacDraw is a registered trademark of Apple Computer, Inc. Macintosh is a trademark of Apple Computer, Inc. Manufactured

Circle 143 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.

Macworld News

by Gil Davis

ImageWriter LQ

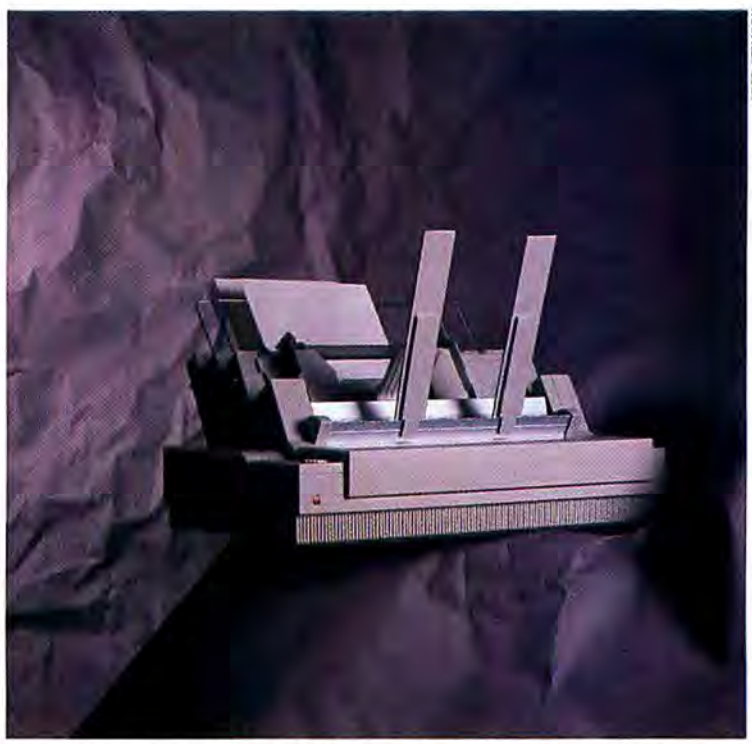
In spite of the LaserWriter's glamorous high-resolution type, the need still exists for an impact printer that can handle a variety of paper types and perform many mundane office tasks.

Apple's new ImageWriter LQ, while not up to LaserWriter standards, provides resolution and paper handling superior to that of the ImageWriter II. Those advantages will cost users at least twice the price of an ImageWriter II but less than half as much as the LaserWriter.

The ImageWriter LQ's 27-pin print head lets you print with roughly twice the ImageWriter II's 9-pin dot density. The LQ can print up to 216 dots per inch (roughly three times the Mac's screen resolution) vertically and horizontally in a single pass, as opposed to the ImageWriter II's 144 dots per inch.

Like the ImageWriter II, the LQ can print using an optional four-color ribbon (black, yellow, red, blue) with a life of one million characters per color band. The ribbon is as wide as the printer and runs in a loop. The LQ's black ribbon takes advantage of the band-shifting mechanism used for color printing to lengthen ribbon life, and it may be able to print as many as four million characters.

The LQ is also significantly faster than the ImageWriter II; it can print 250 characters per second in draft mode (which uses the printer's built-in fonts) at 10 characters per inch. It takes about 2 minutes to produce a full page of letter-quality text.



FRED STIMSON

Apple's new ImageWriter LQ is aimed solidly at the business market, with an envelope feeder and three sheet-feeder bins.

The LQ's superior paper-handling capabilities include a bale that pops open automatically after each print job. The LQ can print on paper as wide as 15 inches, and it can print five-part forms and large spreadsheets. The printer has both back-feed and bottom-feed paper paths, which are easily interchanged. For cut sheets, an optional sheet feeder can be purchased with up to three paper bins and an envelope feeder.

The LQ has a single slot to accommodate an optional circuit board for tying into AppleTalk. To configure the printer for the AppleTalk board or the sheet feeder, you must set recessed DIP switches. While that's relatively inconvenient, any other solution would have made the printer more expensive for the end user. You must set the switches only when first using the printer or when adding major peripherals.

Business users may note that one of the key advantages of a high-resolution dot matrix printer (like the LQ) over a daisy wheel printer is its ability to print documents that include graphics. You can also produce a variety of type styles without changing the print mechanism—thanks to a disk containing specialized font families, including Helvetica, Times Roman, Courier, and Symbol.

Although at press time the LQ's price was undetermined, the basic printer is expected to cost between $1300 and $1500. The sheet feeder will cost around $300; each of two additional bins will be about $150. The envelope feeder will cost about $50 and the AppleTalk card should cost about $139.
—Adrian Mello

Cheap Laser Fonts

While shareware libraries around the country have long offered a wide array of ImageWriter fonts, shareware PostScript fonts for the LaserWriter have been in short supply. In fact, until recently only one PostScript font has been available from user groups, electronic bulletin boards, and companies such as Educomp. That font, Princeton 4.0L (Philip and Harvey Lam; $30 shareware fee for single users, $100 for multiperson office use), is a sans serif font designed for techni-

(continues)

Power to see your best.

The 827,392 pixel window of opportunity

If you are a designer, engineer or a professional in business, marketing or sales you have probably discovered you can work faster and communicate better with a Macintosh.™

Add *The Big Picture*™ from E-Machines and you open new vistas of power. Here is the opportunity to see your best work unfold. *The Big Picture* displays a 1024 by 808 pixel desktop that shows you over four and a half times more information than the standard Macintosh screen, or almost three times as much as either of the optional screens for the new Macintosh II.

Engineered to be the most Macintosh compatible

The Big Picture is the ideal large screen for your Macintosh. We have carefully designed and engineered all the major systems from the ground up. The hardware, the software, the ergonomics. Because we designed it right, from the start, following all the Macintosh rules, you get the most Macintosh compatible large screen monitor on the market.

The Big Picture supports all standard Macintosh software. Plus, it's compatible with the leading high-performance add-ons. Like Hypercharger-020™ from General Computer and TurboMax™ from MacMemory; products from Levco, Dove, and more.

In fact, one of the most tangible statements about E-Machines' commitment to engineering quality can't be seen on the screen at all. You have to look behind *The Big Picture* to see the FCC "B" certification stamped right on the back.

That's the highest rating attainable. Rather than settle for the easier to get Class "A" certification, we pushed ourselves for excellence. Class "B" demands rigorous engineering and is reserved only for products that exceed tough standards. Products like *The Big Picture* and the Macintosh.

***The Big Picture* is upgradable to work with any Macintosh**

The Big Picture is available now for all Macintosh models, including the new -SE and -II. And it's good to know that *The Big Picture* you buy today can be upgraded to work with the Macintosh you may buy tomorrow. Even if you have your sights set on one of Apple's new "Open Macs" or portables from Dynamac™ and Colby.™

See for yourself

Ask your Apple® dealer for *The Big Picture.* Dealer installation is quick and easy. There's no drilling or soldering which keeps your Macintosh neat, clean and portable as ever. *The Big Picture* and Macintosh. The power to *see* your best.

THE BIG PICTURE™

E-Machines Inc. 7945 S.W. Mohawk Street Tualatin, Oregon 97062 (503) 692-6656

© 1987 E-Machines, Inc. Apple, Macintosh SE, and Macintosh II are trademarks of Apple Computer, Inc. Hypercharger-020™ is a trademark of General Computer and TurboMax™ is a trademark of MacMemory.

Circle 600 on reader service card

cal publications that require Greek and mathematical symbols. In addition, you can use Princeton to construct complex mathematical equations that

would be impossible with almost any other font.

But Princeton is no longer the only shareware PostScript font. Recently a number of fonts by Francis X. Mahoney, Jr., have become available on CompuServe (you'll find them in MAUG's font data library) and elsewhere. Three are completely original fonts, and each has a $20 shareware fee. Modern Print Bold is a tall, stylish sans serif font. Sans Serif is plainer and is horizontally elongated. Cuneifont, however, is something else: it looks as though the designer was plugged into a wall outlet when he created the font, which resembles a series of lightning bolts assembled into letters. While Modern Print Bold and Sans Serif would both make good display fonts, Cuneifont is clearly a specialty item.

Two other creations by Mahoney are based on fonts resident in the LaserWriter and the LaserWriter Plus. Calligraphic ($20) takes Zapf Chancery and deitalicizes it to create a more old-fashioned look. In addition, Option-Shift-(letter) combinations produce uppercase letters enclosed in a decorative box. Thus, if you begin each paragraph with a large decorative capital and wrap the first few lines of text around it, you can use Calligraphic to create your own illuminated manuscripts.

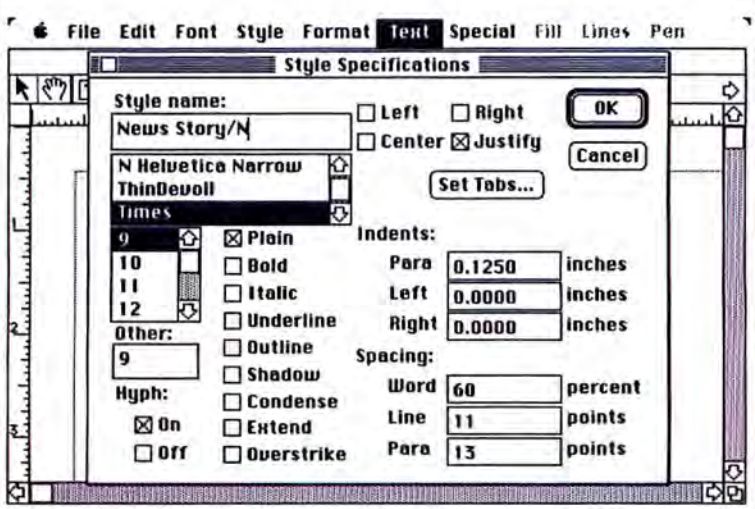
On the other hand, Times Fractions ($25) is far more practical. It is essentially a normal font (utilizing the characters in the LaserWriter's Times font) with a built-in fraction-construction kit. Option-Shift-(letter) combinations are used for the digits in the fraction's numerator, and Option-(letter) combinations for the denominator. And although it takes a little practice to get the hang of putting fractions together, you can make any fraction you want, and the fractions this font makes are among the best I've seen.–*Robert C. Eckhardt*

Better, Faster

Letraset wants to turn your head away from *PageMaker,* the best-selling desktop publication program. To do so, it has added 60 functions and faster performance to the newest version of *ReadySetGo*–4.0. Productivity is enhanced with style sheets that let you preset such attributes as columns, headlines, and paragraphs, and then flow in text from a word processing program. With version 3.0, the emphasis was on design; with version 4.0, productivity has been added.

Among the improvements are batch-pagination features, such as global linking of text blocks, global search and replace, and other features useful for longer documents and high-volume publishing. Glossaries from different *ReadySetGo* documents can be combined and easily displayed by pressing command keys. In addition, the new version produces tabloid-size pages, which can be "tiled" to make pages up to 99 inches square.

Other new features include an expanded search-and-replace function that can search for type characteristics like font, style, and size; the ability to wrap text around irregularly shaped graphics; improved hyphenation; and a floating-zero-point ruler for positioning text and graphics. Although version 4.0 is larger in size than its predecessor (about 225K versus 138K), Letraset officials claim that speed–one of the selling points of the last version–was not sacrificed. For more information contact Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653, 201/845-6100.–*Karen Sorensen*



You can save time by creating style sheets in* ReadySetGo's *new version, 4.0.* RSG's *new tools emphasize higher productivity by processing entire documents rather than just pages.

Shiva's AppleTalk Modem

Networks have long let users share devices like laser printers and file or disk servers, but until the recent appearance of modem servers (see "The Great Pretenders," *Macworld,* May 1987), there was no way networkers could share a modem.

Shiva Corporation of Cambridge, Massachusetts, is shipping the first 300/1200-baud modem that connects directly to AppleTalk. The $599 NetModem obviates the need for any additional server hardware or software. Because no modem is tied to any one Mac, network members can access any modem as if it were their own.

Shiva's modem serves many AppleTalk users, and it brings lights and sound to each Mac.

Shiva's designers have come up with a unique way of monitoring the NetModem's activities. Once your communications program issues a modem command, the lights that normally appear on the modem's front panel appear in the

(continues)

FEEL THE HEAT

No matter what kind of game you're in the mood for, you'll find that if it's in a box marked FIREBIRD, it's really hot!

Firebird offers the excitement of a whole range of challenges — Adventures and Strategies for long rainy weekends, Arcade games for exhilarating evenings, Simulations when you need to get away from it all.

Look for the Firebird — it stands for top-quality entertainment software in virtually *every* category.

How About These Fireworks From Firebird!

The world has been waiting for a sequel to the highly-acclaimed PAWN, with its revolutionary text-handling system. Here at last is GUILD OF THIEVES, an extraordinary trip through legendary Kerovnia. One of the most sophisticated parsers on the market lets you input complicated sentences and interact with a whole cast of fascinating characters.

You'll think of Firebird every time you yearn for Adventure!

You'll find the Firebird logo on other addictive Adventures, too. There's the award-winning PAWN, forerunner of GUILD OF THIEVES — and KNIGHT ORC, a magical world of illusion enhanced by superb graphics and character interaction.

Fire From Firebird

When your mood changes from Adventure to Strategy, try these two from Firebird! TRACKER introduces you to a whole new concept in military warfare, while the revolutionary UNIVERSAL MILITARY SIMULATOR* will provide you with the opportunity to recast all of history's most dramatic battles. This is Firebird — the best in entertainment software of every description. We'll prove to you that you don't have to keep switching brands to satisfy your obsession for challenge.

FIREBIRD

"The First Full Line In Software"

Firebird Licensees, Inc.
P.O. Box 49, Ramsey, NJ 07446
(201) 444-5700

Firebird software for Apple and Macintosh systems, including the popular Elite, Golden Path, Starglider, Colossus Chess IV, Silicon Dreams, and Jewels of Darkness, is available from $24.95 to $44.95.

*Available January '88. Apple II and Macintosh are registered trademarks of Apple Computer, Inc. Firebird, and the Firebird logo are registered trademarks of Firebird Licensees, Inc.

Circle 683 on reader service card

upper-right corner of your screen. And when the dialing begins, the NetModem ships to your Mac the sounds that would normally come from the modem's speaker, so you can hear how the call is progressing.

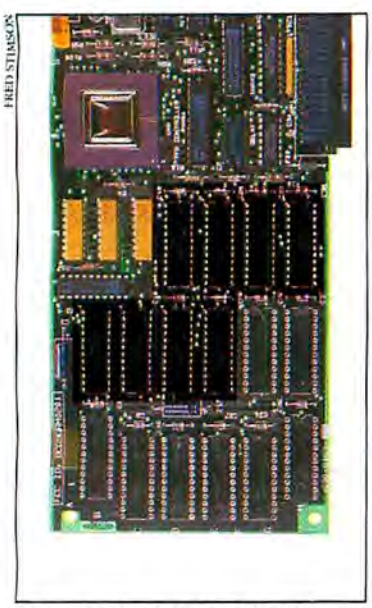
Shiva's engineers guarantee the Hayes-compatible NetModem's operation with ten of the most popular communications programs, including *MicroPhone, Red Ryder, inTalk, MacTerminal,* and *AppleLink.* For additional information, contact Shiva at 617/661-2026. *–David Ushijima*

New Macs and Problems

Early users of the Mac II and the SE are reporting a number of problems, including the nonavailability of color monitors for the II. Apple dealers can only deliver complete Mac II systems with monochrome monitors–unless they use Sony's Multisync color monitor CPD-1302, which is said to be very close to Apple's version. Some dealers simply order a custom-made cable to connect the Sony monitor to the II.

Apple has declined to comment on this shortage or on the following reported problems:

- The Mac II's video card crashes because unprotected CMOS chips are highly sensitive to any voltage surges. In addition, Apple's video-card expansion set for the Mac II is generally unavailable.
- The Mac II's lithium battery can go dead after a few days because of a leak from the computer's back plane.
- Cursors on the SE and the Mac II have a bumpy action. Big-screen manufacturers are writing special programs for smoother cursors on their screens.
- Hard disks initialized on the Mac II and the SE may not be usable on other Macs. Apple is reportedly working on a fix.
- Owners of 128K Macs might appreciate this: even with the Mac II and its latest version of the operating system, if you want to copy disks but have only one drive, you are in for multiple disk swaps, just like the 128K owners.



FRED STIMSON

Reportedly, this Mac II video card from Apple crashes when its CMOS chips are hit with a voltage surge.

Shareware that Conserves

Ron Risley has a philosophy of preserving resources. That's why he's written *Immortality,* a small Init for opening one or more desk accessories whenever you boot up or launch any application. Setting up *Immortality* is fairly easy, but you need to use *ResEdit* to customize the Init for each DA you wish to immortalize. You can choose not to open these desk accessories by holding down the Shift key when launching an application or when starting the Mac.

MAX AGUILERA-HELLWEG

Ron Risley, the author of* Immortality *and* BackDown, *conserves energy as easily as he preserves the Mac's various resources with his unique desk accessory programs.

Risley launched *Immortality* as a joke when a group of users were beta-testing a DA spelling checker on a telecommunications service. Participants liked *Thunder* so much that they wanted to have it around all the time, policing them while they typed online, flashing or beeping when they typed a misspelled word. Although *Immortality* was written to immortalize *Thunder,* it can be used with as many desk accessories as you like. *Immortality* sets aside enough memory for system functions to make sure that memory-hogging applications won't intrude on the DA. Each time the DA is closed, the memory *Immortality* reserved for it is again made available, so energy is conserved.

Risley's other Mac contribution is *BackDown,* a shareware DA that provides true multitasking while you're downloading in Xmodem, MacBinary, or the Fast and Dirty ("turbo") mode. *BackDown* is modeless, so that once a file transfer has begun, control of your computer is returned to you. You can monitor or abort the download while doing anything else you like (except shutting down your computer or anything involving the modem port) until the transfer is completed. Then, having been alerted by beeping and flashing, you return to your telecommunications program. Better yet, you can return to a DA telecommunications program, initiate another download, reenter *BackDown* for another transfer, or log off. During this process you can continue your other work without leaving your application.

Risley's respect for resources is apparent in his programs, which work nearly transparently. Both are available through telecommunications services and user groups. *BackDown* can be purchased for $30 and *Immortality* is free from Ron Risley, 1955 Edgemont St., San Diego, CA 92102. *–Linda Joan Kaplan*

(continues)

We Must Go On Meeting Like This!

Like most professionals in today's multivendor environment, you have words stored on one system, spreadsheet and financial data on another and a need to combine information from both for presentation-quality documents on a third.

A software solution from OmniGate allows a Wang VS, Macs and IBM PCs to start talking to each other to meet your needs. Nearly 30 translators make sharing information across vendor lines easy and economical.

Share And Share Alike

Say you've got files stored on a Wang system and a desktop-publishing requirement using a Macintosh. Now you can connect them and transfer and translate documents and data files back and forth. Plug your Wang WP documents into MacWrite or Microsoft Word and merge them into PageMaker. Mail the PageMaker document to other Macintosh users via Wang OFFICE. Move data files or a Lotus 1-2-3 spreadsheet from a Wang VS to an Excel spreadsheet. Graph the figures using Excel and then insert them into the PageMaker layout.

Macintosh users can also access applications on the Wang VS. With our Macintosh 2110 terminal emulator, your Wang becomes an application and file server.

And OmniGate's solution set lets your Wang system do double duty if IBM PCs are part of your system. IBM PC users can transfer and translate information while in Wang 2110 terminal mode. Your Wang system becomes a versatile file and application server for both the Macintosh and the PC.

You need no special hardware to introduce your machines to each other, because our solution is a software solution. No document and file-format translator boxes. No special wires or cables. Implement our solution using dial-up, switched or dedicated telecommunication links. No special training is required to use an OmniGate solution, either.

Let's Meet Today

Call OmniGate at 415-781-6464 to meet the dealer nearest you. Once you've seen the OmniGate solution set, you'll know why we must go on meeting like this!

Building Bridges For The Multivendor Environment

OMNIGATE

351 California Street, Suite 1000
San Francisco, California 94104

Circle 794 on reader service card

Margarine? No, Butter

The high-priced spread of the publishing world is coming to the Macintosh II. It's *Interleaf* 3.0, the leading document-preparation program for UNIX, VAX, Apollo, and Sun workstations.

Interleaf on the Mac won't be for everyone. You might seriously consider *Interleaf* if you publish manuals, books, or other documents of over one hundred pages, or if your publications are extremely complex.

For instance, let's say your manual has 337 figures that are referenced in text. You want to add a figure in the middle. It's easy with *Interleaf*, since the program will immediately and automatically renumber all figures and references in all text files.

In addition to having many features necessary for handling large documents, *Interleaf* combines a full-fledged word processor with advanced layout, drawing, and paint programs. This integrated program requires 4 megabytes of RAM memory and at least a 40MB hard disk. A large-screen monitor will display a full-size page and associated graphics.

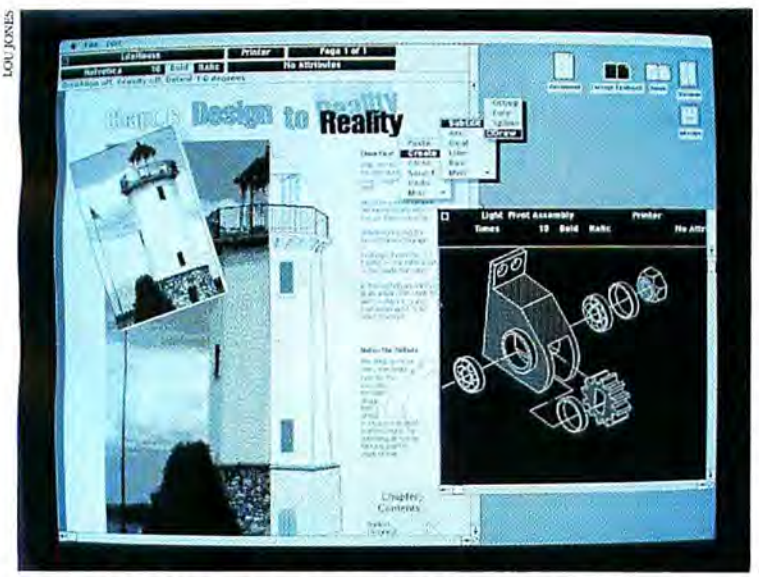
What does this all mean? It means that more and more publishers will be looking to the Macintosh II as the computer for their editors and designers. The driving force will be the low price of a Mac II with *Interleaf* 3.0: some $10,000, compared with the $15,000 to $35,000 price for a workstation-based *Interleaf* system.

Interleaf users have traditionally been Fortune 1000 companies and other large organizations. But despite its full-featured text editing, most of those companies use *Interleaf* as a composition tool and create the text on lower-priced word processing programs. Since *Interleaf* 3.0 is expected to be priced in the $1900 to $2500 range, more companies may consider using its integrated word processor.

For more information, call Interleaf in Cambridge, Massachusetts at 617/577-9800.

–Jeffrey B. Walden

LOU JONES



Coming to the Mac: a new generation of desktop publishing programs that emphasize production of large, complex documents. **Interleaf,** ***shown above, is just such a program.***

Faster Mac Networks Go Online

Macintosh II users can now connect to a much faster network than AppleTalk. Apple's introduction of an EtherTalk interface card provides a direct connection to Ethernet networks for the Mac II. In addition to greatly increasing the speed and capacity of Mac II local area networks (LANs), this new product gives Mac IIs access to the wide variety of computing environments that already support Ethernet, such as VAX and UNIX.

EtherTalk is actually AppleTalk protocols running on an Ethernet LAN. Ethernet LANs use coaxial cable to enable transmission rates of up to 10 megabits per second. In contrast, AppleTalk's traditional twisted-pair media can transmit at only 230 kilobits per second. Because of its greater capacity, Ethernet can also support many more computer nodes than AppleTalk: over 100 as opposed to AppleTalk's 32.

To make EtherTalk work, Apple had to bridge the gap between Ethernet and AppleTalk networks by creating a translation program called the AppleTalk Address Resolution Protocol. This software puts Ethernet addresses on packets of AppleTalk information. Since the AppleTalk packets are effectively disguised as Ethernet packets, the Ethernet LAN happily sends them to their destination.

What physical media they use is not the only difference between Ethernet and AppleTalk. Each requires different protocols to define transmission methods and to control media access. As a result, Apple has developed the capability to translate between AppleTalk protocols and Ethernet protocols.

Kinetics in Walnut Creek, California, has already introduced its EtherPort SE, a plug-in board for the Mac SE with similar AppleTalk/Ethernet gateway features. Since Apple currently has no plans to bring out a version of EtherTalk for the SE, it's working closely with third-party vendors like Kinetics to ensure consistency in packet structures, and thereby compatibility between products.

DAVID ESCOBAR

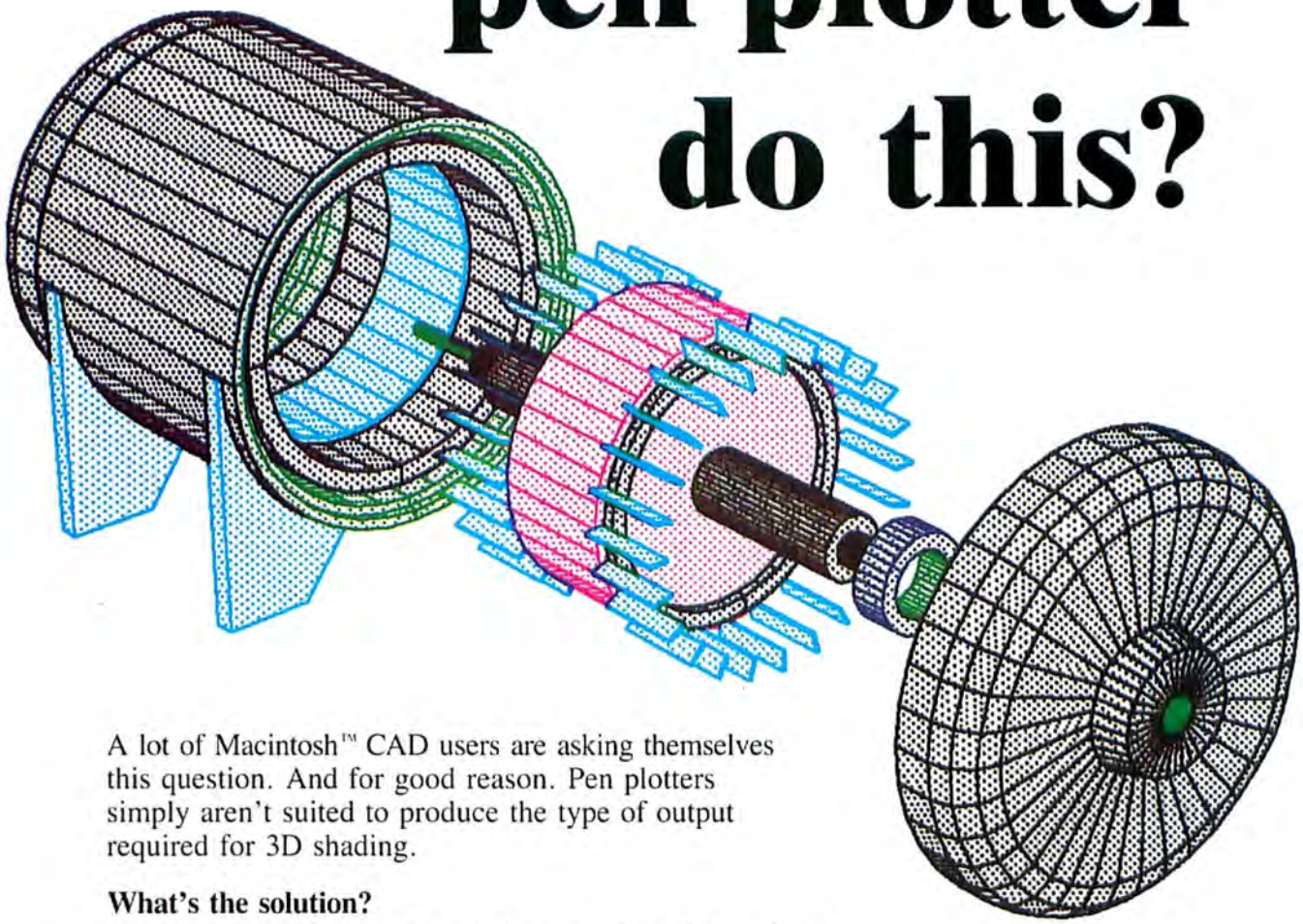
Chris Bryant shows Apple's new EtherTalk card, which connects the Mac II to high-speed networks.

Chris Bryant, Apple's marketing manager for desktop communications, says EtherTalk is just another step in the company's overall networking and connectivity strategy. That strategy has seen the release of products that allow the transfer of data between the Mac and IBM 3270 mainframes and MS-DOS systems. Now in the works: bringing MS-DOS computers into an *AppleShare* environment.

Meanwhile we have EtherTalk, which is a higher-performance version of AppleTalk, for those who need faster net-

(continues)

Can a pen plotter do this?



A lot of Macintosh™ CAD users are asking themselves this question. And for good reason. Pen plotters simply aren't suited to produce the type of output required for 3D shading.

What's the solution?

JDL's new 850 GL+ is the only lowcost, A to C-size plotter to offer you practical 2D/3D drafting and 3D modeling hardcopy. The GL+ combines in one convenient desktop device: color, consistent line quality and accuracy, polygon fill patterns, HP-GL compatibility, automatic media feed and a host of other standard features to enhance your plotting productivity. And all at plot speeds up to ten times faster than pen plotters.

Don't limit your options with a pen plotter. Meet the demands of today's CAD hardcopy and be prepared for the next dimension.

Let the JDL-850 GL+ serve all your desktop engineering plotting needs. Call us for a brochure and plot sample now.

JDL INCORPORATED

West: (805) 495-3451 East: (704) 541-6352
2801 Townsgate Road, Suite 104, Westlake Village, California 91361

Macintosh is a trademark of Apple Computer, Inc. HP-GL is a registered trademark of Hewlett-Packard Corporation.
VersaCAD drawing courtesy of VersaCAD Corporation.

Nationwide service by BRUNING

Circle 765 on reader service card

working and connection to Ethernet networks. For more information, call Apple at 408/996-1010.–*Brita Meng*

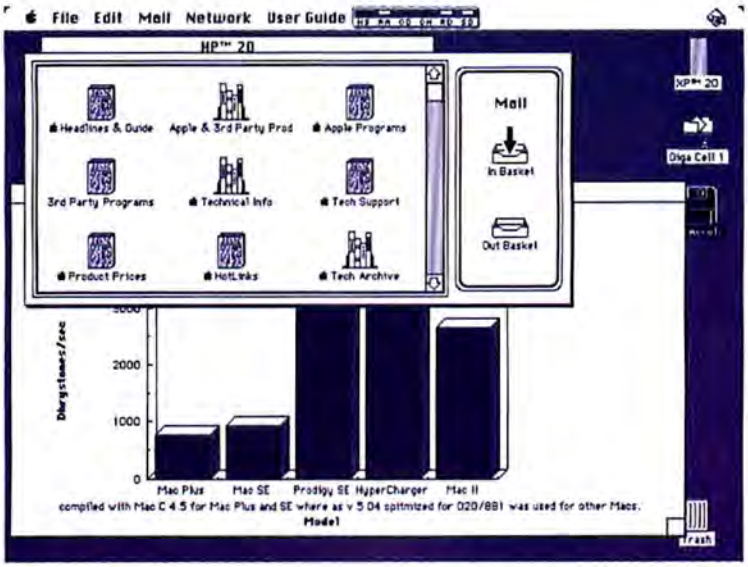
Beyond MultiFinder

Like a sculptor who chisels away at a stone block until the sculpture is complete, Apple refines a product until it's right. Witness the evolution of the Mac's hardware and operating system (OS) to produce the finely tuned SE. But with MultiFinder (see "MultiFinder: The Application Juggler" in this issue) and the Mac II, Apple must once again pick up the chisel and mallet.

Clearly, MultiFinder is only the first step toward true multitasking–the ability to run more than one progam at a time. For one thing, the Mac OS must eventually use the paged memory management unit (PMMU) now an option for the Mac II. Until then there will be no surefire protection against programs crashing into one another in memory. And virtual memory, a proven technique on mainframes that enables you to run programs of any size on any machine regardless of how much RAM is installed, will require the PMMU.

Another deficiency of the Mac OS is its management of peripherals (like printers and modems) and networks (like AppleTalk). Currently, you can't simultaneously run multiple applications that require the same device, such as a modem or the LaserWriter.

Applications like *HyperCard* are limited by the Mac OS's inability to allow applications to exchange messages (a mechanism often called *interprocess communications*). Without this capability, you can't link applications so that they'll perform such tasks as automatically updating your *HyperCard* stacks when you create a new *Excel* worksheet, or running *MicroPhone* to download a file directly into *WriteNow*.



Using Apple's MultiFinder, you can open a number of applications at the same time. More powerful Finders are on the way.

Apple's engineers and programmers are aware of MultiFinder's shortcomings; in fact, they emphasize that MultiFinder is only a step in the Mac's evolution. They acknowledge that improvements can only be implemented in several stages. According to Apple, developers who follow the rules for compatibility with MultiFinder will have cleared the greatest obstacle to using future versions of the Mac OS that support the PMMU.

And what about A/UX? Ironically, Apple's version of UNIX has nearly all the features missing from the Mac OS. But UNIX has an interface and jargon that make learning Sanskrit look easy, as well as memory and storage requirements that put it well beyond the reach of most Mac owners.

Apple can refine its operating system through two different paths. One has the Mac OS evolving into A/UX, the other has A/UX evolving into the mainstream Mac OS. The first alternative seems to be the most likely, given the resources devoted to upgrading the Mac OS. But don't forget that unlike UNIX, the Mac OS wasn't a true multitasking operating system from the start, and retrofits are neither easy to implement nor trouble-free in operation.

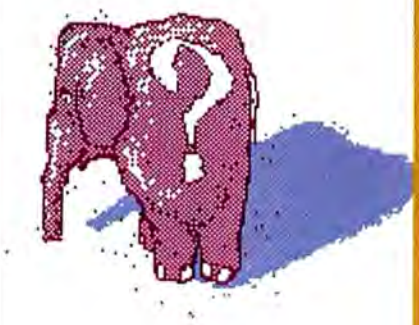
Because A/UX can access most of the Mac's user-interface Toolbox, it can look to the user like a Mac running MultiFinder. A/UX's memory and disk requirements could cease to become an issue if RAM and disk prices drop sufficiently–besides, even MultiFinder on a Mac Plus requires 2MB or more to be truly useful. Also, as long as the interface is the Mac's, will anyone care or even notice what initials are on the operating system?–*David Ushijima*

Mucho II RAM

What's Apple trying to tell us when it says Macintosh II owners might need more RAM?

Let's take National Semiconductor of Santa Clara, California, as an example. National says it was asked by Apple to create a board providing up to 16 megabytes for the Mac II. This board is now available in 4-, 8-, 12-, and 16MB configurations. Also available is a 4MB RAM board from AST Research. Both boards can only be used, at this time, with a RAM disk, because the current Mac II operating system, even with the new MultiFinder 1.0, only supports main memory on the motherboard. A later version of the Macintosh operating system (OS) may correct this.

To overcome this limitation, and for a lot of other reasons, Apple is preparing A/UX, a Unix-based OS that will address NuBus RAM cards in addition to the main board memory. That's just as well, because A/UX may take up 1.5MB just in its basic configuration.



Now add on some of the new graphics programs, which could take 1MB all by themselves, and you're up to 2.5MB. Remember, these graphics programs could be working on bitmapped scanned images at 300 dots per inch. Larger prints could consume 4MB just to be in memory along with various Undo operations.

So now we're up to 6.5MB and we've only got one image in memory. Say we want to cut and paste between two more large images. Suddenly, we've added another 8MB and we're up to a total of 14.6MB and are

(continues)

It's one thing to have great graphics. It's something else to make them move.

VideoWorks™ II for:

- Business Presentations
- Animated Slide Shows
- Multi-media Storyboards
- Educational Movies
- Entertaining Animations
- Suggested Retail Price $195

MacroMind has been making the Macintosh look great for years. Now let us make you look great with VideoWorks™ II! The Overview window creates slide shows that can include animation, wipes, fades, timers or sound. VideoWorks™II works great with the Macintosh II (in either 16 or 256 colors) or the Macintosh 512, Plus, SE.

Create animation on your Macintosh with VideoWorks™ II. Take any artwork you have and create animated presentations, storyboards, educational courseware, point of sale displays or music-videos. From MacroMind® Inc., the creators of MusicWorks™, M.U.D.™, Art Grabber™, ComicWorks™, GraphicWorks™, Maze Wars+™.

Original VideoWorks owners can upgrade to VideoWorks II for $100. Send your check, VISA or MC order along with your VideoWorks Movies disk.

VideoWorks II

VideoWorks™ II © 1987 MacroMind™ Inc., 1028 W. Wolfram St., Chicago, IL 60657 (312) 871-0987. Comes with three disks: Program & Tutorials, Clip Amination, Artwork & Movies and a Guided Tour training disk. Not copy protected. Distributed by Brøderbund Software. Ask your local dealer.

MacroMind® Inc.

Circle 781 on reader service card

in danger of running out of memory using National's largest board. Another scenario might have numerous documents open in multiple applications at the same time.

Remember when 512K seemed large? Now it's possible to fill up 16MB and still need 16MB more. For information about National's boards, call National Semiconductor at 408/721-5000.

Turbocharging the LaserWriter

Have you been suffering from those waiting-for-the-LaserWriter blues? Now there's an accelerator board from Mass Micro Systems that speeds up Apple's LaserWriter by two to three times when printing graphics. It replaces the existing 68000 microprocessor in the LaserWriter and LaserWriter Plus and comes with the same powerful 68020 CPU used in the new Mac II.

Also available from Mass Micro Systems is a card that allows up to 4 megabytes of memory, which lets you download up to 80 fonts, depending on how much memory they require. Even more fonts can be used if you connect the unit to an optional hard disk via a SCSI interface.

For those who want numerous fonts and can live with the LaserWriter's present speed, Mass Micro Systems sells a $499 1MB memory upgrade. The card allows up to 40 fonts at a time to be downloaded into RAM. The company also markets a FAX modem that accepts transmissions from FAX machines or other FAX modems.

Mass Micro Systems, a 16-person start-up company, began in April with a number of high-level computer company executives—like Dave Paterson, former director of engineering at Apple Computer for the Apple II product line and head of development for the LaserWriter printers. Perhaps that's the reason for the emphasis on LaserWriter products.

The company pledges that it will give volume discounts to corporate customers and maintain an 800 number and a 24-hour support line.

For further information, contact Mass Micro Systems, 3250 J St., Santa Clara, CA 95054, 408/988-1200 or 800/253-8900.
—Karen Sorensen

Politics with the Mac

The Massachusetts State Senate is equalizing the population of voting districts—as mandated by state law—by redrawing boundaries with custom-designed geographic database software on the Mac.

MASS—for Massachusetts Alternative State Senate Redistricting System—was developed for the state in 100 days by student research assistants at the computer graphics lab in Harvard University's Graduate School of Design. "The program does not allocate new districts or optimize solutions," explains Mark Van Norman, Harvard's project director. "Options must be generated by humans. The computer just substitutes for what would be enormous hand calculations."

Adopting the Mac's intuitive interface and graphics format for the legislators, the software displays a detailed map of the state and allows townships or voting precincts to be dragged between adjacent Senate districts. It then redraws new boundaries for any two adjacent districts—which must by law contain equal populations within a 3 percent variation—and recomputes their demographics.

SETH RESNICK

Mark Van Norman heads a Harvard project that's using a new Mac program to redraw the political districts of Massachusetts.

Plans are to offer the package commercially as a generic database tool that could allow information to be manipulated and displayed for a number of geographically distributed attributes.*—Stuart Silverstone*

Fine-Tuning Utilities

In recent months, a number of new public domain and shareware programs have appeared that make it possible to fine-tune various aspects of your Macintosh. *Set Clock* version 1.4 (Jim Leitch, free), for example, will place a ten-second call to Virginia (or Toronto) over a Hayes-compatible modem, converse briefly with a "master clock driver," and set your computer's internal clock to within one second of the exact time. All you have to do is pay for the call.

You will find *Layout* version 1.0 (Michael C. O'Connor, free) handy if you want to change the way the Finder displays files on the desktop. With *Layout*, you can change the font and size of the text used in most parts of the desktop. You can change the vertical and horizontal placement of the icons in both Icon view and Small Icon view, and turn on a grid so that icons snap into place when you move them. You can adjust the width of the columns of information in the four text views (by Name, by Size, by Date, and by Kind) and change the format of the date. You can set the position and size to which all new windows (those of newly formatted disks and new folders) open. And the daring can eliminate the warning that gives you

(continues)

For Your Convenience

Why do more work than you have to? Microsoft® *Works* gave you word processing, spreadsheets, and a data base. But don't you still wish you had an "automatic time-saving device" to take care of the everyday, repetitious typing?

Get the WorksPlus Command program. With its pre-programmed commands, you can eliminate much of your repetitive typing. With the touch of a single Macintosh™ command key, you can

- Select a style rule
- Set up multi-column labels from a data base
- Generate a table of contents or an index
- Log on to a time-sharing service

and much more.

Once you see how easy it is to use, you can also use WorksPlus Command to create your own commands. You don't need to be a programmer. Simply record the keystrokes or mouse clicks and you have an "instant" command.

Of course, if you have a programming inclination, WorksPlus Command provides a full programming language for your convenience. Create your own complex macros to do your bidding at the touch of a key.

Put your time to your advantage instead of striking the same keys over

...and over

...and over.

(Suggested retail price is $99.95.)

Microsoft® is a registered trademark of Microsoft Corporation.
WorksPlus™ is a trademark of Lundeen & Associates
Macintosh™ is a trademark licensed to Apple Computer, Inc.

Lundeen & Associates
P.O. Box 30038
Oakland, CA 94604

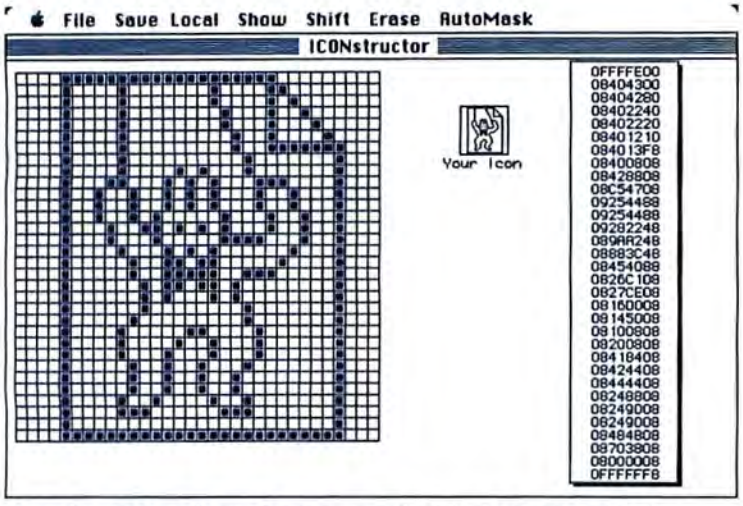
Circle 601 on reader service card

one last chance before trashing a file.

Iconstructor version 1.0 (Lawrence W. Walker, shareware donation requested) provides a way to modify or create completely new icons. The program has a single window containing a large grid for working on icons in FatBits, a life-size rendition of the current icon next to it (so you can monitor the results of your efforts), and a hexadecimal description of the icon that only a programmer would love. You can draw on the blank grid with the pointer, or load in an icon from any file (except the System file) and alter that. The program also makes it extremely easy to animate an icon so that it switches to a completely different image when you select it. The documentation has enough basic information to get you through.

For the truly ambitious, there is *PD FontEdit* version 0.96 (T Tauri SoftSystems, free). With this program you can alter or add to existing ImageWriter (bit-map) fonts or create new ones of your own. You adjust font and character attributes like leading, baseline, ascent, width, and kerning by clicking on arrows that surround the Edit window. You edit a character in a FatBits window while the same character in actual size is displayed next to it. To help you draw characters, there are shape and line tools and a pattern palette for filled shapes, in addition to the standard pointer that clicks FatBit pixels on and off.

There are also commands to double the size of the characters in a font, resize them to specification, stretch them vertically or horizontally (or both), style them (in the usual Macintosh-created italic or bold or in a version of italic, bold, outline, or condensed that follows your specifications), shade them to gray or invert them (change black to white or white to black), and more. There is also a full-screen window in which you can type as much text as you like, to test the font and see how it looks. *PD FontEdit* font files are not the same as Font/DA Mover files, but they can be selected by holding down the Option key when you click on the Open button in Font/DA Mover, and then installed just like regular font files.–*Robert C. Eckhardt*



Creating custom icons is easy now, thanks to* Iconstructor *by Lawrence W. Walker. This handy program is available on many bulletin boards.

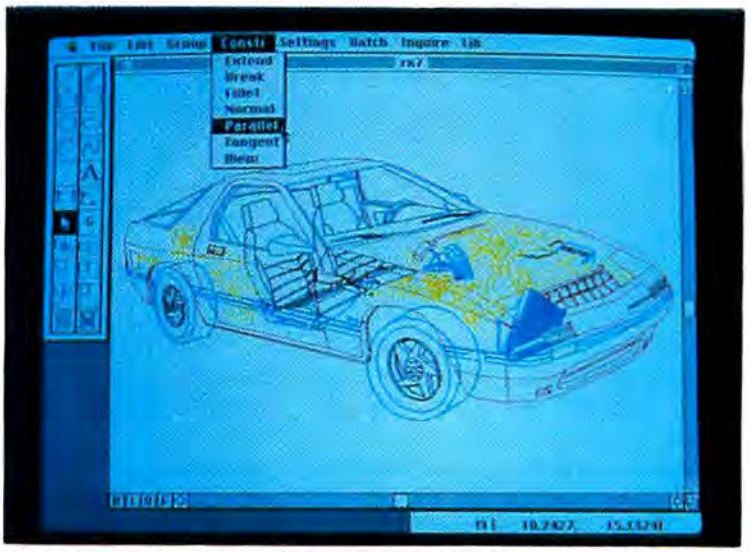
VersaCAD Comes to the Mac

A leading computer-aided design (CAD) program in the IBM PC world, *VersaCAD,* which has an installed base of around 40,000 units, is coming to the Macintosh. Versacad Corporation of Huntington Beach, California, recently announced plans to release a Macintosh version of their popular CAD program. A company representative stressed that *VersaCAD/Macintosh Edition* is not simply ported over from the IBM PC version; Versacad has spent more than a year rewriting the program to conform to the Mac's user interface.

According to a Versacad spokesperson, *VersaCAD/Macintosh Edition* will be available late this year and will sell for $1995. Program features will include 16-decimal-place accuracy, up to 250 layers, automatic corner and intersection cleanup, and built-in drawing tools such as French curves, ellipses, and multiple parallel lines. Drawings are created with the mouse or with keyboard input of absolute, relative, or polar coordinates. Output devices include the LaserWriter and plotters up to size E.

Many developers are no longer trying to cram sophisticated applications onto 400K floppy disks; *VersaCAD/Mac* requires a Mac with 1MB of memory and two 800K drives or a hard disk.

Part of the success of CAD software in the IBM PC market lies in the development of companion products by third parties. Such add-ons include computer-aided manufacturing components and symbol libraries. Perhaps the entry of an established company like Versacad into the Mac marketplace, coupled with the expanded capabilities of the Mac II, will encourage third-party developers to create complementary products for *VersaCAD* and other Macintosh CAD programs, realizing Apple's goal of making the Mac a "desktop engineering" computer. For more information, contact Versacad Corporation at 714/847-9960.–*Erfert Nielson* □



Both drafting and drawing tools are included in* VersaCAD/ Macintosh Edition, *which can output to plotters and PostScript printers.

If you want to know why FullWrite

Within the next ten minutes, your entire concept of word processing will be turned upside down.

FullWrite Professional™ sets new standards for word processing.

It lets you handle words better, faster, more powerfully, with more versatility than any other word processing program. But competing in today's world requires even more. Now, documents need the persuasive power of text and graphics combined.

That's why FullWrite Professional easily turns your words into fully illustrated documents, and even generates the graphics. Chances are, you'll never need a page layout program.

FullWrite Professional is going to change serious writing forever. Here's why.

- *WYSIWYG multi-column display.* What you see on the screen is exactly what prints on the page. With automatic repagination, as you type.
- *Full desktop publishing look.* Drop in any shaped image, and watch the text wrap around it automatically. Create sidebars to mix multiple column sizes on the same page, as well as multi-column headlines. Automatically revises layouts while you edit.
- *An integrated MacDraw®-like drawing environment.* With Bezier curves similar to Adobe's Illustrator™ for smoother, more natural looking curves. Bit-mapped graphics are automatically converted to laser resolution objects for easy cropping, scaling, and re-sizing.
- *Change bars.* Visually highlights changes between drafts of a document.
- *Posted notes.* Append comments and observations directly to a document without affecting the text. Notes are automatically stamped with the time, date and name of person making the comment. Make comments individually or as a group.
- *Browser.* Quickly scan footnotes, posted notes, pictures, virtually any user defined category, through a special window, without looking through the entire document.
- *Outlining.* Sophisticated, powerful outlining that rivals the best stand-alone products.
- *Automatic free upgrade.* All registered owners receive a free media upgrade to the next version, automatically.
- *Power word processing features.* All the stan-

Professional really is so damn good.

you'd better sit down.

Macintosh is a trademark licensed to Apple Computer.
MacDraw is a registered trademark of Apple Computer.
Adobe Illustrator is a trademark of Adobe Systems, Inc.
The prefix Full, FullWrite, and FullWrite Professional are
registered trademarks of Ann Arbor Softworks.

© Ann Arbor Softworks 1987

dard editing features plus: user defineable outlining styles; base style sheets; custom style sheets; find and replace by virtually any attribute; large screen support; spelling checker; thesaurus; automatic hyphenation; automatic table of contents and index generation; full undo of all options; bookmarks; references; glossaries; variables; mailmerge; full header and footer support with graphics; automatic renumbering of footnotes, endnotes, pictures and other user defined items; kerning; leading; guttering; column rules; strike-outs; small caps; multiple windows; show pages; full keyboard shortcuts; true laser grey scales; intelligent left/right formatting of pages; flexible printing; directly import other word processing documents and more!

FullWrite Professional is not just for professional writers and communicators. It's for managers, account executives, and secretaries, too. It is the word processing program for the future. Your future.

If you can operate a Mac Plus, SE, or II (anyone can operate a Mac), you can use FullWrite Professional. Right away.

It's what word processing was meant to be. And it's going to change serious writing.

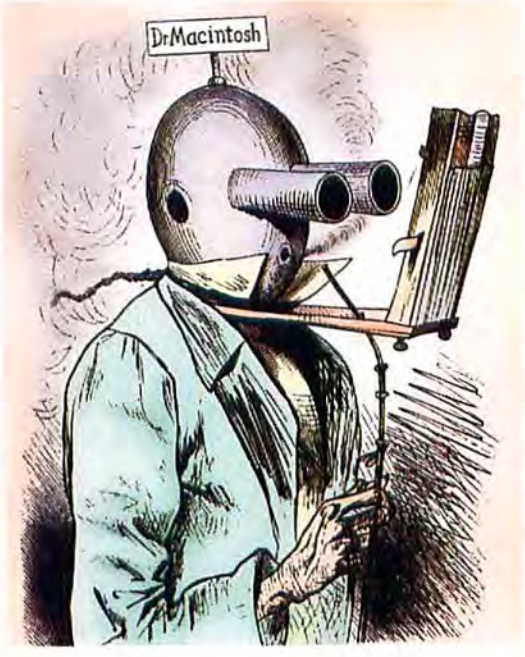
Forever.

Circle 204 on reader service

FULLWRITE PROFESSIONAL

ANN ARBOR SOFTWORKS 2393 Teller Road • Suite 106 • Newbury Park, CA 9132
Phone: (805) 375-1467

Seeing is believing.



In the perspicacious village of Marlow, NH (pop. 547) we definitely don't see the world through rose-colored glasses. Au contraire! We use our famous X-ray vision (and assorted ocular enhancers) to determine which Mac products will do what you want, when you want, at a price that won't make you see red.

Say you make a lot of presentations and don't have the handy accoutrements of our friend pictured above. Well, then, how will you plan, write, and edit your cogent cajolings, and then design slides, flipcharts, notes, and handouts to go with them? You need **PowerPoint** from Forethought, Inc. Its free-form design capabilities will make it easy for you to mix your text with diagrams, graphs, and illustrations.

Forethought, Inc.
PowerPoint
$249

Hungry for more? Check out Rubicon's **Dinner at Eight** and **Silver Palate.** They harness the Mac's incredibly good taste to help you whip up elegant dinners for friend or flock. The former includes recipes from all over the country. The latter, from the famous *Silver Palate* in New York. Just enter how many people are coming and the recipes will be spit out accordingly. When it's time to see the forest for the trees,

Rubicon Publishing
Dinner at Eight &
The Silver Palate Collection
$52

try **Stepping Out** from Berkeley System Design. You can zoom in on your screen (with 2x to 16x enlargement) or see the big picture with 2x or 4x reduction. It also lets you move through pages in a single mouse stroke without scrolling. A great program for any publishing, design or desktop application.

Berkeley System Design
Stepping Out $57

Mice may be nice, but there's nothing to match a **Quickstick** for sheer ergonomic thrill. Having double-clutched our way out of the 60's and into the computer age, a joystick makes a lot of sense. The Kraft Systems Quickstick is a three-button joystick that matches a mouse for response, and blows it away for speed and convenience.

Kraft Systems
Quickstick $39

Need to cram more programs into RAM? You can double the active memory on your Mac 512 (to 1024k) with the **MacSnap 524** from Dove Computer Corp. It will add significant speed and convenience to your daily crunch. You'll be able to run up to eight programs simultaneously. And it comes with *RAMSnap* performance software that includes print spooling, so you can print one job while working on another.

Dove Computer Corporation
MacSnap 524 $139

Then we have a great time saver for engineers. **Designscope** from BrainPower lets you develop electronic block diagrams on screen, assign parameters to each block, and then run a simulation. So you can catch problems before you start designing component circuitry. It features a truly dazzling assortment of "assignable" component blocks, and requires at least 512k to run.

BrainPower
Designscope $129

Do you need **SuperLaserSpool**? Say, you've just started printing your 50 page monthly newsletter on miryachit (a neurotic condition of Siberian repute). Now you'd like to update your lengthy subscription list. And you don't want to cool your jets till the printing's done. SuperLaserSpool will take over the printing, while you get on to bigger and better things. It's compatible with all major applications, and works on both floppy and hard disk systems.

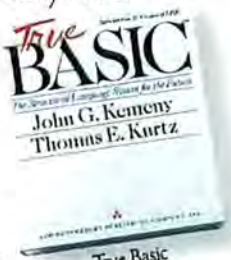
SuperMac Software
SuperLaserSpool $99

Speaking of tongues, there's nothing like a complex accounting problem to turn businesses to babble. Fortunately, there's **Turbo Maccountant** from Digital, Etc. It combines general ledger, accounts receivable, accounts payable, invoicing, and payroll into one fully-integrated and easy-to-use program. And files can be transferred to most popular spreadsheets or word processors.

Digital, Etc.
Turbo Maccountant $259

Now it's simple to account for yourself!

And, if you like Marlow, NH, you'll love Hanover, NH, just a short drive north. There you'll find the professors Kemeny and Kurtz who developed BASIC. We currently have a great deal on their **True BASIC**. First, the price is super low, and second, when you buy it, we'll offer you either of their two most popular optional libraries, **Calculus** and **3D Graphics**, for only $25 each.



True Basic
True BASIC $59

So scope out our data and deals, and give us a call if you need more facts or figures. We keep our eyes peeled so hard it hurts, as we carry on our quest for truth, justice, and the straight scoop on the Mac market. Satisfaction guaranteed.

MacConnection™

14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

©Copyright 1987 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

Set your sights

SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Aegis Development ... NCP
Doug Clapp's Word Tools ..... $42.
Affinity Microsystems ... NCP
Tempo *(power user's macro utility)* ..... 55.
Allan Bonadio Associates ... NCP
Expressionist *(equation processor)* ..... 52.
ALSoft ... NCP
DiskExpress *(maximize disk performance)* 27.
Altsys ... NCP
FONTastic *(create your own fonts)* ..... 27.
FONTastic Plus *(advanced font editor)* .... 49.
Fontographer *(Laserwriter font editor)* ... 245.
Ann Arbor ... NCP
FullPaint *(advanced Paint program)* ..... 53.
Batteries Included
Thunder! 1.1 *(spelling checker)* ..... 32.
Berkeley System Designs ... NCP
Stepping Out *(requires 512k)* ..... 57.
Blyth ... NCP
Omnis 3 Plus *(multi-user available)* ..... call
Bogas Productions ... NCP
Studio Session *(music creation)* ..... 59.
Borland International ... NCP
Sidekick 2.0 ..... 59.
Reflex *(information management analysis)* 59.
Turbo Pascal *(HFS compatible)* ..... 59.
BPI Systems ... NCP
General Accounting *(full-featured)* ..... 129.
BrainPower ... NCP
StatView *(statistics package)* ..... 35.
Graphidex *(DA graphics organizer)* ..... 69.
Designscope *(electronic circuit design)* .. 129.
StatView 512+ *(req. external drive, 512k)* ... 179.
Bravo Technologies ... NCP
MacCalc *(easy to use spreadsheet)* ..... 79.
Broderbund ... CP
Print Shop *(create cards and memos)* ..... 39.
Geometry *(over 350 problems!)* ..... 64.
CAMDE ... NCP
Nutricalc *(diet & nutrition analysis)* ..... 49.
Nutricalc Plus *(dietician's delight)* ..... 175.
CasadyWare ... NCP
Fluent Fonts *(two-disk set)* ..... 29.
Fluent Laser Fonts *(Vols. 1-15)* ..... *each* 48.
CE Software ... NCP
Disktop 3.0 *(powerful DA Finder)* ..... 35.
Calendar Maker *(create custom calendars)* 27.
Central Point Software ... NCP
Copy II Mac *(includes MacTools)* ..... 20.
Centram Systems West
TOPS *(file-server/LAN software)* ..... 125.
Challenger Software ... NCP
Mac3D *(3D graphics, CAD features)* ..... 149.
Chang Labs ... NCP
Rags to Riches Ledger or Payables ..... 125.
Rags to Riches Receivables *(req. 512k)* ... 125.
Rags to Riches Three Pak ..... 299.
The C.A.T. *(contacts, activities, time)* ..... 199.
Inventory Control or Professional Billing ... 243.
Concept Development ... NCP
Micro Kitchen Companion ..... 29.
America Cooks: Italian, Chinese, Mexican,
French, German, or American ..... *each* 11.
Cortland ... CP
TopDesk *(7 new desk accessories)* ..... 34.

MacConnection Software Special
through October 31, 1987

THINK Technologies
Lightspeed Pascal

From the originator of Macintosh Pascal, comes Lightspeed Pascal. This easy-to-use interactive compiler provides the ability to look inside and manipulate a program *as it runs.* Exceptionally fast, lightspeed Pascal allows users to create real stand alone "double-clickable" applications and desk accessories. Includes the "Lightsbug" debugging tool.

- Provides complete Toolbox/OS support
- Includes 600-page manual with extensive index
- Hard disk recommended
- Not copy-protected

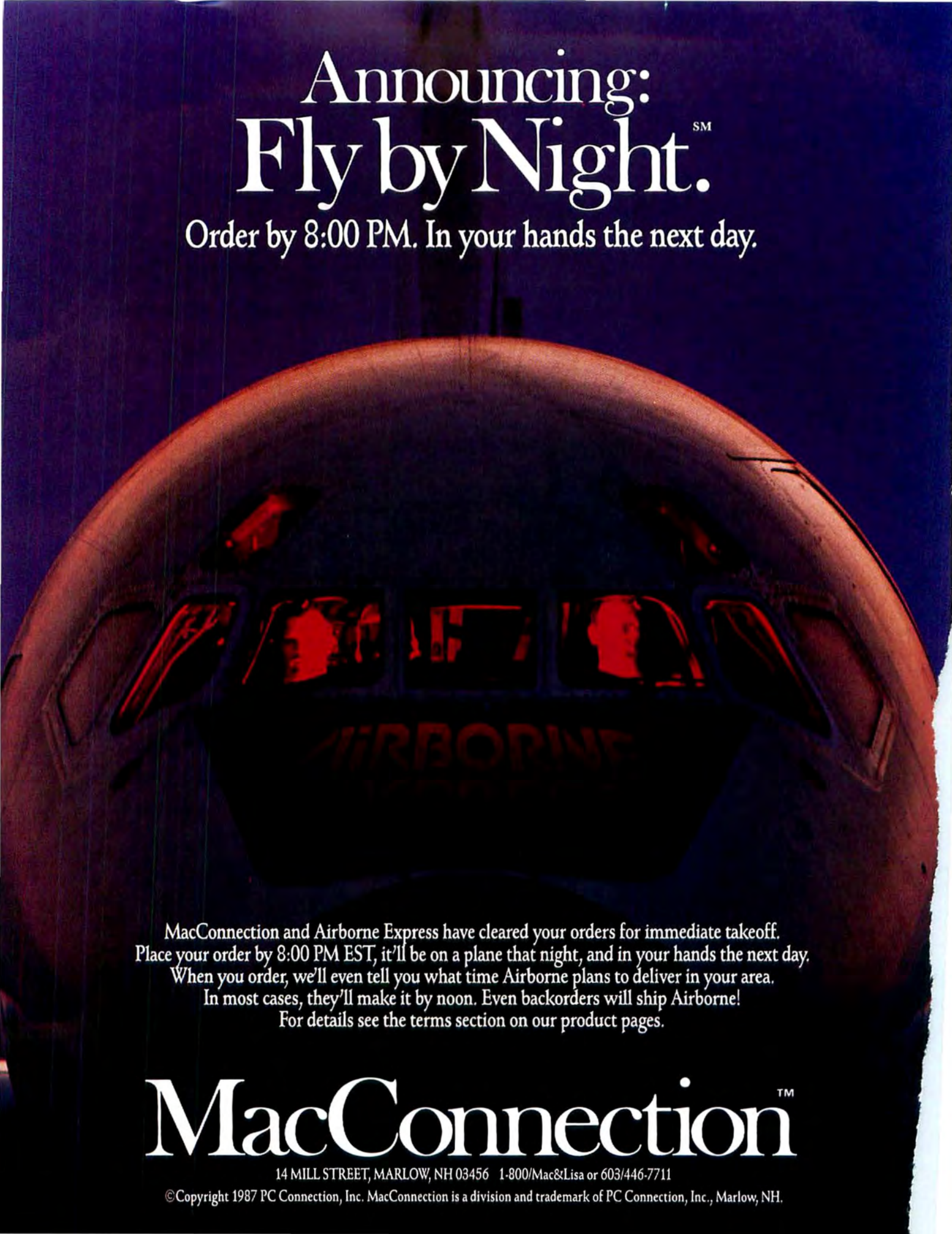
Lightspeed Pascal
(for Mac 512k, Mac Plus, SE & II) ..... $65.

Cricket Software ... NCP
Statworks *(statistical package)* ..... 75.
Cricket Graph *(multiple windows)* ..... 125.
Cricket Draw *(advanced draw capabilities)* 175.
Data Tailor ... NCP
Trapeze *(spreadsheet, reqs. 512k)* ..... 169.
DataViz ... NCP
MacLink Plus *(transfer Mac/IBM data)* ... 159.
Digital, etc. ... NCP
Turbo Maccountant *(GL,AP,AR,Payroll)* .. 259.
Dove Computer ... NCP
RAMSnap *(RAM Disk/Disk Cache)* ..... 35.
Dubl-Click Software ... NCP
World-Class Fonts! *(both Volumes)* ..... 49.
WetPaint Clip Art *(both volumes)* ..... 49.
Calculator Construction Set ..... 39.
Electronic Arts ... CP
Deluxe Music Construction Set 2.0 ..... 63.
Enabling Technologies ... NCP
Easy3D *(create solid 3D objects)* ..... 89.
Pro 3D *(3D shaded modeling)* ..... 199.
Enzan-Hoshigumi USA ... NCP
Japanese Clip Art Scroll 1 "Heaven" ..... 65.
Japanese Clip Art Scroll 2 "Earth" ..... 65.
MacCalligraphy *(create unique designs)* .. 119.
Firebird Licensees ... NCP
Laser Author *(word processor)* ..... 105.
1st Byte ... CP
MAD LIBS *(20 "talking" stories)* ..... 14.
Speller Bee or First Shapes ..... 32.
KidTalk or Mathtalk ..... 32.
SmoothTalker *(speech synthesis)* ..... 32.
Forethought ... NCP
Factfinder *(free-form info organizer)* ..... 49.
FileMaker *(custom forms & reports)* ..... 79.
FileMaker Plus *(feature-packed database)* 159.
PowerPoint *(professional presentations)* .. 249.
Foundation Publishing ... NCP
Comic Strip Factory *(create cartoons)* .... 59.
FWB Software ... NCP
Hard Disk Backup *(protect hard disk info)* 38.
Hard Disk Partition *(speeds up hard disk)* 38.
Hard Disk Util *(program backup)* ..... 56.

Great Wave Software ... NCP
KidsTime *(educational, ages 3-8)* ..... $28.
TimeMasters *(learn about time, ages 4+)* 28.
ConcertWare+ *(music composition)* ..... 39.
ConcertWare+ MIDI ..... 85.
Hayden Software ... CP
MusicWorks *(songs for your Mac)* ..... 29.
VideoWorks *(animation)* ..... 32.
Home Design *(NCP)* ..... 49.
Score Improvement for the SAT ..... 59.
Ideaform ... NCP
MacLabeler *(print disk labels)* ..... 29.
DiskQuick *(catalog floppies & hard drives)* 29.
Imagine ... NCP
Smart Alarms *(DA reminder system)* 38
Industrial Computations ... NCP
Powermath *(equation solving tool)* ..... 59.
Infosphere ... CP
LaserServe *(network software)* ..... 65.
MacServe *(network software)* ..... 165.
Innovative Data Design ... NCP
MacDraft *(new updated version, 512k)* ... 159.
Kensington ... NCP
Type Fonts for Text *(16 new fonts)* ..... 29.
Type Fonts for Headlines *(req. 512k)* ..... 41.
LaserWare ... CP
LaserWorks *(requires 512k, Laserwriter)* .. 199.
LaserPaint *(requires Mac Plus)* ..... 325.
Layered ... CP
Notes for...Excel, Microsoft Works,
PageMaker, or Word ..... *each* 42.
Front Desk ..... 75.
Legisoft/Nolo Press ... NCP
WillWriter 2.0 *(prepare your own will)* ..... 31.
Letraset ... NCP
Ready,Set,Go!3 ..... 249.
Linguist's Software ... NCP
Tech *(1000 different symbols)* ..... 59.
Foreign Language Fonts ..... call
Living Videotext ... NCP
More *(outlines, windows, & tree charts)* .. 158.
Lundeen & Associates ... NCP
WorksPlus Spell ..... 39.
Magnum ... CP
The Slide Show Magician 1.3 ..... 35.
Micro Analyst ... NCP
Mac Zap *(recover crashed hard disks)* .... 36.
Microsoft
Flight Simulator *(the Mac takes flight, CP)* 32.
Basic Interpreter 3.0 *(NCP)* ..... 64.
Chart 1.02 *(42 chart styles, CP)* ..... 72.
Multiplan 1.1 *(63 col. by 255 rows, CP)* ... 111.
File 1.05 *(flexible data manager, NCP)* ... 111.
Basic Compiler 1.0 *(NCP)* ..... 119.
Fortran 2.2 *(compiler, NCP)* ..... 169.
Works 1.0 *(integrated tool, NCP)* ..... 189.
Excel 1.04 *(power spreadsheet, NCP)* ... 224.
Word 3.01 *(word processor, NCP)* ..... 239.
Miles Computing ... NCP
Mac the Ripper Vol. 3 *(req. Paint program)* 27.
Orchestra of Fonts Vol. 4 *(30 different fonts)* 27.
Peoples, Places & Things Vol. 5 ..... 27.
Mindscape ... CP
The Perfect Score: SAT ..... 47.
ComicWorks *(create your own comics)* .... 48.
GraphicWorks 1.1 *(newsletters, NCP)* .... 48.
Monogram ... NCP
Dollars & Sense *(home, small business)* ... 81.
New Canaan MicroCode ... NCP
Mac Disk Catalog II *(requires 512k)* ..... 31.

Announcing: Fly by Night.℠

Order by 8:00 PM. In your hands the next day.



MacConnection and Airborne Express have cleared your orders for immediate takeoff.
Place your order by 8:00 PM EST, it'll be on a plane that night, and in your hands the next day.
When you order, we'll even tell you what time Airborne plans to deliver in your area.
In most cases, they'll make it by noon. Even backorders will ship Airborne!
For details see the terms section on our product pages.

MacConnection™

14 MILL STREET, MARLOW, NH 03456 1-800/Mac&Lisa or 603/446-7711

©Copyright 1987 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

sh products.

Primera Software ... CP
Smash Hit Racquetball *(top-rated!)* ..... $15.
Psion ... CP
Psion Chess *(3D and multi-lingual)* ..... 31.
Sierra On-Line ... CP
King's Quest or King's Quest II ..... 30.
Space Quest ..... 30.
Silicon Beach Software
Airborne! *(CP, the classic!)* ..... 20.
Enchanted Scepters *(CP, over 200 scenes)* 21.
Dark Castle *(NCP, arcade action)* ..... 28.
World Builder *(NCP, program creator)* ..... 41.
Simon & Schuster ... CP
Star Trek—The Kobayashi Adventure ..... 24.
Sir-Tech ... CP
Mac Wizardry *(high-rated fantasy)* ..... 35.
SPHERE, Inc. ... NCP
Tellstar II *(No. & So. hemispheres, req. 512k)* 15.
GATO or Orbiter ..... 26.
XOR ... NCP
NFL Challenge *(be the coach!)* ..... 69.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

NOTE: Some hardware items are available in either platinum or beige color. Please specify.

20 Megabyte SCSI Hard Drive ..... 589.
Apricorn ... 1 year
ApriCord Mac *(for Mac 512k or Mac Plus)* 75.
AST Research ... 6 months
AST TurboScan *(300 dpi scanner)* ..... 1479.
AST 2000 *(20 MB, 20 MB tape)* ..... 1425.
AST 4000 *(74 MB, 60 MB tape)* ..... 3699.
Curtis Manufacturing ... lifetime
Diamond *(6 outlets)* ..... 29.
Emerald *(6 outlets; 6 ft cord)* ..... 36.
Sapphire *(3 outlets; EMI/RFI filtered)* ..... 47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)* 55.
Dove Computer ... 90 days
Mac Snap Memory Upgrades ..... call
Ergotron ... 1 year
Mouse Cleaner 360° ..... 15.
MacTilt or MacTilt SE ..... 74.
MacBuffer 512k ..... 329.
MacBuffer 1024k ..... 429.
Farallon Computing ... 1 year
PhoneNET PLUS *(DB-9 or DIN-8)* ..... 39.
Hayes ... 2 years
Smartcom II *(communications software)* .. 88.
Smartmodem 1200 ..... 299.
Smartmodem 2400 ..... 449.
InterBridge *(connect Appletalk networks)* call
IOMEGA ... 1 year
Bernoulli Box *(dula 10 MB w/SCSI)* ..... 1459.
Bernoulli Box *(dual 20 MB w/SCSI)* .... 1879.
Kensington ... 1 year
Appletalk Cable Clips or Connectors .. *each* 1.
Mouseway *(mouse tracking pad)* ..... 8.
Mouse Pocket *(for your idle mouse)* ..... 8.
Mac Plus/Mac SE System Saver Cover .... 9.
Imagewriter II Dust Cover ..... 9.
Mouse Cleaning Kit w/Mouse Pocket ..... 17.
Disk Case *(holds 36 Mac disks)* ..... 19.
Disk Drive Cleaning Kit ..... 20.

MacConnection Hardware Special
through October 31, 1987

MIGENT
Migent Pocket Modem

What's smaller than a 3" x 5" card and works on a 9-volt battery or AC power? The Migent Pocket Modem! This tiny accessory transmits at either 300 or 1200 bits per second, is 100 percent Hayes compatible and comes with software and cable to get you started.

Slip it in your shirt pocket or attache case and start communicating from the office, home or while on the road. Features include:

- 28-character non-volatile memory
- Dual phone jacks
- Remote ring and tone sensing
- Busy and dial tone monitoring

Migent Pocket Modem
(w/Mac Plus cable) ..... $169.

Tilt/Swivel ..... 22.
Universal Copy Stand ..... 24.
Polarizing Filter *(Mac Plus or Mac SE)* .... 34.
Surge Suppressor ..... 34.
Printer Muffler *(80 column)* ..... 39.
Printer Muffler *(132 column)* ..... 52.
Control Center ..... 64.
System Saver Mac ..... 64.
A-B Box *(for the Mac Plus)* ..... 64.
Turbo Mouse ..... 85.
Koala Technologies ... 90 days
MacVision ..... 175.
Kraft ... 1 year
3 Button QuickStick ..... 39.
Migent ... 1 year
Pocket Modem *(ext. 300/1200 baud)* .. special
Mirror Technologies ... 1 year
Magnum 800 External Drive ..... 209.
Magnum Tape 20 Backup ..... 899.
Magnum Tape 40 Backup ..... 1199.
MagNet 40/40 *(40MB, 40MB tape)* .... 2395.
MagNet 20x *(w/cable & backup utilities)* 779.
MagNet 30x *(w/cable & print spoolers)* .. 949.
MagNet 40x *(w/cable & print spoolers)* .. 1299.
Nutmeg Systems ... 1 year
Nutmeg FPD 15" Monitor ..... 1495.
Nutmeg 19" Monitor ..... 1579.
Nuvotech ... 1 year
EasyNet *(AppleTalk network connector)* ... 29.
Personal Computer Peripherals ... 1 year
MacBottom HD 21MB *(SCSI)* ..... 859.
MacBottom HD 21MB *(SCSI)* with modem 999.
MacBottom HD 45MB *(SCSI)* ..... 1285.
SoftStyle ... 90 days
MacEnhancer *(for plotters to printers)* .... 179.
Summagraphics ... 90 days
MacTablet 12" x 12" ..... 379.
Systems Control ... 2 years
MacGard *(surge protection)* ..... 55.
Thunderware ... 90 days
ThunderScan 4.0 with PowerPort ..... 199.
Western Automation ... 1 year
DASCH RAMdisk 2000k ..... 399.

DISKS

Sony 3½" DS/DD Disks *(box of 10)* ..... $19.
MAXELL 3½" DS/DD Disks *(box of 10)* ... 20.
Fuji 3½" DS/DD Disks *(box of 10)* ..... 20.
Verbatim 3½" DS/DD Disks *(box of 10)* ... 20.
3M 3½" DS/DD Disks *(box of 10)* ..... 21.

INFORMATION SERVICES

CompuServe Information Service ..... 24.
Dow Jones News/Retrieval Membership Kit 24.

ACCESSORIES

Clean Image Ribbon Co.
Clean Image Ribbon Kit ..... 12.
Computer Coverup
Imagewriter II Cover ..... 8.
Mac Plus & Keyboard *(two covers)* ..... 10.
I/O Design
Imageware II *(Imagewriter II carry case)* .... 49.
Macinware Plus *(Mac Plus carry case)* ..... 69.
Macinware SE *(Mac SE carry case)* ..... 79.
Kalmar Designs
Teakwood Roll-top Case *(holds 45 disks)* ... 14.
Teakwood Roll-top Case *(holds 90 disks)* ... 21.
Teakwood Roll-top Case *(holds 135 disks)* .. 29.
Magnum
Mouse Mover *(let your mouse ride!)* ..... 14.
Moustrak
Moustrak Pad *(standard 7" x 9")* ..... 8.
Moustrak Pad *(large 9" x 11")* ..... 9.
Sensible Softworks
Quality "MacAttire" nylon dust covers.... 7-17.
High Trek Imagewriter II carry case ..... 49.
High Trek Mac Plus or SE carry case ..... call

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 usually shipped 1st Class Mail.
- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING

Note: Accounts on net terms pay actual shipping. **Continental US:** Barring massive computer failures and other natural or unnatural catastrophes, all 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. Airborne assesses an additional $7 charge for C.O.D. **Hawaii:** Shipments may incur an additional day. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

on our latest Macinto

Odesta ... NCP
Double Helix *(relational, custom menus)* $275.
Multi-User Helix *(requires 512k)* 439.
OWL International ... NCP
Guide *(hypertext, free-form info)* 79.
Guide Envelope System 109.
Palantir ... CP
MathFlash, WordPlay or MacType 26.
inTalk *(communication to emulation, NCP)* 99.
Passport Designs ... CP
Passport MIDI Interface *(with cables)* 95.
Master Tracks Pro *(MIDI record & edit)* 259.
PBI Software ... NCP
HFS Locater *(DA organizer for HFS)* 26.
HD Backup *(supports MFS, HFS)* 29.
Personal Computer Peripherals ... NCP
HFS Backup 32.
ProVUE Development ... NCP
OverVUE 2.0 *(power-packed database)* 149.
Mail Manager or Pers. Finance Template 29.
Rubicon Publishing ... CP
Dinner At Eight-Silver Palate Bundle 52.
Satori ... NCP
BulkMailer *(mailing lists)* 85.
BulkMailer Plus *(up to 90,000 names)* 225.
Legal Billing *(attorneys to accountants)* 385.
Legal Billing II *(full trust accounting)* 575.
Project Billing *(architects to engineers)* 445.
Silicon Beach Software ... NCP
Silicon Press *(printer utility, 512k)* 41.
SuperPaint *(advanced graphics program)* 54.
Simon & Schuster ... NCP
Mac Art Department *(req. Paint program)* 24.
Paper Airplane Construction Kit 24.
Typing Tutor III *(learn to type!)* 35.
SoftStyle ... NCP
Epstart *(Epson printer driver)* 27.
Printworks *(print faster & in color)* 49.
Laserstart *(Hewlett-Packard Laserjet)* 58.
Softview ... NCP
Macinuse *(time-use manager)* 45.
Software Discoveries
Record Holder Plus *(data manager)* 45.
Software Ventures ... NCP
Microphone 1.1 *(includes Glue™)* 129.
Solutions, Inc. ... NCP
SmartScrap & The Clipper 41.
Glue *(creates "print to disk" capability)* 41.
SuperGlue *(total graphic integration)* 59.
Springboard ... CP
Art a la Mac Vol. 1 or 2 *(NCP)* 23.
Early Games or Easy as ABC 28.
Certificate Maker *(CP)* 35.
SuperMac Technology ... NCP
SuperSpool 3.4 49.
Diskfit *(backup & restore utility)* 49.
SuperLaserSpool $99.
Multi-User SuperLaserSpool 259.
Survivor Software ... NCP
MacMoney *(financial planner)* 42.
Symmetry ... NCP
Acta 1.2 *(outline/writing desk accessory)* 38.
PictureBase 1.2 *(clip art manager, 512k)* 44.
Telos Software ... NCP
Business Filevision *(512k, external drive)* 199.
Think Educational ... CP
MacEdge II or Mind Over Mac. 28.
THINK Technologies ... NCP
Laserspeed *(Laserwriter utility)* 59.
Lightspeed Pascal special
Lightspeed C *(top-rated C Compiler)* 99.
InBox Starter Kit *(CP)* 225.
InBox Personal Connection *(Mac & PC)* call
T/Maker ... NCP
ClickArt Personal Graphics, Effects, Publications, Letters Vol. 1 or 2, Holidays, Business Image *each* 28.
Bombay, Plymouth, or Seville Laser font 46.
Write Now *(word processor)* 99.
TML Systems ... NCP
TML Source Code Library 58.
TML Pascal *(compiler, req. 512k)* 68.
TrueBasic ... NCP
True BASIC *(fast, flexible, & portable)* 59.
Algebra I or II, Pre-calculus, Trigonometry, 3D Graphics, Discrete Math, Probability, Chippendale utilities, Calculus, Arithmetic and Function *each* 35.
TrueSTAT *(statistics)* 58.
Runtime *(create stand-alone applications)* 59.
Unicorn ... CP
Animal Kingdom *(ages 6-12)* 27.
Decimal Dungeon *(math, ages 9 and up)* 27.
Fraction Action *(arcade style math game)* 27.
Mac Robots *(pre-school program)* 27.
Math Wizard *(math games, ages 5-10)* 27.
Read-A-Rama *(reading, ages 5-8)* 32.
William & Macias ... NCP
myDiskLabeler *(design & print labels)* 24.
myDiskLabeler w/Color *(req. Imagewriter II)* 33.
myDiskLabeler w/Laserwriter option 38.
Working Software ... NCP
Findswell *(locate documents fast)* 32.
Spellswell *(spelling checker)* 42.
Spellswell Medical Dictionary 59.

GAMES

Accolade ... CP
Hardball *(baseball simulation)* 24.
Activision ... CP
Tass Times in Tonetown 21.
Championship Star League Baseball $22.
Shanghai *(Mah Jongg strategy)* 24.
Addison-Wesley ... CP
Puppy Love *(your dog will love it!)* 19.
Artworx ... CP
Bridge 5.0 *(sharpen your skills)* 22.
Avalon Hill ... CP
MacPro Football *(req. 512k)* 30.
MacPro Football 85 Team or Season 16.
Blue Chip ... CP
Millionaire, Tycoon, Baron or Squire 35.
Broderbund Software ... CP
Lode Runner *(over 150 levels)* 24.
Ancient Art of War *(military strategy)* 27.
Toy Shop *(create working models)* 39.
Bullseye ... CP
Ferrari Grand Prix *(Formula One racing)* 34.
Fokker TriPlane Flight Simulator 34.
Electronic Arts ... CP
Archon *(arcade strategy, req. 512k)* 27.
Skyfox *(3D graphics)* 27.
Seven Cities of Gold 27.
One on One/Dr J vs Larry Bird *(req. 512k)* 27.
Patton-vs-Rommel *(req. 512k)* 27.
Pinball Construction Set 27.
Chessmaster 2000 30.
Epyx ... CP
Rogue *(strategy dungeon classic!)* 15.
Sub Battle Simulator 24.
Winter Games *(Olympic events)* 24.
Hayden Software ... CP
Perplexx *(scrabble-type game)* 24.
Sargon III *(9 levels of chess)* 29.
Infinity Software ... CP
Go *(strategy)* 23.
Grand Slam *(tennis, req. 512k)* 27.
Infocom ... CP
Hitchhiker's Guide to the Galaxy 18.
Leather Goddesses, Trinity, Moonmist, Ballyhoo, Bureaucracy *(standard)* ... *each* 24.
Zork Trilogy 45.
Invisiclues Hint Booklets *(please specify)* 6.
MacroMind ... NCP
Maze Wars+ *(play via modem or network)* 32.
Miles Computing ... CP
Harrier Strike Mission *(3D flight simulation)* 27.
Quintette *(strategy of "Go")* 27.
Down Hill Racer. 27.
Fool's Errand 27.
Mindscape ... NCP
Balance of Power *(world politics)* 30.
King of Chicago *(req. minimum 512E)* 30.
Bataccus *(great graphics, req. 512k)* 30.
Uninvited, Shadowgate or Deja Vu. 30.
PBI Software ... CP
Strategic Conquest *(multi-user)* 35.

1-800/Mac&Lisa 750C

MacConnection℠

MacConnection, 14 Mill Street, Marlow, NH 03456 800/622-5472 603/446-7711

Copyright 1987 PC Connection, Inc. MacConnection is a division of PC Connection, Inc. MacConnection is a trademark of PC Connection, Inc.

All items subject to availability. Prices subject to change without notice.

*Defective software replaced immediately. Defective hardware replaced or repaired at our discretion. Some items have warranties up to five years.

MultiFinder: The Application Juggler

by Lon Poole

Apple's new system software changes the look of the desktop

The juggler has arrived. It wants to show your Macintosh how to keep two, three, or more applications open at the same time and how to do a couple other tricks as well. Its name is MultiFinder, and it's the first major enhancement of the Macintosh operating system since HFS (the Hierarchical File System) was added two years ago to support hard disks. Now the MultiFinder begins to take advantage of the hardware power in the Mac Plus, the Mac SE, and particularly the Mac II.

Apple calls the MultiFinder the first-generation multitasking operating system for the Macintosh. It goes beyond the simple application-switching that *Switcher* has provided for the last couple of years. With MultiFinder, you work with multiple applications as if they were desk accessories. You can have the Finder and several applications open at the same time, see their windows overlap one another on the desktop, and switch quickly between them. The MultiFinder can also open several applications, documents, and desk accessories automatically when you start up your Mac.

In addition, the MultiFinder lets you work with one application while certain other applications continue processing unattended in the background. Background printing for the LaserWriter is part of the package.

Physically, the MultiFinder is part of a new version of the Finder, version 6.0. It's not a new version of *Switcher,* a modification of *Servant,* or some new application you open after starting your Mac. Apple designed the MultiFinder as a fully integrated extension of the Macintosh operating system. It affects the Apple menu, the Finder, and windows in general.

In order to use the MultiFinder, your Mac must have plenty of memory. You'll need at least one megabyte, and you'll want two if you use the MultiFinder often.

Apple is distributing the MultiFinder as part of its first-ever *Macintosh System Software Update* package. You can buy it at an authorized Apple dealer and know you got the complete set of disks and documentation. Or you can get it through alternative channels like user groups and online information services.

Omnipresent Emcee

The first thing you notice about the MultiFinder is that it doesn't go away like the Finder does. Open an application in the usual manner and the MultiFinder remains open, in a state of suspended animation. You can see its icons and windows sticking out from under the newly opened application's windows (see "The Thing that Wouldn't Leave").

Because the MultiFinder stays open, you may activate it at any time by clicking on one of its windows or icons. While the MultiFinder is active, you can use it to open another application or to rename, copy, or move applications, documents, folders, and disks. The MultiFinder won't let you do anything that would cause trouble, like throwing out an open document.

Main Act: Application Juggling

Using the MultiFinder, you can open many applications (memory permitting). An MS-DOS application can even be one of the open applications if your Mac has the necessary equipment. The names of all open applications appear in the Apple menu, below the list of desk accessories. The MultiFinder is listed there too, under the name Finder.

Only one open application is active. The active application is called the foreground application. In most cases, you can move its windows around to see windows belonging to other applications, which are called background applications. Most background windows are static, but the MultiFinder permits unattended background processing, so background windows can change while you attend to the foreground. Some applications, such as *MacPaint,* have fixed windows or take over the entire

PHOTOGRAPHS BY FRED STIMSON

screen. They may hide the background windows, but the background applications are still open.

You can tell which application is active because its menu titles appear in the menu bar. As a further reminder, its icon appears at the right edge of the menu bar (space permitting). You can switch to another open application any of three ways. First, you may choose the application from the Apple menu. Second, you may click on any window that belongs to the application. And third, you may double-click the application's icon in the Finder. Because the application is open, the icon looks hollow, like the icon of an open disk.

Activating an application by any of these three methods brings all windows belonging to that application to the foreground, in front of all other windows. You may still be able to see useful information in background windows if you've carefully sized and positioned them, especially on a large screen. For example, you might have documents open for page layout, graphics, and graphing. That arrangement would make it easy for you to work on illustrations and graphs while laying out a publication.

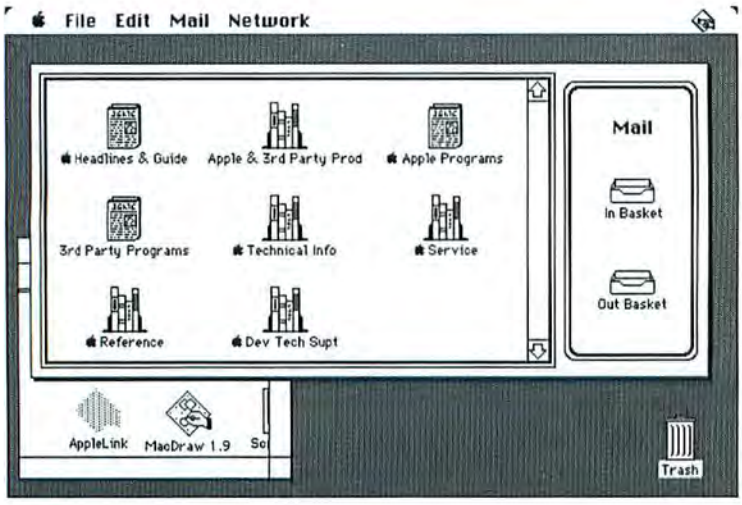
The MultiFinder waits until all pending file-system requests are finished before switching. This means, for example, that you cannot activate a different application until an in-progress save-to-disk is completed.

Switching from one application to another is quick if the two applications are "aware" they may be operating in the MultiFinder environment. If the applications are unaware, the MultiFinder must go through an elaborate charade to ensure the Clipboard contents are maintained during the switch. Otherwise, cut-and-paste would not work between applications. Most applications use a private Clipboard, with their own patented formats. An application that's unaware of the MultiFinder environment only converts its private Clipboard format to a standard public Clipboard format when you quit it or use a desk accessory.

An application aware of the MultiFinder environment knows to convert its private Clipboard when you switch applications, obviating the time-consuming charade. This MultiFinder awareness is the same as *Switcher* awareness, which many of today's applications have.

Switching is even faster if the applications involved abide by Apple's rules for operating in the MultiFinder environment. Among other things, this means an application deactivates its topmost window—by blanking scroll bars and so forth—when you switch from it; it reactivates its topmost window when you switch to it. The MultiFinder environment rules are new. There will undoubtedly be a period of transition while developers revise applications to make the most of the MultiFinder environment. In the meantime, it may take a second or two longer to switch applications.

The MultiFinder even speeds up switching between two applications that aren't open concurrently. Because the MultiFinder is always present, it only takes a second or so to quit an application. That's much faster than the quitting time with the plain Finder.



The Thing that Wouldn't Leave
After opening an application, the MultiFinder sticks around in a passive role. The menu bar shows that the newly opened application has control of the computer.

Desk Accessories in Revue

The MultiFinder makes switching to an open application as easy as opening a desk accessory. Thus desk accessories no longer have the unique advantage of always being available; now most tasks they perform can be done just as easily by small applications. And desk accessories have disadvantages not shared by applications. You must use the Font/DA Mover to install them, and there's an arbitrary limit on the number you can install. In contrast, installing applications is a matter of dragging icons from disk to disk, and you can install as many on a disk as the disk can hold.

Desk accessories are still there when you need them, but they work a bit differently with MultiFinder than before. When you open a desk accessory, or activate one that's already open, all open desk accessories come to the front. At that time, a special desk accessory menu bar appears. It has a File menu and an Edit menu, plus any menu the currently active desk accessory may create. Desk accessories stay open until you close them. They don't close automatically when you quit an application. The File menu's Close command closes the currently active DA, and its Quit command closes all open desk accessories.

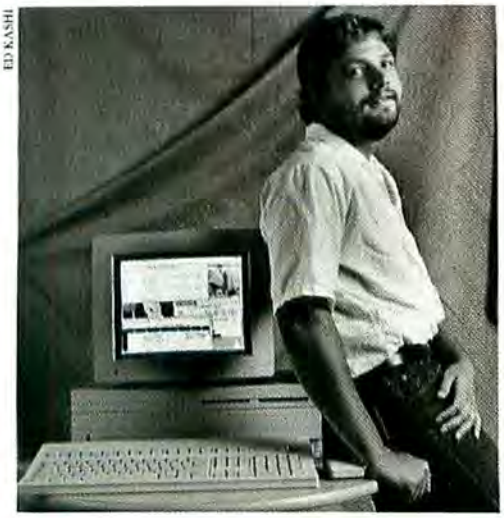
Window Follies

You can probably imagine how cluttered the screen gets when you've got windows open from the MultiFinder, several applications, and some desk accessories. Finding a particular document can take a while. Getting at the Trash and other icons on the desktop is even harder. Document windows invariably cover the entire screen, so you have to resize or move them in order to get at the desktop icons. There must be a better way. Let's hope Apple discovers one before the next release.

Memory's the Stage

When Apple first introduced the Mac Plus, it was hard to imagine what to do with one megabyte of memory. You won't need an active imagination if you use the MultiFinder. The MultiFinder takes at least 160K and the System needs 250K to 300K. Desk accessories and background printing increase the System load by 100K or so. That leaves about 500K, enough for one or two of today's average applications. One megabyte certainly gives you enough room to open almost any application and still have the MultiFinder instantly available.

However, most people who use the MultiFinder will want two megabytes, particularly if they use any of the new heavy-



ED KASHI

Master Juggler
The software engineer responsible for the MultiFinder (code name Juggler): Erich Ringewald.

weight applications that weigh in at more than 512K. You're not likely to need more than two megabytes unless you regularly use applications that need a megabyte or more apiece. Today, a second megabyte of memory costs $250 to $500.

No matter how much memory your Mac has, it has a finite amount. The MultiFinder has to know how much memory to allot each application you open. Too much, and there may not be room to open another application. Too little, and the application may not work or its performance may be diminished. Often there's no one amount that's right for all occasions. That makes memory allocation something of a black art.

Apple has established a standard method whereby an application informs the MultiFinder how much memory it prefers, and the minimum amount it must have to work. When you open an application, the MultiFinder tries to provide the preferred amount of memory. If that much space is unavailable, the MultiFinder places the application in the largest block available that's larger than the minimum size.

Application developers are supposed to specify the preferred and minimum memory sizes in an application resource (the Size resource). Apple suggests developers set the preferred size high enough to allow the application to perform 90 percent of its function without problems. The minimum memory size need only be enough to allow the application to open without crashing—you may or may not be able to do anything with it. These are the same sizes *Switcher* uses, so many applications do include them. If you open an application that doesn't specify a minimum and preferred size, the MultiFinder allocates 384K.

The preferred memory size often requires a compromise. It may restrict document size or limit performance. If necessary, you can increase an application's memory size before you open it. At your own risk, you can also decrease the memory below the minimum size. The Finder's Get Info command now lets you see and change the memory size.

Adjusting memory size gets tedious if you have to do it on a large scale. Suppose you want to always use 500K for every application and leave the rest for the MultiFinder and the System. That way you always have access to the MultiFinder's services and can quickly quit the one application you're using in order to open another (also in 500K). Setting up such a scheme requires changing the memory size of each application individually. You can't simply tell the MultiFinder to always use a certain size. If you go ahead and individually change memory sizes and later decide you want to open two applications concurrently, you have to go back to the Get Info windows and change the memory sizes again.

You can use the Control Panel's RAM cache in conjunction with the MultiFinder, provided your Mac has enough memory to make its use meaningful. However, most third-party RAM cache products, RAM disks, and print spoolers need modifications before they can work with the MultiFinder.

The Finder/MultiFinder now displays a memory-usage graph when you choose About the Finder from the Apple menu (see "Memory Graph"). The graph shows how much memory each open application has and how much of that memory it's currently using. It also tells you how much memory is available for opening another application.

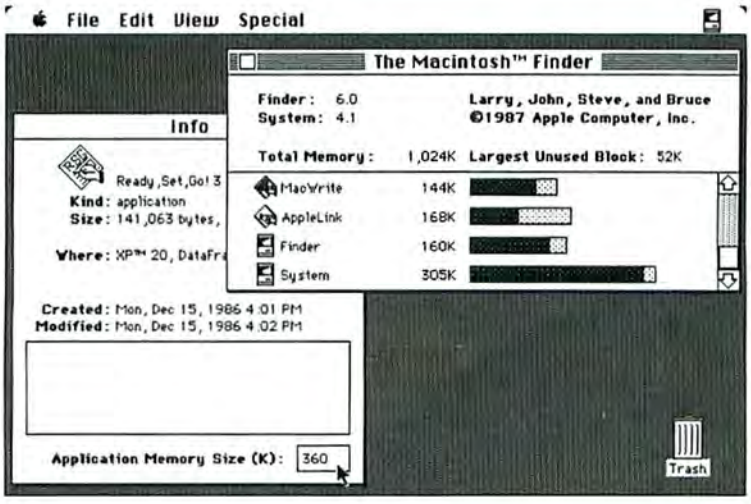
There may be more unused memory than what the window reports is available. Some unused memory may be unavailable because it's scattered in small fragments between applications. The MultiFinder doesn't provide a simple way to collect memory fragments into one contiguous memory space. You must quit all open applications and reopen them.

New Starting Acts

The MultiFinder, alias Finder 6.0, gives you several new options at start-up time (see "Set Startup Dialog"). With the Set Startup command, you choose to use either the MultiFinder or the plain Finder when you next start your Macintosh. If you pick the plain Finder, all multitasking features will be disabled and any application you open will have all memory at its disposal.

Before choosing the Set Startup command, you can select one or more items to be opened automatically at start-up time. You can select one application to be opened instead of the plain Finder, or several applications and documents to be opened along with the MultiFinder. The selected items must all be in the same folder.

Alternatively, you can specify that all currently open applications and desk ac-



Memory Graph
Choosing About the Finder from the Apple menu displays a graph that shows how memory is currently being used.

Standby Processing

The MultiFinder usually has ample opportunity to steal processing time from the wastrel foreground application and give it to needy background applications. That's because the foreground application spends lots of time waiting for the user to do something—insert a disk, use the mouse, type. Any time the foreground application checks for recent user action, which it must do often, the MultiFinder can suspend it. The foreground application thinks it's waiting for a user action, but it has been slipped a mickey. The MultiFinder has either activated a new foreground application or given some processing time to background tasks.

Background applications ignore user actions. Meanwhile, the pointer must move smoothly and the text insertion point should flash even when background processing is going on. Otherwise the Macintosh loses its customary responsive feel and users get restless.

The MultiFinder does not allow the foreground application to arbitrarily preempt background processing in order to maintain responsiveness. Therefore, background applications must regularly give up time so the application in the foreground can respond to user actions. The foreground application has no reciprocal obligation; it can take as much processing time as it likes. In fact, background applications are not guaranteed they will ever get additional processing time. They always fly standby.

Covert Printing

Apple intends to supply with the MultiFinder one application that uses a lot of background processing time. It's a LaserWriter spooler. Unfortunately, it was not working when this article was written. The following description is based on interviews with Apple engineers and on information in the MultiFinder documentation.

Background printing works only with a LaserWriter or another printer that uses the unaltered LaserWriter printing resource from the System Folder. It does not work with applications that have their own printing resource, such as *PageMaker* 1.2 and *Adobe Illustrator*. To print from such applications, you must turn off background printing and print directly.

Background printing is preset to On. You can turn it off using the Chooser. If you have access to more than one LaserWriter from your Mac, you can also use the Chooser to select the LaserWriter with which you want to print a document.

When you print with background printing on, the LaserWriter printing resource doesn't process pages for printing. Instead it saves or spools the QuickDraw description of each page on the start-up disk. If you print several documents in succession, each is spooled and then printed in order.

Spooling QuickDraw page descriptions should take a fraction of the time it would take to actually print the pages. For example, SuperMac Software's SuperLaserSpooler, which uses this method, spools a document to disk in 6 to 30 percent of the time printing would take (see "Speaking of Spoolers," *Macworld*, June 1987). As always, you use the Print command, but you don't have to wait as long before beginning another task.

A small new background application named Backgrounder watches for spooled documents on the disk. If it sees one, it opens another application, PrintMaster, as a background task. PrintMaster reads spooled documents from the disk and sends them to the LaserWriter.

You can also make PrintMaster the foreground application and use it to control the documents waiting to be printed. (Other print spoolers have a desk accessory that serves this same purpose.) Using PrintMaster, you can review the status of documents in the print queue, change the order in which they print, schedule a spooled document to print at a specific time of day, postpone printing of a document indefinitely, and determine whether or not you receive immediate notification of printing errors. You can also remove documents from the queue—including the document being printed.

cessories be opened automatically–along with the MultiFinder–when you start your Mac. In this case the start-up applications need not be in the same folder. However, documents are not opened automatically when you're using this method. You must open documents individually, using the Open command from each application.

The MultiFinder opens multiple start-up applications in alphabetical order. It opens them quickly, but only the last one begins working right away. If you designated start-up documents with the Set Startup command, only those belonging to the last start-up application are opened at start-up time. Other start-up documents are opened automatically when you first switch to the appropriate application.

Solo or Ensemble?

An application faces new challenges when it moves from the familiar single-tasking stage to the new multitasking stage. It must be able to do its act on part of the stage, and it mustn't get its scenery confused with other acts going on in the background. At any time, the audience may ask it to step back while another application performs.

Most applications that work in the present single-tasking environment should have no trouble with Apple's methods for application switching and background processing. This is because Apple's standard model for Macintosh application design has always included three key features. An application that follows the model provides regular and frequent times when it can be suspended safely and indefinitely (see "Standby Processing"). It works anywhere in memory. And it uses standard procedures in the Macintosh Toolbox ROM for displaying information.

Applications that bypass the Toolbox ROM and write directly to the screen are generally incompatible with the MultiFinder environment, in which many applications share the screen. Certainly many game programs fall into this category, but so do some productivity applications. They use a clever technique to speed up screen display that won't work when operating under MultiFinder. This technique involves saving a bit-mapped (dot-for-dot) image of an area of the screen that's about to be temporarily covered by a dialog box. When the dialog box goes away, the screen can be quickly refreshed by redisplaying the bit-mapped image. In the MultiFinder environment, such applications no longer know what may be happening on the screen beneath their dialog boxes. A background application might be drawing in a window, for example. The bit-mapped image saved a second ago may be out of date, and redisplaying it would ruin the display. (In fact, this is the technique menus use to operate quickly. Consequently, MultiFinder has to halt background processing while any menu is pulled down.)

Realizing applications might have idiosyncrasies that would trip them up in a multitasking environment, Apple furnished developers with early copies of the MultiFinder, and even made special adjustments to the MultiFinder in order to accommodate individual applications. For instance, some applications are acrophobes. They don't work if they're located above the first megabyte of memory. So the MultiFinder specially checks for such applications and tries to put them in the first megabyte.

In the MultiFinder environment, the compatibility and reliability of a single application may affect all open applications. If one act founders, the whole show may fall apart. The MultiFinder tries to catch a failing application so it doesn't harm others. But usually if one goes, they all go. If that happens, you lose all the work you've done on all open documents since they were last saved. Thus you must consider *any* open application only as reliable as the *least-reliable* open application.

Reprise

At first glance, it might seem that the MultiFinder is just *Switcher* plus a LaserWriter spooler. Like that combination, MultiFinder provides application switching and background printing. However, it provides those services as a natural extension to the familiar Macintosh operating environment. As a result, the average Macintosh user basically knows how to switch applications and print in the background without learning anything new.

Not every user will benefit equally from the new features. Those with less than a megabyte of memory can't use the MultiFinder at all. Those who have two megabytes of memory and who use several applications concurrently will get the most from the MultiFinder's application-switching capabilities.

At first, only those users with a LaserWriter will benefit from the background processing capabilities. Later, background tasks will probably include downloading information from a remote computer, performing time-consuming database operations, and more.

The MultiFinder, which represents the next step in the evolution of the Macintosh operating system, may make dinosaurs out of integrated applications like *Microsoft Works* and Lotus's *Jazz*. These monoliths offer easy switching among their component applications, but you may find their components inadequate. With MultiFinder, you can integrate any applications you like. All you need is enough memory.

Apple is exploring further evolution, including such features as interprocess communication, preemptive event scheduling, hardware-supported memory management, virtual memory, improved support for intelligent peripherals, and user interface enhancements. Film at eleven. □

Set Startup Dialog
Finder 6.0 offers a number of new options, which all take effect the next time you start up your Macintosh.

Champion

ing

Wr

Mac

ead

Wri

SCOTT BALDWIN

Microso

Now

orksPlus Spell

tGo

The Final Spelling Test

The grades are in on this year's class of faster, better spelling checkers

by Scott Beamer and Jeffrey Bartlett

Spelling checkers have always sounded like a good idea. After all, proofreading is precisely the kind of mechanical task most people like to leave up to their assistants—electronic or otherwise—if possible. The problem was that up until recently, Macintosh spelling checkers belonged more on the gadget pile than in the tool chest. They tended to be slow and cumbersome to use, with an annoying habit of repeatedly questioning words that were obviously correct.

But luckily for those of us who always score high on ideas but below par on mechanics—or who simply don't have time to scrutinize every letter of every word of everything we write—spelling checkers have matured to the point where we can now review and correct an error-laden ten-page document in about three minutes. Some of these new spelling checkers were designed to accompany the powerful new word processors, such as *Microsoft Word* 3.0 or *WriteNow*, that have entered the Mac market in the last year. Others are built into page-layout programs like *XPress* and *ReadySetGo* 3.0. And others, like Target Software's *MacLightning*, Electronic Arts' *Thunder*, *Spellswell* from Working Software, and *Spelling Champion* from Champion Software, are independents that can be used with a variety of word processors.

But while the new spelling checkers are good, they're not all equally good. Some programs don't work as you might expect them to, and some manufacturers' claims about speed and dictionary size are misleading. To sort out questions about speed and comprehensiveness and to explore the relationship of price to performance, we ran a series of tests on nine of the top spelling-checker packages. This article gives you the scores from that spelling exam, along with briefings to help you find a program that matches your needs and working style.

Configuration

Spelling checkers work in three basic ways: as desk accessories, as stand-alone programs, or as built-in modules of application programs. The most convenient spelling checkers are the built-in models, since they're readily accessible, retain formatting, and let you alternate between checking your spelling and editing text with a minimum of inconvenience. But built-in checkers also have their limitations. None of them are designed to read files from other programs. So if you want to check spelling in documents you've created with another program—such as an outliner or another word processor—you may want an independent as well. The other serious problem with built-in checkers is predictable: they don't have the range of features typical of independent programs. For instance, among the built-ins considered in this article, only *XPress* includes a word counter, though all the stand-alone spelling checkers have one.

Desk accessory (DA) spelling checkers are a nice idea, but in the real world they haven't lived up to expectations. Both the DAs we considered for this article, *MacLightning* and *Thunder*, share a serious drawback: when operating in batch mode, in which the entire document (or a selection) is checked en masse, the DAs remove all formatting from most word processing documents–the exception being those done in *MacWrite*. That's right: you lose all tabs, font changes, underlines, and other formatting throughout the document.

The publishers of DA spelling checkers maintain that batch checking is not the principal mode of use for their products. They recommend using the interactive mode, in which the spelling checker looks over your shoulder, as it were, and beeps whenever it doesn't recognize the combination of letters you're typing. But personally, I like to bang out my ideas and then edit what I've typed when I'm ready; constant typo alarms tend to make me lose my train of thought. And if you ignore an alarm and continue on until the spelling checker beeps a second time, it forgets about the previous suspect word.

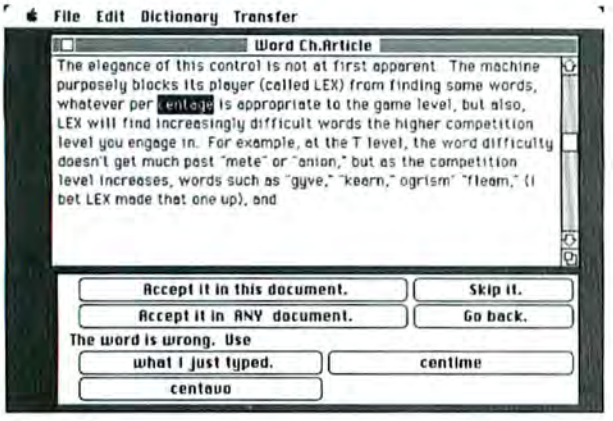


Figure 1

Most independent spelling checkers would count the word per *in this example as correct; they would question the word* centage *and let you change that word, but would not let you join it with its prefix.* Spelling Champion *is the only independent that lets you edit text other than suspect words from within the spelling checker.*

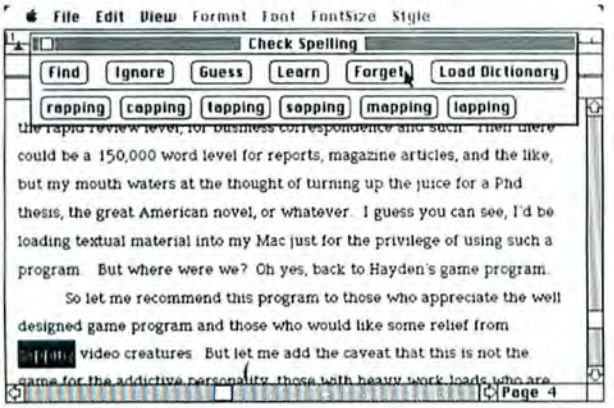


Figure 2

WriteNow*'s Spartan controls and smart guessing make it one of the fastest checkers. A click is all it takes to substitute one of the suggested words or to move on.*

Stand-alone spelling checkers have been criticized as the least convenient type, but they're not as bad as one might think. The two considered in this article work well with *Switcher*. Apple's MultiFinder, which wasn't available when this article was prepared but probably will be by the time you read this, will allow for instantaneous transfer between programs without going back to the desktop.

A cautionary note is in order, however, unless you're using *Spelling Champion*. With any of the other independent spelling checkers–DAs or stand-alones–it's important to understand that you shouldn't just switch at will from spell-checking mode to text editing when you see something in your document (other than a suspect spelling) you'd like to change. When you're using the spelling checker, you actually have two versions of your document open at once: the application version and a copy in the Clipboard. Whichever one you save last will write over the one saved previously, erasing any changes you might have made.

If you're using *Spellswell* with *Switcher*, you must remember to save and close the document in the word processor before switching to the spelling checker, and vice versa. If you're using one of the DAs, save your word processing document before starting the spelling program and save again whenever you leave the speller.

Spelling Champion is the only independent spelling checker that finds a way around this problem. It allows the user to edit text directly in a window of the spelling checker, so there is no reason to shift back and forth from your word processor (see Figure 1).

Dictionary Size

The primary ingredient of any spelling checker is its main dictionary. Surprisingly, the spelling checker with the largest dictionary may also be the fastest checker. This is mainly because the smaller the dictionary, the more false alarms the program will produce when it comes across a correctly spelled word that it doesn't have in its lexicon. A dictionary of 50,000 words is about the minimum for smooth utility, but 100,000 words or more is preferable.

The programs we looked at claim dictionaries ranging from 60,000 to 125,000 words. These claims can't be directly compared, however, since manufacturers count words differently; their totals may include plural, participial, and other word forms. The results of the size test in "Dictionary Size and Guessing Ability" give a good relative idea of dictionary strength.

Accuracy

Much has been made in the computer press of misspellings found in the dictionaries of some of these products (only *MacLightning* guarantees an error-free dictionary). We don't feel this is a very important consideration. In the course of passing thousands of pages through a wide variety of spelling checkers, we found only a couple of true spelling errors in the programs.

Not only are errors rare, but the ones we've found have simply been typos, as opposed to common misspellings. So unless you happen to make the exact same typo, no spelling error will slip through the checking. For instance, the Canadian product *Thunder* has (ironically enough) the word *Canadians* misspelled in its dictionary as "Canadtans." Unless you actually type "Canadtans," the only effect of this error will be the nuisance of an extra false alarm until you add "Canadians" to the learned-words dictionary. Once the proper spelling has been added, the problem will disappear.

Of course, even a guaranteed error-free dictionary can't guarantee you an error-free document. If you accidentally spell a valid word when you misspell the word you intended to write (such as *form* for *from*), no spelling checker will see anything wrong. There are many other elements of proofreading that these programs make no attempt to address, so you will always have to look over your documents.

Convenience

As with any other type of software, the spelling checker with the most features may not be the one you like best. Before you purchase a checker, be sure you like the way it handles. One of the key factors here is the simple matter of how many keystrokes it takes to get the job done. Another important factor is the checker's guessing acumen. An accurate guessing routine that lets you make your change by just clicking on the correct guess ranks right after dictionary size in contributing to speedy checking.

The maker of *WriteNow* has created the epitome of a lean, efficient interface. It consists of a single row of six buttons, of which the first three (Find, Ignore, Guess) are the most frequently used. This leaves most of the screenful of text visible for viewing suspect words in context. If asked to guess, the program quickly offers a row of suggestions below the buttons. One click makes the correction, and another lets you move to the next dubious word (see Figure 2).

Of the programs we looked at, *MacLightning* was the one most in need of a user interface lift. The *MacLightning* interface provides good access to the dictionary, but it does not show errors in context. Instead the program gives you an alphabetized list of suspect words, with duplicates eliminated. In addition, making a correction can take up to six mouse clicks, and the program's phonetic guessing routine is more clumsy and time-consuming than helpful. A significantly revised version, renamed *Spelling Coach,* should be available from Deneba Software by the time you read this. Target Software will no longer distribute the product.

Extra Features

Among the nine products we considered in detail, *WriteNow* and *Spelling Champion*–two of the best–are the only pure spelling checkers. The rest offer some additional proofreading aid.

Spellswell offers more extras than any of the others. In addition to checking spelling, it questions common homophones (like *two* and *too*), looks to see that sentences begin with a capital letter and that no capitalization occurs in the middle of words, checks for appropriate spacing before and after punctuation, ensures that parentheses and quotation marks are always

Not Recommended

None of the following products have been significantly revised in more than a year, and no upgrades are planned. The current versions are not competitive–in either capabilities or price–with the other programs mentioned in this article.

- *Liberty Spell II* (DataPak Software)
- *MacGas* (EnterSet & Applications Unlimited)
- *MacSpell+* (Creighton Development)
- *SpellNow* (MainStay Software)

Be on the lookout for any of the following programs as well. The publishers of these checkers (none of which support the HFS filing system) have gone out of business.

- *Hayden Speller* (Hayden)
- *MacSpell Right* (Assimilation Process)
- *Right Word+* (Assimilation Process)
- *The Right Word* (Assimilation Process)

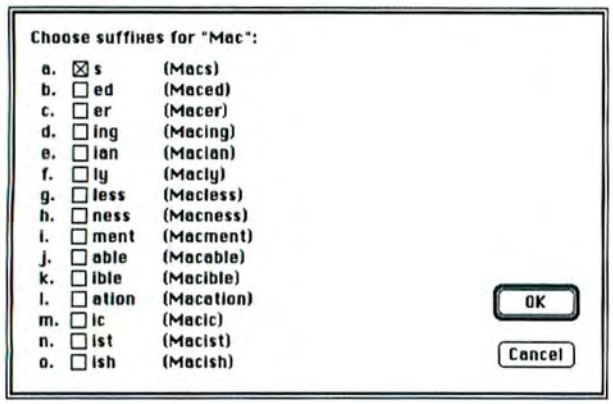


Figure 3
Like some of the other independent programs, Thunder *gives you a special window to help you enter appropriate variants of a word to the learned-word dictionary.*

paired, and performs other simple but useful proofreading functions. Fortunately, any of these functions can be disabled at any time—in case you happen to be proofreading personal computer literature, for example, where intraword capitals and unusual punctuation are all the fashion (*Thunder*'s full name, for example, is *Thunder!*).

A useful feature included in several of these programs is a screen for adding new words to the dictio-

Checkers Checklist

	Desktop Publishing		Word Processing	
	XPress	**ReadySetGo**	**Microsoft Word**	**WriteNow**
Manufacturer	Quark	Letraset	Microsoft	T/Maker
Version tested	1.0	3.0	3.0	1.0
List price	$695	$395	$395	$175
Dictionary size	83,000	72,000	83,000	50,000
Configuration	built-in	built-in	built-in	built-in
Disk space:				
application	389K	141K	339K	80K
dictionary	173K	223K	164K	109K
Modifiable dictionary				●
Learned dictionary	●	●	●	●
Automated suffixes				
Interactive mode				
Checks:				
punctuation				
capitalization			●	
diacritical marks				
Formatting/capitals maintained	●	●	●	●
Software compatibility	[1]	[1]	[1]	[1]
Guesses spelling	●		●	●
Phonetic guessing				
Word count	●			
Glossary		●	●	
Hyphenation	extensive	●	●	
Extras				
Auxiliary dictionaries available			thesaurus	

[1] Program reads its own file format only.

[2] *Macwrite* version 4.5, *Word* version 1.05 and earlier, TEXT files.

[3] *Word* (all versions), *Works, Jazz, More, ThinkTank, MacWrite,* AppleLink, ACTA.

nary (see Figure 3). When you tell the program you want to add a suspect word to the dictionary, a window comes up showing the new word with a dozen or more prefixes and suffixes such as *un-, -ing, -ed,* and *-'s*. To ensure that all likely variants are not questioned in the future, you need only click on the appropriate endings.

Thunder, MacLightning 2.0, *Word* 3.0, and *WorksPlus Spell* all offer glossary facilities that let you save time when typing frequently used expressions, addresses, names, or other material. You enter abbreviations and their long forms into the glossary; after that, when you type the abbreviation, the program writes the whole word or phrase. *Thunder* accepts carriage returns in its glossary, allowing it to write a complete envelope-style address automatically. Of course, even without a glossary you can type abbreviations in your work and then let the spelling checker find and change them during regular checking sessions.

Help with hyphenation is more important in multicolumn work, so it's not surprising that both desktop publishing programs under consideration here offer hyphenation guidance for every word in their dictionaries. *Word* 3.0 and *WorksPlus Spell* also have this feature.

A typical hyphenation facility either hyphenates and readjusts text for an entire article or suggests possible word breaks on a point-and-click basis. Because these programs all have algorithm-based rather than dictionary-based hyphenation systems, they're all prone to error when they encounter words that break the common hyphenation rules (such as *pro•gram*). For this reason, most of these packages include an expandable hyphenation-exceptions dictionary.

		Independent		
WorksPlus Spell	**Spelling Champion**	**Spellswell**	**Mac-Lightning**	**Thunder**
Lundeen & Associates	Champion Swiftware	Working Software	Target Software	Electronic Arts
1.0	2.0	2.0	2.0	1.0
$59.95	$39.95	$74.95	$99.95	$49.95
70,000	125,000	93,000	80,000	50,000
built-in	stand-alone	stand-alone	desk accessory	desk accessory
60K	228K	91K	52K	52K
144K	n/a	284K	318K	89K
•	•	•		
•	•	•	•	•
	•	•		•
•			•	•
		•		
•		•		
•		•		
•	•	•	sometimes	sometimes
1	2	3	MacWrite[4]	MacWrite[4]
•	•	•	•	•
•			•	•
	•	•	•	•
•				•
•				
checks spacing	live text edit	double words		
		medical/ legal dictionaries	medical/ legal dictionaries, thesaurus	

[4]Preserves formatting for *Macwrite* in batch mode; works with most other programs in interactive mode.

Exam Time

To compare the capabilities of the various checkers, we put them through three tests and graphed the results (see "Correction Speed" and "Dictionary Size and Guessing Ability"). The procedures for the tests were as follows:

■ *Dictionary Size* To arrive at a means for measuring the effective size of spelling dictionaries, we took the first word from every page of *Webster's Ninth New Collegiate Dictionary* and then deleted foreign, archaic, or hyphenated words to arrive at a sample spelling list of 800 words. The scores for our dictionary test show the percentage of words on this essentially random list that each checker recognized.

■ *Guessing Ability* To test a program's ability to deduce your intentions when you make a mistake, we began with a list of 100 random words, all of which are recognized by all the programs. We then left out some letters, transposed some, and entered other deliberate misspellings. We also used an additional short list to test the programs' abilities to recognize errors in punctuation, capitalization, and spacing.

■ *Speed of Correction* The final test of a spelling checker is how quickly and easily it helps you proofread. To assess this realistically, we created an error-filled five-page document and then timed ourselves as we worked our way through the test with each program.

A comparison of the test results with the features in "Checkers Checklist" reveals that the price of spelling checkers bears no relation to quality. The program with the lowest list price, *Spelling Champion,* scored very high in our performance test and has the largest dictionary of the programs we looked at.

How Do You Spell Upgrades?

The Mac's expanding memory and storage are making possible a new generation of spelling checkers

Check It Out

Here are some salient features and failings of built-in and independent spelling checkers.

Word Processing

Microsoft Word 3.0

Pluses: Makes excellent guesses, including phonetic ones. Corrects capitalization. Alternate U.K. dictionary. Full hyphenation facility for page layout. Glossary.

Minuses: No word count. No Ignore command (continues throughout entire document to query a word you've OK'd.)

WriteNow

Pluses: Speed. With a larger dictionary (in forthcoming up date), will probably be the fastest corrector of all. Unobtrusive and easy to use. Good guesser.

Minuses: Small dictionary. No word count.

WorksPlus Spell

Note: Sold as a separate program, installs permanently in *Microsoft Works* but is removable. Performs as a built-in.

Pluses: Excellent guessing and hyphenation. Glossary. Only program that checks extra spaces between words. Checks accented words.

Minuses: No word count. No way to turn off accent and space checking.

Desktop Publishing

XPress

Pluses: Fast. Checks by word or document. Strong word-count facility. Simple controls. Automatic hyphenation with discretionary controls. Learned-word dictionary for hyphenation facility.

Minuses: $695 price tag, copy protection.

ReadySetGo 3.0

Pluses: Glossary. Automatic hyphenation with hyphenation-exceptions dictionary.

Minuses: Does not try to guess correct spelling. Small dictionary. Primitive glossary.

Desk Accessories

MacLightning 2.0

Note: New version, by Deneba Software, to be called *Spelling Coach.*

Pluses: Guaranteed error-free word list from Merriam-Webster. Easy access to main dictionary. Accessories available, including thesaurus and medical and legal dictionaries.

Minuses: Awkward correction mode makes this the slowest program tested. Does not work in batch mode with some word processors, strips formatting from most programs.

Thunder

Note: Original publisher, Batteries Included, is no longer in business. Electronic Arts has purchased the rights and will release new version by the original programmer.

Pluses: Relatively fast. Both American and U.K. spellings in dictionary. Excellent glossary—even allows carriage returns. Guesses well. Tries to spot run-together words by including spaces in some guesses.

Minuses: Dictionary too small. Main dictionary can't be edited and contains significant errors. Somewhat awkward interface.

Stand-alones

Spelling Champion 2.0

Pluses: Largest dictionary. Fastest corrector. Takes up little disk space. Inexpensive. Lets you edit the text of your document while checking spelling. Main and user dictionaries accessible for word searches or editing.

Minuses: The only way to buy the program or to get technical support is from the programmer. Works only with ASCII text, *MacWrite,* and *Word* 1.05 (*Word* 3.0-compatible version forthcoming). Ignores capitalization and punctuation errors.

Spellswell 2.0

Pluses: Checks the widest variety of extras, including homonyms, punctuation, and capitalization. Only stand-alone that checks for double words (such as *and and*). Works with widest range of word processors. Currently the only spelling checker that reads *Word* 3.0. Medical dictionary module available, legal dictionary due soon.

Minuses: You cannot edit text without closing checker and reopening document in word processor. Medical and legal modules are expensive ($99.95 each).

that will begin to resemble the total writing tools many of us have dreamed about for years. Here's a list of augmented spelling products you can expect to see in the near future:

■ *Spelling Coach,* the expected upgrade of *MacLightning* 2.0, will check faster than the current program, especially on a hard disk. A special hard disk version called *Spelling Coach Professional* will take up nearly 2MB and will include definitions for every word in its dictionary–a first for spelling checkers on any microcomputer. *Spelling Coach* will actually have a larger dictionary than *Spelling Coach Professional* (91,000 words versus 80,000) but no definitions. Both will have full hyphenation facilities.

Spelling Coach's correction mode will allow you to see words in context as you move through documents one suspect word at a time. You will be able to add to the dictionary words that include accents, numbers, and any other characters in the basic ASCII set. The program will even allow mathematical formulas. *Spelling Coach* will be constructed in a way that enables it to appear as a menu choice within any word processor. *MacLightning*'s formerly optional modules (medical and legal dictionaries and thesaurus) will now be bundled with *Spelling Coach Professional.*

■ *FullWrite Professional* will have a spelling checker with an 80,000-word dictionary, a thesaurus, and a hyphenation dictionary.

■ *Word Perfect* will have a built-in spelling checker with a capacity of 115,000 words (of which about 20,000 will be a legal dictionary) and a thesaurus.

■ *Speed Spell* is being released by Aegis Development as a companion to *Doug Clapp's Word Tools.* It will be a stand-alone spelling checker with a 130,000-word dictionary and an expected list price of $49.95.

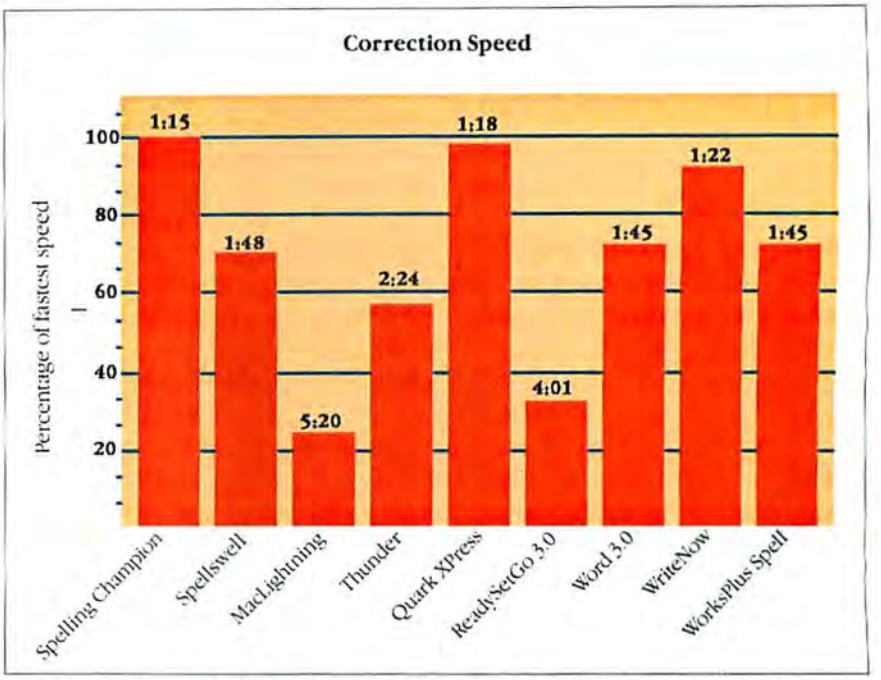
Don't Fire the Proofreader

The day of professional-quality expert systems for copyediting and proofreading may not be as far off as some people–notably copy editors and proofreaders –believe. But for the present, no computer spelling checker can substitute for a final once-over by human eyes.

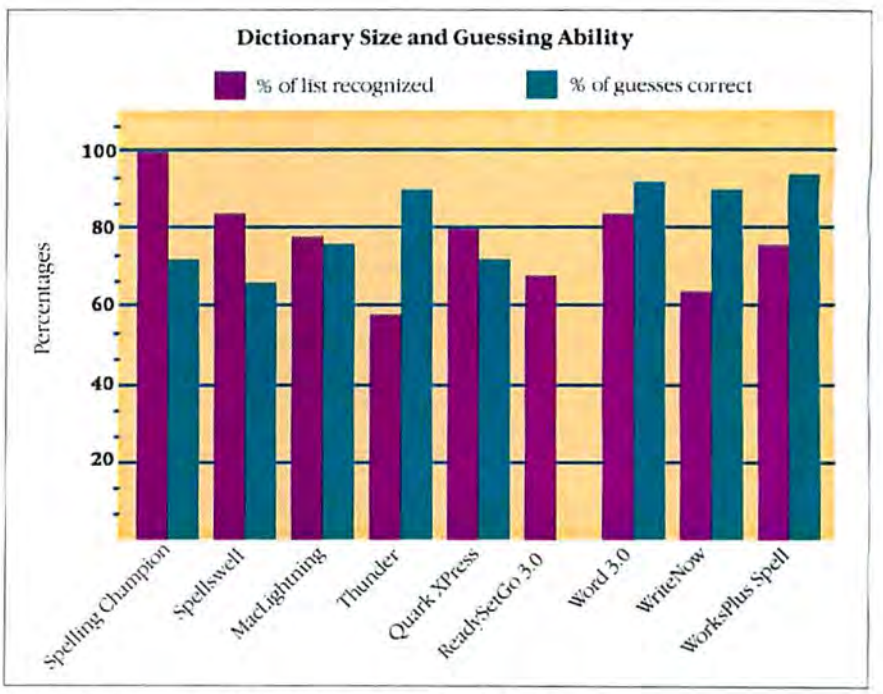
What today's spelling checkers can do is exactly what the best Mac programs do: take care of the more mechanical aspects of a job and let you concentrate on problems of a higher order. A good spelling checker can free you from the drudgery of letter-by-letter typo searches and leave you to seek out more sophisticated logical, grammatical, or stylistic difficulties.

Of course, the other thing a spelling checker can do is help you cope with fundamental spelling insecurity. So if you still feel your grade-school grammarian looking over your shoulder, ready to rap your knuckles when you make a mistake–relax. No one will ever have to know you don't remember whether *i* goes before *e*. □

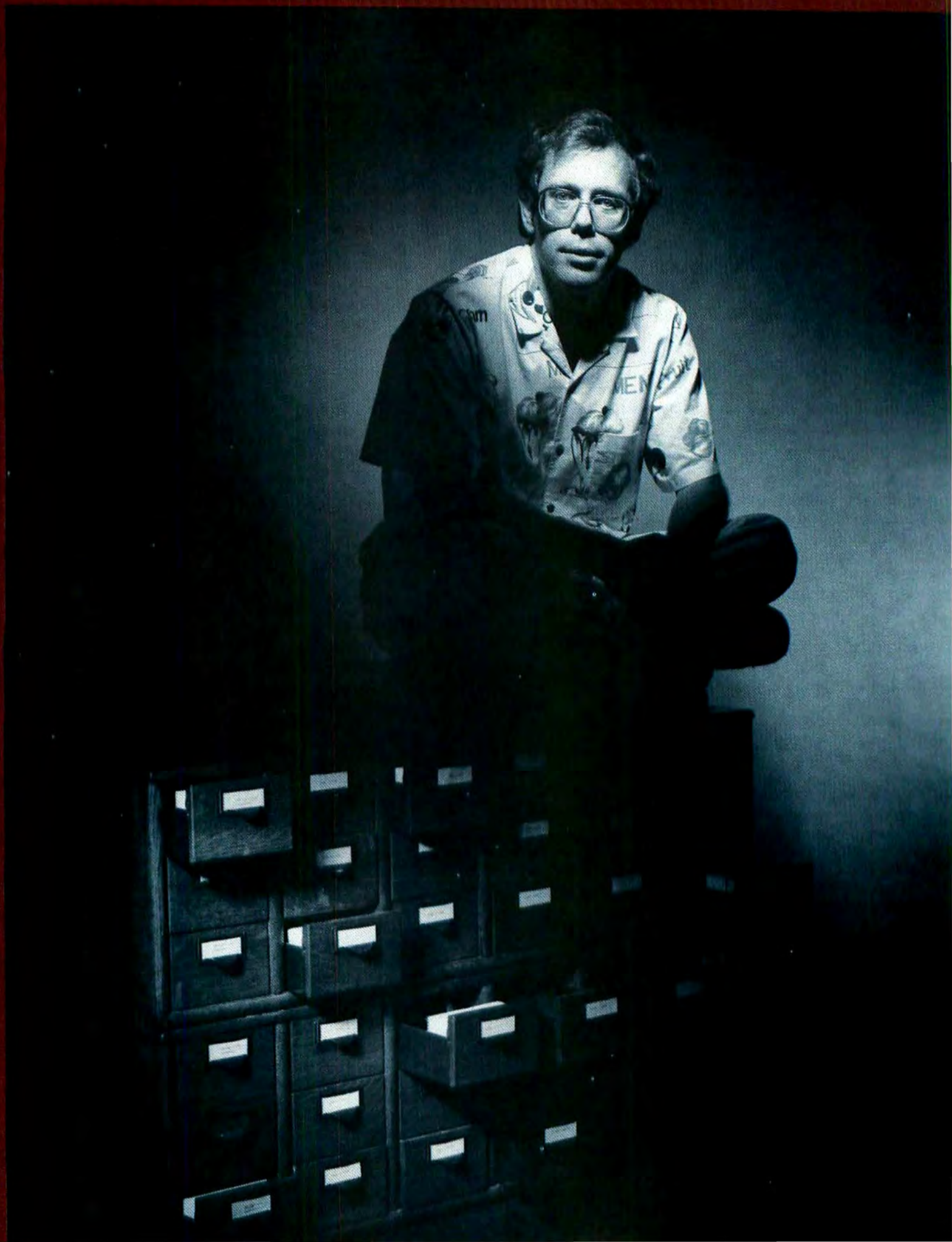
See *Where to Buy* for product details.



Which program gets the job done fastest? These times show how long it took us to proof an error-filled five-page document. The bars show performance as a percentage of the fastest time, that of Spelling Champion.



*For a relative measure of dictionary size, we ran a random word list through all the programs; the black bars show the percentage of words the programs recognized. For a measure of guessing ability, we presented each program with a list of misspelled words and recorded the number of times the intended spelling was correctly identified (*ReadySetGo *does not have this feature).* Spelling Champion*'s score of 98 in dictionary recognition helps explain its top score in the speed test (see "Correction Speed").*



The Two Faces of HyperCard

Bill Atkinson serves up a Macintosh software revolution

by Danny Goodman

I've heard the complaint so often–I've even voiced it myself: "If only there were a software program out there that would accommodate my personal and business information needs." Sure, there are plenty of programs written by well-meaning folks who understand programming better than I ever will. But they'll never understand exactly how *my* business operates.

The irony of an easy-to-use computer like the Macintosh is that it is incredibly difficult to program well. Consequently, people who could benefit from tailor-made applications and people who could share their expertise don't have the time or inclination to learn how to program the Macintosh.

But the tide is about to turn for Macintosh owners in search of personalized software. After almost three years of intensive development, Bill Atkinson–creator of QuickDraw and *MacPaint*–has unleashed a multifaceted authoring system called *HyperCard*.

HyperCard is difficult to describe because it has two very different faces. From one point of view, *HyperCard* is a system that lets you build Macintosh applications with the same point-and-click interface that you've come to expect from most Macintosh programs. But you may also take an entirely passive approach by just running *HyperCard* applications developed by other people.

HyperCard could be compared to a portable cassette recorder that both plays and records tapes. *HyperCard* runs ready-made applications. It also comes with all the graphics and information-handling tools necessary to create full-fledged applications, including the ability to open external applications and documents directly from within *HyperCard*.

HyperCard and Databases

The majority of what we do with our computers involves the creation and management of information. Because *HyperCard* and the applications it creates are information-intensive, first-time users may lump this program into the database-management category, along with development systems such as *Omnis 3*, *Helix*, and *4th Dimension*. But there are fundamental differences between database managers and *HyperCard*–differences that actually make the two types of software complementary to each other.

Database management software stores and organizes information primarily in lists. A relational database system, for instance, might contain a list of clients, a list of invoices, and so on.

An invoice list might allow you to retrieve a client's name and mailing address, for example, from the client list and then insert this information on a printed invoice. This approach requires organization and planning. But the true strength of database software is in its ability to sort, select, and report information, either on screen or in print.

In contrast, *HyperCard* is much more flexible. *HyperCard* lets you browse through information as if it were stored in a library card catalog. Moreover, you can branch off and access related facts in that set of cards or in another. Searching information and establishing links between seemingly unrelated pieces of information are *HyperCard*'s strengths.

Stacks of Cards

The on-screen metaphor of any *HyperCard* information base is simple to grasp if you've ever used a

HyperCard: What You Get

HyperCard comes with such a full wardrobe of support files that the package is delivered on four 800K disks. Here's a rundown on the disks you get with *HyperCard*.

■ *Disk 1: HyperCard Startup* This disk contains the *HyperCard* application file, plus a folder with a few basic *HyperCard* applications, a System file, the General Control Panel resource file, and the ImageWriter printer driver. There is no Finder, which means that when you start the machine with this disk, you go straight into *HyperCard*. The Finder was left out to provide room for the *HyperCard* stacks, thus making the Startup disk a fully functional one-disk environment.

■ *Disk 2: HyperCard and Stacks* Here you'll find a second copy of *HyperCard* and a fuller collection of *HyperCard* stacks. There is also more room to breathe on this disk. You can fill in data and add cards to stacks like the Name and Address stack.

■ *Disk 3: HyperCard Help* This entire disk is devoted to a pleasingly complete online help system written by Apple's Carol Kaehler. There are three stacks in the help system, but this division is completely transparent once you're in it. Every piece of *HyperCard*, including HyperTalk (which is not covered extensively in the *HyperCard* printed manual), is documented in the help system.

■ *Disk 4: HyperCard Ideas* A gold mine of stack, card, and button ideas ready for you to copy and paste into your own custom stacks, this disk will be a valuable source of professional-looking card backgrounds.

When installing *HyperCard* on a hard disk, bear in mind that you need only those stack files that you use all the time (including the Home Stack). As you begin to familiarize yourself with *HyperCard*, I recommend keeping the Help stacks handy. If your hard disk gets too full, consider leaving the Ideas stacks on a floppy—but make a backup.

Figure 1
The Home Card (in the Home Stack) is where most HyperCard *sessions begin. It is an iconic directory to other* HyperCard *stacks. Each icon is a button linked to a stack or a specific card in a stack. As you add new stacks to the* HyperCard *environment, you can place icon buttons for them on the Home Card.*

card catalog. In *HyperCard*, information is stored on *cards;* cards are grouped into *stacks*. Each stack is a disk file that serves as a *HyperCard* application.

HyperCard normally begins a session in the Home Stack, which serves as a guide to other *HyperCard* stacks (see Figure 1). Each iconic button on the card is associated with a stack. By clicking once on a button, you head for that linked stack. If you get lost, a selection in the Go menu always takes you back to the Home Stack. Most *HyperCard* applications also have a house-icon button that takes you back to the Home Stack with a single click.

A stack contains one or more *backgrounds*. A background may consist of any combination of *MacPaint*-like graphics, text fields, or buttons, arranged any way you like. If a stack has more than one background, the user determines which group of cards within that stack will share the attributes of one background and which group will share the attributes of others (see Figure 2).

Cards can hold both text and *MacPaint*-like graphics. Graphics that are peculiar to one card (not part of a shared background) stay in a foreground graphics layer called the *card graphics layer*. Graphics may be copied and pasted via the Clipboard or created with the aid of *HyperCard*'s built-in painting tools.

Text goes into text fields, which may be one or

more lines deep and up to 9 inches wide (even on a larger monitor). If a text field is designed into the background, then the field appears on every card sharing that background. But each card stores different text in that field (like a field in a database form). *HyperCard* offers five different kinds of fields, including scrolling text fields for large information blocks.

Buttons are the primary action parts of a *HyperCard* stack. Clicking a button may simply bring up the next card in the stack or it may perform a more complex task, like retrieving exchange rates from one field, converting one currency to another, and putting the result in yet another field. In addition to familiar button styles, like check boxes, radio buttons, and rounded-corner rectangles, *HyperCard* has arrow, shadow, and icon buttons for a total of 28 visual combinations. It's also possible to set up buttons within graphic images—a click on part of a picture can take you to an associated stack.

Need-to-Know Basis

While *HyperCard* is a self-contained environment for both browser and author, the system offers five different levels of complexity. *HyperCard* was designed with these levels to prevent the casual browser from being overwhelmed by the depths of *HyperCard* programming.

To choose a level, click the desired button on the User Preferences card in the Home Stack. As you increase the complexity, the menus and dialog boxes fill out. The five levels are Browsing, Typing, Painting, Authoring, and Scripting.

Browsing is a read-only level. Browsers can open stacks, click on buttons, and access navigation commands in the Go menu. At the Typing level—the one *HyperCard* starts with the first time you use it—you enter and edit information in fields located on cards. A *HyperCard* stack author may restrict users to any level with the Protect Stack password-protection feature built into *HyperCard*.

Graduating to the Painting level adds the Tools menu and fills out some of the existing menus. The Tools menu is actually a movable 18-tool palette that you can detach from the menu by dragging it away from the menu bar (see "More than MacPaint"). Across the top of the Tools palette are the Browse, Button, and Field tools. At the Painting level, the only active tool is Browse. But the 15 painting tools, most of which are

More than MacPaint

When Bill Atkinson wrote *MacPaint* for the first Macintosh, he had to shave a number of features so that the program would run comfortably inside the 128K RAM restriction. Much of the memory was taken up by the System and video information, so Atkinson didn't have much space to work with. But now that the Mac Plus is essentially the low end of the spectrum, he's had room in *HyperCard* to do things with the painting tools that he's been wanting to do for years.

If you're an experienced *MacPaint* user, you'll be pleased to find that you can now select the last item drawn, even if it overlaps previously drawn material. You can drag a filled rectangle atop other stuff and still pick it up. Lassoed selections are, as Atkinson says, "first-class citizens"; you can now perform the same operations on a lassoed selection that you can on one defined by the selection rectangle.

You can now drag all shapes from a center point if you want. You also have access to regular polygons, with a palette of five styles: triangle, square, pentagon, hexagon, and octagon.

While many programs force you to type knuckle-numbing keyboard combinations (billed as shortcuts), *HyperCard*'s painting tools go in the opposite direction. You can choose most items from a long menu of enhancements by pressing Power Keys—single keys that let you do things like select the last object you drew by typing *S*'s or inverting a selection by typing *I*.

Were it not for the limitation of painting only within the size of one Macintosh screen, you would probably want to make *HyperCard* your regular painting program.

Browse
Select
Brush
Spray
Bucket
Text
Button
Lasso
Eraser
Rectangle
Oval
Reg. Polygon
Field
Pencil
Line
Round Rect
Curve
Polygon

Watching HyperCard Grow

Since March 1986, I've had the unique privilege of watching Apple Fellow Bill Atkinson turn a developmental prototype called WildCard into a full-fledged authoring system, *HyperCard*. Here are some impressions from an Apple outsider.

Until our first meeting I knew Bill Atkinson only as the legend behind QuickDraw (which makes Macintosh graphics possible) and the program most of us cut our Mac teeth on, *MacPaint*. There I was in John Sculley's office with John, Del Yocam, and Bill—and Bill's presence was making me nervous.

Bill demonstrated WildCard. I think John and Del were more interested in observing my reaction to the program's potential than anything else, since they and the rest of the executive staff had recently decided to let Bill develop the project for Apple. The demo was a mixture of reality and some wishful thinking. But it wasn't long before an odd tingle flashed through my body. I'd experienced this sensation only twice before in my eight-year writing career: once when I saw a Macintosh prototype and again when I witnessed a printout from a prototype LaserWriter. My brain wanted to expand to fill the universe that WildCard was about to open.

Bill supplied me with prototype versions of WildCard. He wanted me to use it and give him feedback. For the next year, we met now and then. He'd show me the latest features; I'd show him some things I'd done with WildCard. He'd also watch very closely to see how I was interacting with the tools. He was making mental notes about the times I stumbled or failed to understand something.

In the meantime, Bill was breaking technological ground by compressing bit-mapped images to use only a thirtieth of the memory and disk space they usually require. He also devised a text-search system that finds any three-letter text string inside a 15-megabyte *HyperCard* stack in a few seconds.

Above all, Bill is a good listener. For many creative people, criticism comes hard, but with Bill, it doesn't go unheeded. It's not unlike Bill to take someone's suggestion to heart and rewrite huge chunks of program code. It was amazing to see things I'd struggled with turn into simplified standard parts of WildCard. Once the language was working, I'd leave Bill samples of my scripts. He'd add new features to HyperTalk or revise existing features so that an operation that had required a 15-line script could be accomplished with a 1-line command.

That willingness to change, however, kept all of us on our toes. At one session after the features had supposedly been frozen for a couple of weeks, I met with Bill and his chief HyperTalk programmer, Dan Winkler. They asked my opinion about which of several ways to write HyperTalk functions in scripts made the most sense. I offered my opinion, which seemed to jibe with what they both wanted to do. Then Dan said, "You know, if we go that way, then user-definable functions shouldn't be that hard to do." After a ten-minute exchange in programming Greek between Dan and Bill, Dan was at work making the changes to his HyperTalk code, and Bill was literally jumping up and down, smiling like a kid who was about to get a new toy.

In a formal interview, Bill told me that he has changed an important part of his programming style: he now invites others to share in his work. He still knows every line of the code that went into *HyperCard*, but he had people like Dan Winkler (HyperTalk), Adam Paal (printing), and Ted Kaehler (sound) help with the coding. In all his previous projects, he never let anyone see the code until the program was out.

I got the sense that not only did *HyperCard* grow during this time, but so did Bill Atkinson.

similar to *MacPaint*'s (although their powers are enhanced), are available at this level. Choosing any one of these painting tools brings out three additional menus that pertain to painting tasks.

Authoring—Scissors and Glue

At the Authoring level, you gain access to the Button and Field tools, which let you create and modify buttons and fields. You are free to copy and paste buttons and fields between stacks. Thus at the Authoring level you can paste together a new application from existing pieces in other stacks, including the dozens of samples on the disks supplied with *HyperCard*.

It's important to realize that even without getting into the Scripting level, you can become a *HyperCard* author. By copying and pasting existing backgrounds (which often contain fields and basic stack-navigation buttons) and predesigned buttons, you can create custom applications. If the field arrangement in the copied background is not to your liking, use the Field tool to rearrange what's there and add or delete fields as you wish. You also have full access to the painting tools for modifying the background art.

Programming in HyperTalk

Scripting is *HyperCard*'s fifth and most complex level. It differs from Authoring in that Scripting gives you access to HyperTalk, the programming language that is built into *HyperCard*. The HyperTalk programming environment is so different from traditional programming that those who have never programmed before may grasp the language more easily than experienced programmers.

Instead of writing one long series of instructions, as in a traditional programming language, you write short scripts for various objects in a stack: buttons, fields, cards, backgrounds, or even the entire stack itself. Each object in the stack has an information dialog box that includes a Script button. Clicking on this button opens the Script Editor, which displays the script attached to that object.

Each script can contain one or more handlers. A handler is a set of instructions that *HyperCard* executes in response to an action, such as clicking on a button or selecting (and opening) a new card.

Here's what a handler looks like:

```
on mouseUp
  visual effect wipe left
  go to next card
end mouseUp
```

This handler might be in a script belonging to an on-screen arrow button that indicates an advance to the next card. When you click on the button, *HyperCard* sends out a mouseUp message. If there is a handler with "on mouseUp" in its first line, *HyperCard* follows the instructions in the handler. In this example, the program loads one of its 17 visual effects (wipe left) and then goes to the next card in the stack, using that visual effect. The handler ends with an "end" statement and the name of the message. Each script may contain several handlers, but only one for each message (such as mouseUp).

System Messages

The concept of message passing is the lifeblood of HyperTalk. *HyperCard* continually sends system

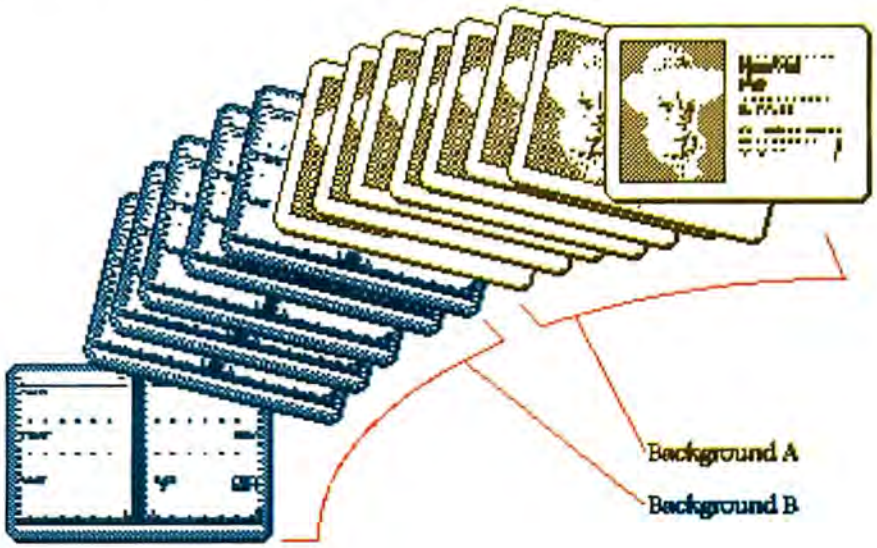
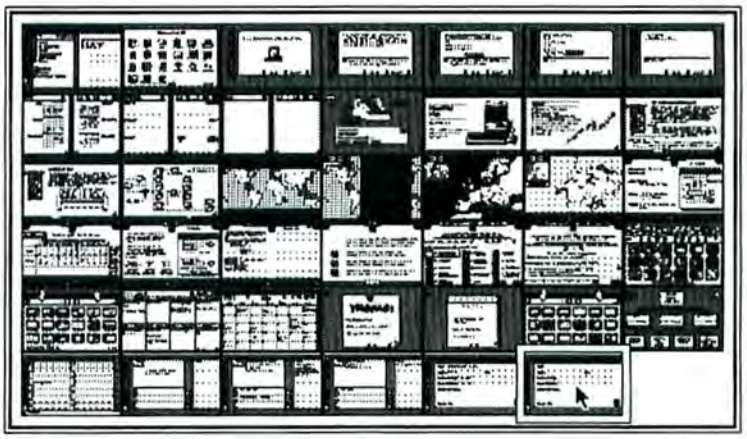


Figure 2
Cards share graphic, text-field, and button attributes assigned to the background. A stack may contain more than one background, shared by two distinct groups of cards. The backgrounds may be entirely different even though they're in the same stack.



Retracing Your Steps
The Recent dialog box maintains a kind of photo album of the last 42 unique cards you've viewed. Click on any minicard to zip back to that card. Note the wide variety of cards that can appear in a HyperCard *application.*

Hardware to Match

With its four 800K disks, *HyperCard* presents a formidable collection. While the program itself is large—roughly 350K—it's still in the range of Microsoft's *Excel*. Nevertheless, you should be aware of the kind of hardware demands *HyperCard* can make once you start incorporating it into your work routine.

If you plan to use *HyperCard*'s painting, authoring, or scripting tools, you'll need at least a Macintosh Plus (or a 512KE upgraded to a megabyte or more of RAM) and two 800K drives. Bear in mind, though, that keeping the help system online leaves very little room on your external drive for other outside stacks you create or obtain. Since *HyperCard* encourages you to link stacks so that you have the widest possible pool of information available at a mouse click, it won't be long before you find you need a hard disk.

If you want to work with *HyperCard* in the MultiFinder (or *Switcher*) along with other application programs, your megabyte of RAM will seem like a drop in the bucket. *HyperCard* alone tries to grab approximately 750K, and other major applications (like *Excel* and *Word*) aren't shy either when ordering their RAM from the bar. For maximum flexibility in this configuration, I recommend a Macintosh with two or more megabytes of RAM.

messages to buttons, fields, and cards. When you click on one of those objects, *HyperCard* sends the messages mouseDown, mouseStillDown, and mouseUp in quick succession to that object. The table "Message Hierarchy" lists the system messages that *HyperCard* initially sends to each kind of object.

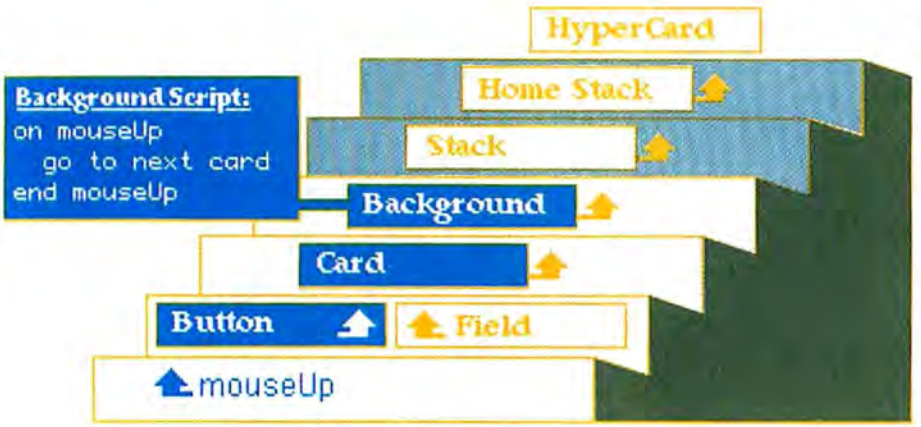


Figure 3
When you click on a button, HyperCard *sends a mouseUp message to that button. If the button contains no message handler with that name, then the message speedily works its way up the* HyperCard *object hierarchy until it finds either a matching handler (here it's in the background) or the* HyperCard *object.*

Up the Ladder

Let's say you click on a *HyperCard* button. The first message to go to that button is mouseDown. If the script of that button does not contain a handler starting with "on mouseDown," then the message passes on to the next object in an established hierarchy (see Figure 3). The mouseDown message goes next to the card, in search of a mouseDown message handler. If none is found, the message keeps going up the hierarchy until it reaches the final object, *HyperCard* itself. (All this happens so fast that you don't perceive it at all.) If a system message makes it all the way to *HyperCard,* then the message is ignored.

But when a message encounters a matching handler along its way (when an object "traps" a message), the message goes no further (unless the handler instructs it to proceed.) *HyperCard* carries out the instructions in the script and sends the next system message. This message may be nothing more than the "idle" message, which indicates that nothing else is happening.

HyperTalk—In English

While HyperTalk has some of its programming-language roots in SmallTalk and Pascal, the language is much closer to plain English than to any other programming language. Common commands include: "go," followed by the name of the card and/or stack to go to; "put," followed by what you want to put (text, numbers) and where you want to put it (which field); and "get" and "set," followed by one of the many visual properties an object has.

Not only does the incorporation of English commands help you learn the language, but also the modular method of programming—attaching small message handlers to various objects in the stack—

enables you to build programs quickly and debug them easily.

But that's not to say that HyperTalk lacks the power to do remarkable things. People building scripts have access to the SANE math library that's in the Mac's ROM, and they have the ability to script any action that can be done manually with *HyperCard*, including using painting tools and even modifying scripts. *HyperCard* can import data from and export data to other applications. A script can also open applications and documents from within *HyperCard*.

A relatively complex task takes very few lines of HyperTalk coding. For example, in writing my book on *HyperCard*, I developed an application that behaves like a visual outliner program; the code prints out on a single page. That application would require substantially more programming in a traditional language like C, Pascal, or assembler. You'd also need above-average familiarity with the contents of Apple's massive programmer's bible, *Inside Macintosh*. HyperTalk, of course, is not intended to replace professional programming environments; instead it makes Macintosh programming far more accessible to a wider audience.

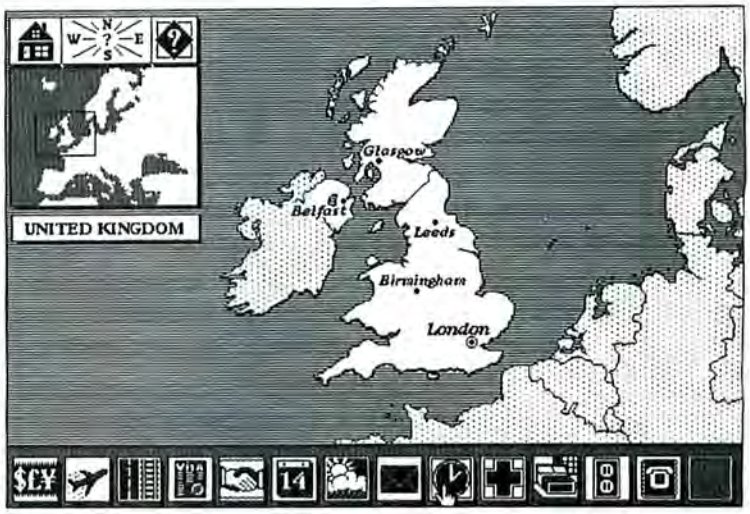


Figure 4
Third-party HyperCard *stackware comes in many varieties. Bantam Software's Business Class* HyperCard *template offers a completely mouse-driven interface to travel-information cards for over 65 countries.*

Message Hierarchy

To Button:	newButton, deleteButton
	mouseDown, mouseStillDown, mouseUp
	mouseEnter, mouseWithin, mouseLeave
To Field:	newField, deleteField
	openField, closeField
	mouseDown, mouseStillDown, mouseUp
	mouseEnter, mouseWithin, mouseLeave
To Card:	newCard, deleteCard
	openCard, closeCard
	newBackground, deleteBackground
	openBackground, closeBackground
	newStack, deleteStack
	openStack, closeStack
	mouseDown, mouseStillDown, mouseUp
	returnKey, enterKey, tabKey, arrowKey
	suspend, resume, startup, quit
	help, idle, doMenu

Message Hierarchy
HyperCard *sends system messages to button, field, and card objects. Message handlers in objects "trap" message names (for instance, "on mouseUp") and provide* HyperCard *with instructions.*

Applications Galore

It's important to keep in mind that *HyperCard* differs from the applications that you'll see written for it. The selection of stacks provided with *HyperCard* emphasizes personal (and some business) information management. But to call *HyperCard* an appointment calendar or a Rolodex-like name-and-address book is to miss the point entirely.

HyperCard is a software engine bursting with potential energy. For information management, information delivery, and interactive training, *HyperCard* is superb. But it will also accommodate other uses no one has thought of yet. *HyperCard* might, for instance, become a standard interface for information providers when CD ROM and other optical-storage media become more popular in the Macintosh arena. Ultimately, it's up to us to tap *HyperCard*'s energy and apply it in ways that suit our needs (see Figure 4).

Because it puts powerful programming tools into the hands of nonprogrammers in business, professional service, and education, *HyperCard* should inspire a quick rise in the number and variety of applications available for the Macintosh. We no longer have to rely on the programming skills of big-name software houses for specialized applications. *HyperCard* is what we've needed all along. □

See *Where to Buy* for product details.

Building Bridges

Learn how three companies are using networks to tie Macs together and link them to corporate mainframes and minicomputers

by Brita Meng

How do you tie together the vast information resources available to modern corporations and organizations? What's more, how do you tie the Macintosh into the established mainframe and minicomputer systems that are at the heart of most large organizations? These are just a couple of the questions facing MIS (management information services) directors today as the Mac proliferates behind corporate walls that were once considered impenetrable. Many companies are finding answers to these questions with the help of innovative new networking products for the Mac, as they begin to recognize the need to integrate a growing number of Macs into their data processing environments.

The MIS Dilemma

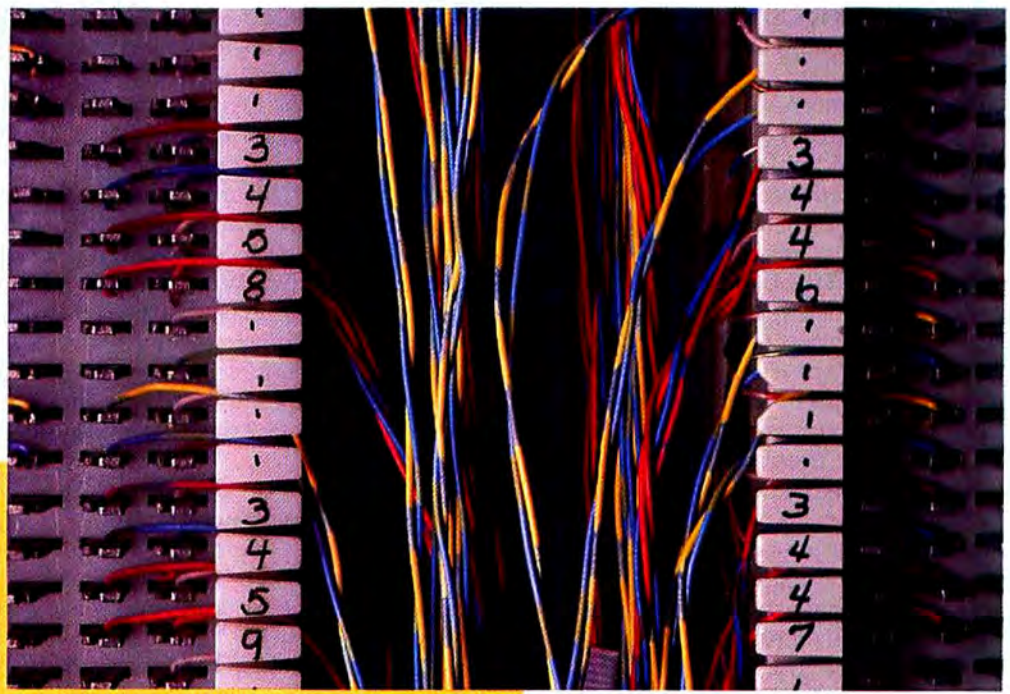
Before specific network strategies are examined, it helps to get a historical perspective on the dilemma facing MIS directors. Information is the name of the MIS game. Traditionally, MIS departments have used a large host computer, with strict security precautions, to control the flow of that information. Users took advantage of the host by using dumb terminals—workstations without independent processing capabilities. Because the host provided all available computing power, the MIS manager controlled not only all computing, but all data stored on the host computer.

Around 1980, a new MIS environment emerged with the appearance of personal computers on corporate desktops. The personal computer was an alternative to the mainframe and the minicomputer. Users no longer had to compete with each other for computing time on the host, and they retained control of the personal computer's data. The problem was that neither camp could share data easily, since the company computers were incompatible with personal computers.

Terminal Limitations

The communications gap between Macs and mainframes was first bridged by terminal emulation software, either by itself or in conjunction with specialized hardware. Terminal emulation software, also known as *terminal emulators,* refers to programs that let a Mac communicate with a host computer by mimicking the behavior of a compatible terminal. Terminal emulators allowed personal computer users to access many years' worth of MIS data on the host computer.

and Gateways



However, early terminal-emulation solutions amounted to a lobotomy for the Mac. The embedded base of software on the host computer responded to the Mac as if it were nothing more than a dumb terminal. Early terminal emulators assumed a lowest-common-denominator approach, using the Mac to perform only the input and output operations necessary for communicating with the host. Present-generation terminal emulators have come a long way since then (see "The Great Pretenders," *Macworld,* May 1987). Rather than relying on the host to process all the information, terminal emulators now use the Mac to do some processing on its own, usually editing or formatting. Still, there's a lot more Mac power to be tapped.

The Network Advantage

The development of local area network (LAN) technology finally puts the Mac in a position to provide more valuable capabilities. In its first year, AppleTalk introduced users to the limited but tangible value of sharing an expensive peripheral device such as the LaserWriter. Since then Apple's networking standard has added the benefits of electronic mail software, file sharing, and multiuser database programs.

But local area networks can provide benefits beyond those associated with local communications by reaching out and establishing links with other networks–including minicomputer and mainframe systems. For example, although terminal emulators do bring Macs online with large hosts, they don't allow true distributed processing over the network. Distributed processing splits up one program's processing load among several different machines on a network. And unlike terminal emulators, networks can help users take advantage of mass storage (as much as several gigabytes), backup, or print-queuing capabilities of minicomputers and mainframes. A well-planned network strategy will enable users to share the advantages of a centralized computer while retaining the benefits of the Macintosh.

Running Cables

The first step in connecting a network is just that–physically connecting the Macs to the mainframe or minicomputer. At Stratus Computer in Marlborough, Massachusetts, the MIS department uses three Macs

PHOTOGRAPHS BY ROBERT HOLMGREN

for word processing, presentations, and electronic mail. An analyst develops and documents all Stratus's standard operating procedures with *MacWrite*. These documents are then posted for everyone at Stratus to see, either as separate files or as E-mail messages. Everyone has access to a Stratus terminal, but not everyone has a Macintosh.

To connect the MIS Macs at Stratus, analysts use PhoneNet connectors from Farallon Computing of Berkeley, California. PhoneNet permits AppleTalk networks to be constructed from existing telephone wiring. Taking advantage of the Mac's built-in AppleTalk connector was important, but according to information analyst Marilyn Anderson, so was avoiding the installation of new cables in the building. This decision was based on the experience of one engineering work group. Group members had previously run AppleTalk cable in the ceiling to connect their Macs, but they soon moved to another part of the building. Cables still dangle from above, unused.

Luckily, the building had been designed with an extra pair of phone wires in every office–so no one had to disconnect the phone to communicate over AppleTalk. These wires are attached to the PhoneNet connectors, and thereby to the Mac's AppleTalk interface. The other ends terminate in a telephone room, where they are hardwired in a star configuration. To make the connection to the Stratus XA-600 minicomputer, analysts use an asynchronous line that directly connects from each Mac to a communications board in the Stratus. The Stratus processor board acts as a buffer for incoming Mac data (see Figure 1).

Coaxing an IBM Connection

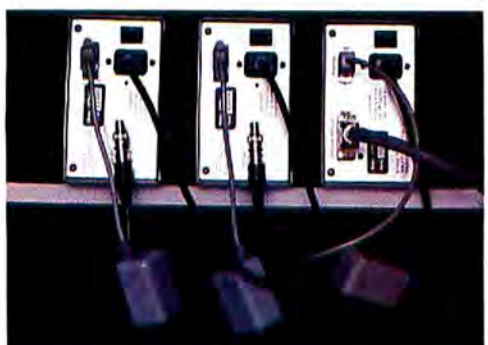
At Prudential Insurance in Roseland, New Jersey, over one hundred Macs are used by auditors for word processing, spreadsheet, database, graphics, and electronic-mail functions. The E-mail system is IBM's Professional Office System (PROFS) running under the IBM operating system CMS. The Macs are all connected with AppleTalk so that they can share laser printers. To enable the Macs to share information with the company's IBM mainframe, however, Prudential's Pat Natale (vice president, auditing) had to find a way to connect the Macs to the IBM System/370 computer-network architecture. The IBM mainframe uses a type of cabling called Coax A for its network media. One end attaches to the terminal, or to Macs taking the place of terminals; the other end attaches to an IBM 3174/3274/3276 control unit or a 4300 series Display Printer Adapter to complete the mainframe link (see Figure 2).

Prudential solved its requirement for a Coax A connection by using the MacMainFrame DX gateway from Avatar Technologies of Hopkinton, Massachusetts. MacMainFrame DX can either be directly connected to the Mac's modem port by a serial cable, or remotely connected by modem over telephone lines for dial-in capabilities. Prudential uses the modem method primarily to connect remote Macintosh users to the mainframe.

MacMainFrame DX acts as a protocol converter between the Mac and the IBM mainframe. Although Avatar does sell a converter that supports multiple users, Prudential chose to provide one box for each Mac. Auditors access the MacMainFrame DX box with communications software that provides terminal emulation capabilities.

How Big Can a Network Get?

Perhaps the best answer to this question will be provided by Apple Computer, where a massive networking project is under way. The goal of Joe Nevin, Apple's MIS director, is total desktop connectivity between every computer in the corporation. That includes all systems in the 84 foreign countries in which Apple has offices, as well as those in the United States. When you consider that Apple puts a computer on every employee's desk, with the exception of the folks on the manufacturing line, the massive project is ambitious by any standard.



Backbone Bridges

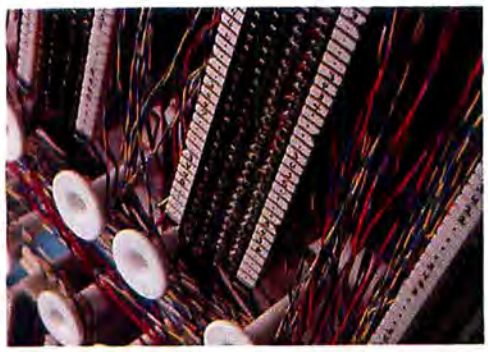
At Apple Computer, AppleTalk networks connect to a thin Ethernet backbone using Kinetics' FastPath bridges.

Patching Connections

A custom patch panel using RJ-11 connectors allows the network at Apple to be easily configured.

The predominant computer is the Macintosh, but other systems are vital as well. For example, a fault-tolerant Tandem computer is used at each manufacturing site (Singapore, California, and Ireland). The IBM System 38 is the computer of choice for distribution centers, handling order-entry, warehouse inventories, and shipping. Two IBM System/370 mainframes are used in Cupertino, California, for corporate information consolidation (financial summaries) and databases. DEC VAX minicomputers are popular in the human resources and administration departments, as well as in engineering. And, of course, there's the Cray X-MP supercomputer used for advanced engineering research design. That's a lot of computers to connect.

Networking everything at once didn't make sense, so Nevin is proceeding in phases. The first phase consisted of networking the Macintoshes on the Apple campus together and to the DEC computers. Connecting the Macs was relatively easy. AppleTalk communicates through telephone wires using PhoneNet. In eight buildings on the Apple campus, every desktop is connected via PhoneNet. At the other end, the wires all converge in various telephone closets in each of the buildings. Each closet contains an RJ-11 patch panel so that star configuration AppleTalk networks can be constructed in the panel. In turn, the telephone closets within the same building are connected with FastPath AppleTalk/Ethernet bridges from Kinetics of Walnut Creek, California. Interbuilding connections use fiber-optic cable. This allows individual AppleTalk networks to communicate over Ethernet, and then fiber-optic backbones, both of which have a higher bandwidth than AppleTalk. The scheme results in a large campuswide in-



Network Maze
Farallon's PhoneNet and the telephone system wires share a common telephone punch-down block.

ternet, which lets any user select and access any network device from the Chooser, regardless of its location (see Figure 3).

At the same time, an Apple MIS project was under way to implement the AppleTalk networking protocols on the DEC VAX minicomputer. Contracted to Alisa Systems of Pasadena, California, the project became *AlisaTalk,* now marketed by Alisa. Using Ethernet cable, *AlisaTalk* allows AppleTalk protocols to run on DEC VAX/VMS systems. Macintoshes access the minicomputers with FastPath bridges over the same Ethernet cables that connect the individual AppleTalk networks. Since all VAX computers are connected to each other with DECnet (DEC's own network), any Macintosh can communicate not only with any other Macintosh, but with any of the several VAX computers at Apple as well.

The Guises of a Host

Once the cables are in place, the next step is evaluating the relationship between the Mac and the host computer. A minicomputer or mainframe can take on several different roles in a network. For example, should the VAX be primarily a means of sharing peripheral resources, such as queuing laser printer requests? Should the IBM mainframe act as a centralized library for data and information, or as a backup or archival storage unit for Macintosh data? How about as a file or database server for information to be analyzed on the Macintosh? Or as a gateway for communications between the Mac and other personal computers used in the company?

File-Transfer Tactics

How a company uses a host computer's resources depends greatly on networking software. Stratus uses *pcLink* from Pacer Software in La Jolla, California. The software is installed on both the Mac and the host machine, and it enables terminal emulation, file transfers, and virtual disk links. Because analysts primarily upload documents to the Stratus XA-600 computer, the file-transfer ability is important.

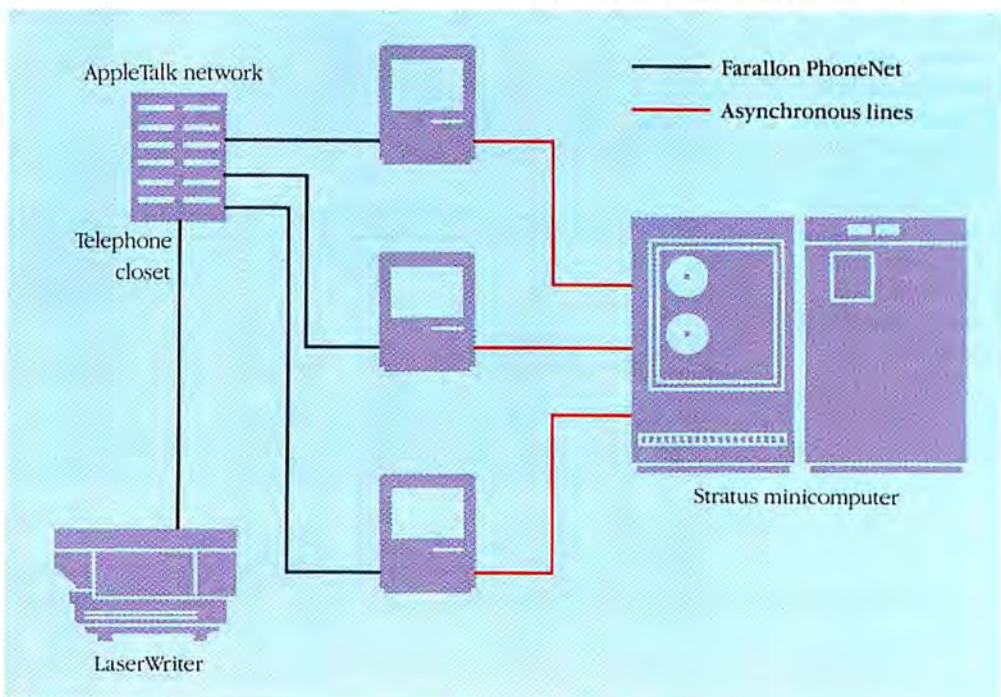
After saving a *MacWrite* document as a text-only file, Stratus analysts use *pcLink*'s terminal-emulation capabilities to log on to the Stratus computer. The text transfer is not perfect. For one thing, saving the file as text-only means that all formatting commands, such as tabs, are lost in the translation to a Stratus file. Spurious carriage returns and control characters also appear in the file. As a result, analysts must use the Stratus editor to reformat the document; they must also run a filter program to remove extraneous characters. For a three-page document, the whole process takes less than a minute.

MacWrite documents are also sent over the Stratus E-mail system. This too requires text reformatting because *pcLink* sends Mac files to the minicomputer as stream files, whereas the E-mail system handles only sequential files. In stream files the end of each record is marked by an ASCII line-feed character, while in sequential files each record is labeled at its beginning and end with a 2-byte length indicator. Analysts convert stream files to sequential files by creating a new file with a sequential structure, into which they copy the stream text. This process simply converts the file format from stream to sequential so that it can be sent as an E-mail memo. The E-mail system is accessed through the *pcLink* terminal emulator.

Shared Data Processing

Prudential uses its Mac connection in several ways: as a front-end processor of database information, as an E-mail terminal, and as a communications gateway between the auditing department's PCs and Macs. Prudential uses Avatar's MacMainFrame DX software to transfer different types of files among Macs, PC compatibles, and IBM System/370 mainframes. Part of the MacMainFrame DX software resides on each Mac as a desk accessory to communications programs such as *MacTerminal* and *Jazz.* Another part of the MacMainFrame DX software called host file transfer (HFT) resides on the IBM to complete the network. A terminal emulator lets auditors directly access PROFS in the CMS environment on the Mac. Because the IBM mainframes in each Prudential office are networked, auditors can use the Mac to send PROFS messages to any Prudential personnel across the country.

Figure 1
Stratus uses PhoneNet to connect its Macs, and asynchronous communications lines to network each Mac with the Stratus minicomputer. The asynchronous lines from the Macs connect to a processor board—which acts as a buffer for incoming data—in the Stratus minicomputer.



File-transfer capabilities permit Prudential auditors to upload a *MacWrite* file to the IBM host either as a text file for PROFS E-mail distribution or as a binary file for PC-compatible users. For example, Microsoft SYLK files are interchangeable between the PC and the Mac. The binary transfer preserves the file format while it resides on the mainframe.

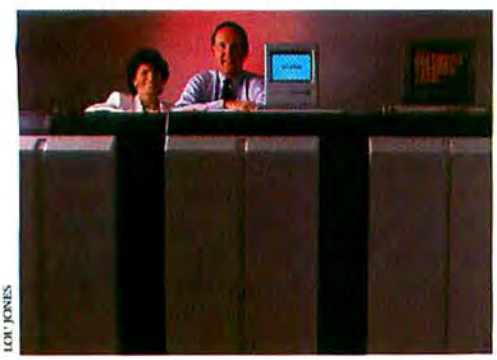
Prudential also uses Avatar's text-filtering software so that uploaded files will be formatted to host appearance standards and mainframe users can prepare files to meet Mac formats. This allows Mac users to work on database information for later integration into the main IBM database. MacMainFrame DX has a feature called Document File Transfer (DFT) that also lets the IBM mainframe be used as a central mailbox for information exchange between Macs. Auditors use the Mac for database, spreadsheet, and graphics applications. Using DFT, they then store on the host an exact representation, or mirror image, of any Mac file. As a result, a *Jazz* worksheet or a *MacDraw* document can reside on the mainframe disk, in its Mac format, waiting for another Mac user to retrieve it.

At the Heart of the Beast

Apple telecommunications manager Tom Porter configures the network easily with PhoneNet.

Stratus Connects

Stratus analysts Jim Moran and Marilyn Anderson use Macs to connect to the Stratus XA-600.



LOU JONES

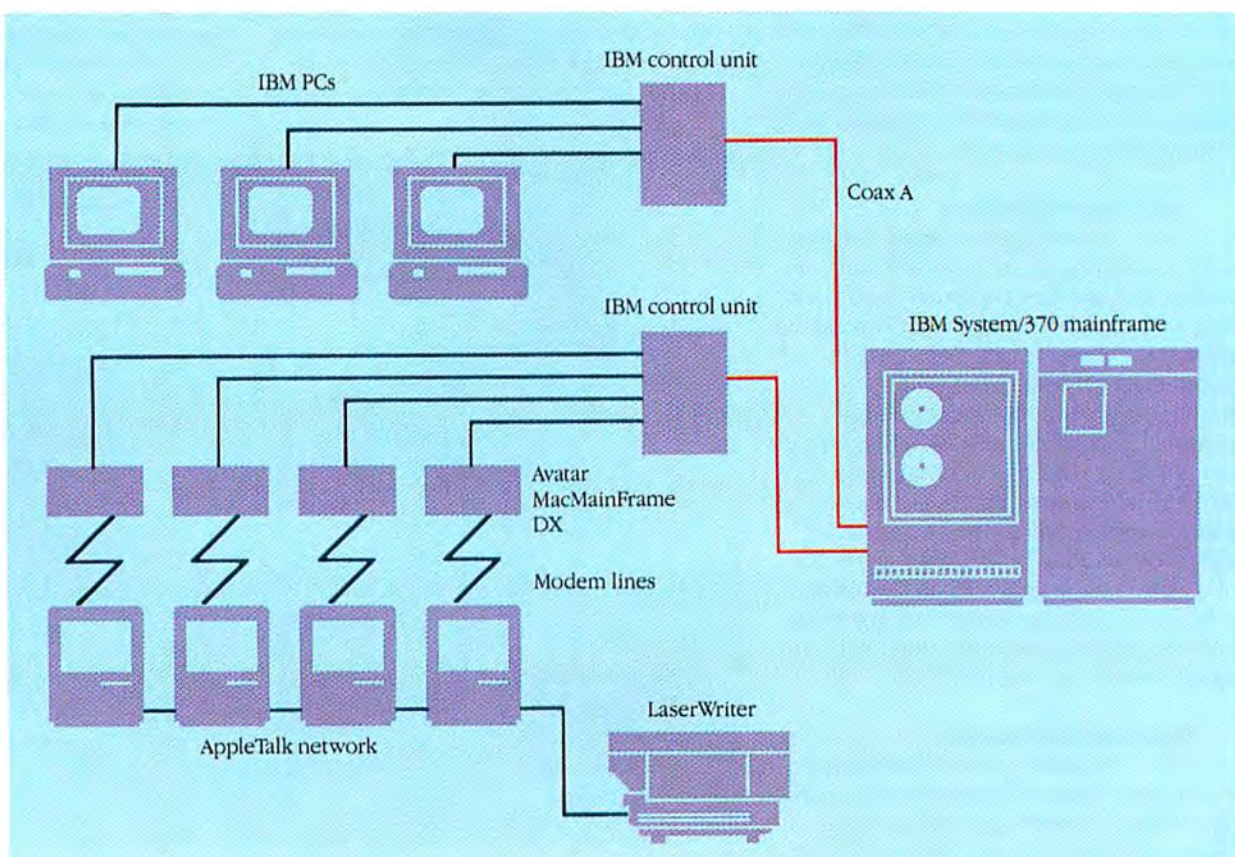
DEC Server and Gateway

Apple uses its VAX as a file and database server for the connected Macs and as a communications gateway. To the Mac, a VAX running *AlisaTalk* looks like just another AppleTalk network. *AlisaTalk* software resides solely on the VAX and consists of AppleTalk network support, two server programs, and a DECnet remote terminal system. The terminal package allows some Mac terminal emulators, notably *Mac240* and *VersaTerm/PRO,* to connect to the VAX via the CTERM protocol, DEC's wide area network (WAN) protocol. Thus the Mac can access any VAX on the DECnet network by just accessing one VAX gateway. One server is a LaserWriter spooler, selected by the Chooser.

The other server is a file server that runs as a desk accessory. It provides transparent access to all files on the VAX; Mac users see the VAX simply as one or more volumes available for mounting on the desktop. After the remote volume is mounted, it looks exactly like a local disk. Mac users at Apple can create, delete, or rename files stored on the VAX (providing they have the correct security clearances,

Figure 2

At Prudential, the auditing department's network includes both Macs and PCs. The Macs use Avatar's MacMainFrame DX to connect to the IBM System/370 network, whereas the PCs use Irma from Digital Communications Associates. Both Avatar and DCA have announced plug-in boards for the Mac SE/IBM gateway.



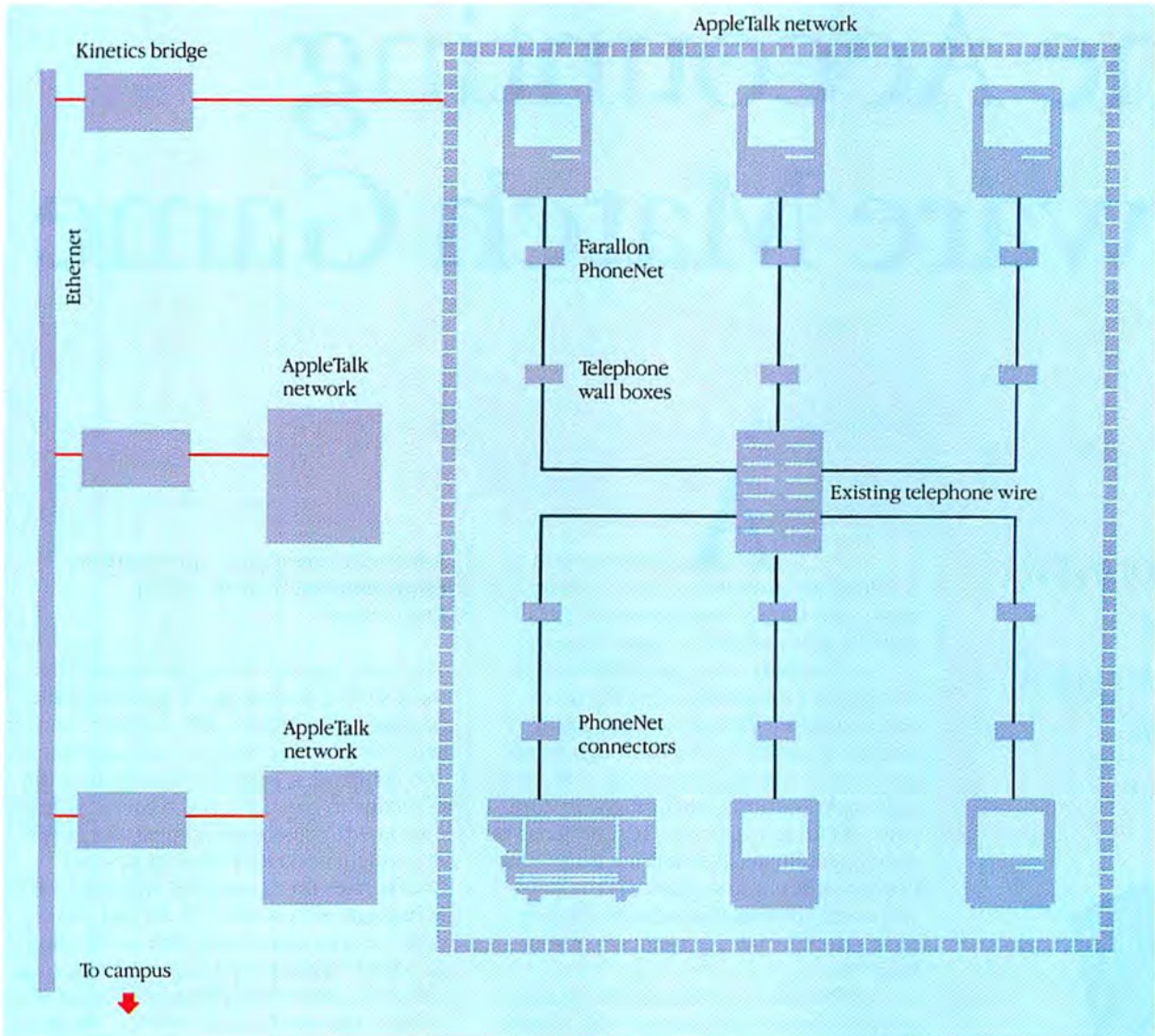


Figure 3
Apple's ambitious networking project is connecting all the company's computers. Each building on the Apple campus has several AppleTalk networks, which converge in telephone closets. This diagram illustrates a building configuration. Each AppleTalk network is configured with Apple custom-developed RJ-11 patch panels (shown in the exploded view). These networks are linked to Ethernet with the Kinetics bridge, which enables them to communicate with networks all across campus.

of course). Since the file server allows multiple users to read and write files, applications stored on the VAX server can be shared; this conserves valuable Mac disk space. A file server utility (FSU), which includes text-file format conversion, allows Mac files stored on the VAX to be accessed by VAX users.

Apple has an online telephone directory service that illustrates the capabilities of its developing network. The directory is an information database for all Apple employees and is stored on a MicroVAX computer. It holds first and last names, office and building locations, *AppleLink* addresses, telephone numbers, etc. By simply typing a query, any Apple employee can locate another from the desktop. The request is so swiftly routed over the network to the MicroVAX that the directory appears to be stored locally.

The Network Horizon

While Mac-to-host links have already made their impact felt at Stratus, Prudential, and Apple, none of the companies feel the networking projects are totally complete. Stratus would like to connect its IBM PCs to the Macs for data exchange, perhaps using the Stratus minicomputer as a communications gateway. In addition, Anderson is investigating ways of posting Mac public domain and shareware programs on the Stratus for downloading by other Mac users at the company. At Prudential, Natale is considering hooking up the PC users to AppleTalk. And at Apple, Nevin's job is just starting. He expects by next year to have the IBM and Tandem connections–as well as some of the international networks–on the company's network.

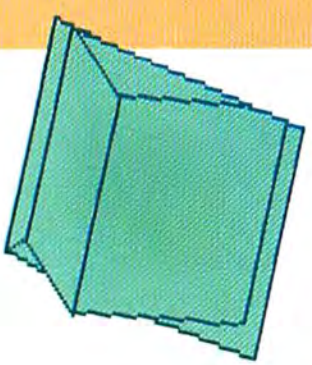
As local area networks proliferate, the new MIS environment will force developers to create software that can easily cross hardware boundaries. Certainly, products like Odesta's *Helix VM/X* and Apple's *HyperCard* (see "The Two Faces of HyperCard" in this issue) are already pointing the way. *VM/X* allows users to store databases on the VAX and manipulate them on the Mac; *HyperCard* could use the VAX as a stack server for a similar configuration. Ultimately, large minicomputers and mainframes are likely to become Mac peripherals–to be used mainly for storing and serving files–while the Macintosh becomes the workhorse. □

See *Where to Buy* for product details.

The Accounting Software Match Game

Find the accounting package that works the way your business does

by Steve Mann



A computerized accounting and inventory-control system can make your business run more smoothly and efficiently–if it's the right system.

Consultants who specialize in automating businesses agree that the secret of selecting an appropriate accounting package is performing a thorough *needs analysis* before you even begin to boot up potential programs. Analyzing your company, deciding what types of functions you want to automate, and ranking those functions in order of importance is the only way to ensure that the package you buy meets the special requirements of your business.

To help get you started, this article outlines some special accounting requirements for five industry categories and suggests appropriate Mac programs for each. The recommended products are suitable for medium-size businesses, they have good general accounting capabilities and the breadth of special features necessary for business settings, and they come from vendors with proven track records. A more complete list of accounting software can be found in "The Accounting Software Buyer's Guide" (*Macworld,* September 1986). You might also refer to the *Omnis 3 Plus Business Directory, The Macintosh Buyer's Guide,* and *MacGuide* for lists of products designed specifically for vertical markets or certain types of companies.

Service/Professional

Examples: *Real estate, insurance, accounting, law, finance, medicine, engineering, architecture, construction, software development.* **Key software requirements:** *Flexible billing, job costing.*

The most important feature required by most service businesses is flexible billing (accounts receivable). Service firms may sell a variety of services to both individuals and companies; invoice formats vary from company to company, and sometimes from customer to customer. For instance, a law firm might need to include hours and hourly rates on its invoices, an insurance firm might simply list policies and their costs, and an accounting firm might need to comply with special government format requirements. Some clients may require printed invoices for each service, while others may want to receive statements summarizing all charges at regular billing periods.

A package that accommodates a variety of layouts and automatically includes all the appropriate information saves a lot of time, reduces errors, and helps you control accounts receivable and cash flow. Before you can pick the right billing system, you need to match your current methods for preparing invoices, your format requirements, and the types of calculations you make with the functions offered by a receivables program.

Another requirement for companies like engineering, construction, and architectural firms is the ability to track information relating to specific projects. *Job costing* is the practice of assigning important accounting activities, such as revenues, expenses, and budget amounts, to specific

JOHN HERSEY

jobs or projects. This simplifies the management of large projects and improves a firm's chances of remaining profitable.

Several Mac accounting products provide flexible billing. Chang Labs sells an accounts receivable module that prints simple itemized invoices and statements as part of its *Rags to Riches* series. Chang also offers a professional billing module that provides more sophisticated billing and the ability to track simple jobs and activities. Both modules let you change fonts and font styles on invoices and statements, allowing you some flexibility over the final printed format.

The accounts receivable module of Layered's *Insight* has three invoice formats—shipping, service, and standard. The service format provides a table of standard professional services and their rates, which you can then include on an itemized invoice. Both Great Plains and Microfinancial are working on separate job-costing modules for their accounting software series (*Great Plains Accounting Series* and *Flexware,* respectively). Microfinancial's job-costing program should be available by the time you read this. At press time, no release date had been announced for the Great Plains module.

ED KASHI

Tom Adams of Research and Development Glass Products in Berkeley, California, uses Insight's *accounts receivable module. He finds* Insight's *A/R-aging expert report critical for controlling late payments.*

Light Manufacturing

Examples: *Printing, furniture, metal fabrication, machinery, food products, textiles and apparel, paper products, instruments.* **Key software requirements:** *Strong inventory control, multiuser capability.*

Light manufacturers build partially or completely finished goods from raw materials or semiassembled components. Such businesses differ from heavy manufacturers primarily in the complexity of their operations and products. For instance, a company that makes storm-doors from prefabricated parts is a light manufacturer; a firm that refines crude oil into petroleum products is probably a heavy manufacturer that can't use a microcomputer-based accounting system. Heavy manufacturers need detailed control over products in intermediate stages (*work in process*) and possibly material planning and production scheduling. Light manufacturers usually don't require any of these functions.

The key requirement for most light-manufacturing businesses is adequate inventory control. A large part of a manufac-

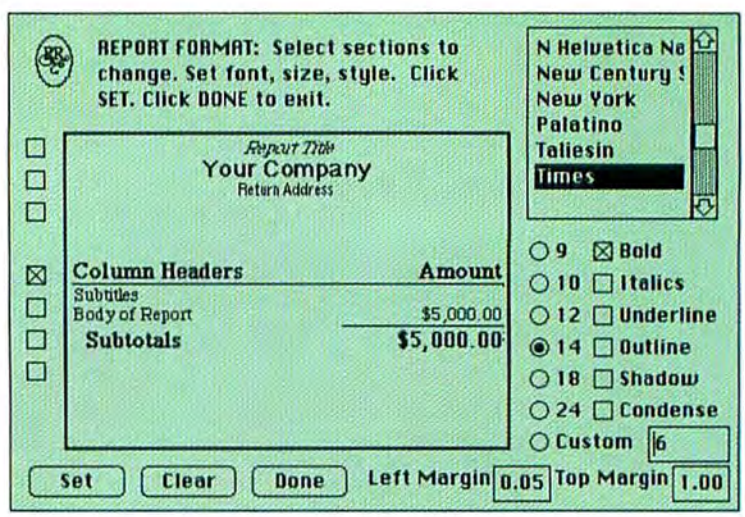


Figure 1
The Rags to Riches *Report Setup command lets you control the font, size, and style of each report or invoice section, and the overall report margins. You can also include your company's logo on each report.*

What Every Accounting Package Should Have

In addition to any industry-specific needs you may have, there are various common-sense features you should look for in all accounting products.

Flexible reporting is one of the most important. A package with a custom report writer enables you to produce reports that show the information you want to highlight in the format you select. Great Plains, Micro-financial, and WOS Data Systems each offer a general report writer for use with their products. Layered's general ledger module includes a simple report writer. Many other products also allow custom reports.

If no report writer is available for the product you want, make sure it at least lets you export data in either text or SYLK format, or through the Clipboard. You can then import the information into a spreadsheet or database program for additional formatting.

Also look for a product that lets you track your financial data in groups (usually called departments, profit centers, or subaccounts). If your company is at all complex, you can benefit greatly by using these features to better understand segments of your business.

And don't underestimate the value of a good audit trail. This consists of one or more reports that let you retrace your accounting activity to track down a specific piece of information, verify a calculation or financial statement balance, or determine if your system is working properly. No one type of audit trail can be designated best—usually, the more detail provided by transaction entry reports, the better.

Converting from one accounting system to another can be a painful experience. You can avoid this trauma by anticipating your company's future growth when you shop for a package. Make sure the products you examine can handle your expected and projected transaction volume. Also consider the possibility that you may have to add users in the future. If you think you might, make sure to consider only products that provide a multiuser upgrade path.

Of course, the obvious criteria—ease of use and learning (the Mac interface helps a lot in these categories), good documentation, and good telephone support—are all important. These basic qualities add up to make conversion from a manual to an automated system (or from one accounting system to another) much less irritating.

turing company's assets are often tied up in its inventory, so efficient operation demands that the firm be able to track those assets accurately and quickly. A good inventory module can tell you when to reorder certain parts, how many to order, who gave you the best price on the last order, and other related information. In an accounting system, inventory control usually appears in three different places.

The first place is typically an inventory module used to manage individual inventory items, track quantities on hand, and measure the value of those quantities. In addition, a good inventory module maintains lists of items required to assemble finished goods (a *bill of materials*) and properly tracks the assembly process. Second, there's usually an interface between the inventory module and an accounts-payable or purchase-order module that tracks orders for raw materials and their movement into the inventory module. Finally, there's usually an interface between the inventory module and an accounts-receivable or order-entry module that tracks the depletion of inventory created by selling finished goods.

Not all products have all three inventory components. If your purchasing and order-entry procedures are uncomplicated, you may not need the second and third components.

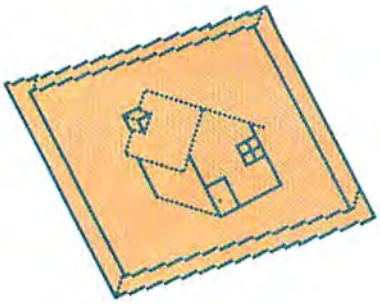
Another common requirement in a light-manufacturing environment is multiuser access to the accounting software. Light manufacturers may have separate purchasing, receiving, payables, and receivables departments, all requiring simultaneous access to the system for transaction entry.

Great Plains Accounting and *Flexware* offer the two most powerful inventory systems available for the Mac. Both companies provide separate inventory, purchase-order, and order-entry modules that can be integrated into a complete accounting system. Both products also feature multiuser capabilities. *Great Plains Accounting* runs on *AppleShare; Flexware* runs on a variety of Mac networks and minicomputers, including the full VAX line from Digital Equipment Corporation.

Retail

Examples: *Groceries, food and beverages, equipment and machinery, hardware, apparel.* **Key software requirements:** *Flexible transaction features, good inventory control, fast data entry and invoice printing, interface to bar code reader or cash drawer.*

Probably more than any other type of business, retail establishments need transaction flexibility. They must be able to handle



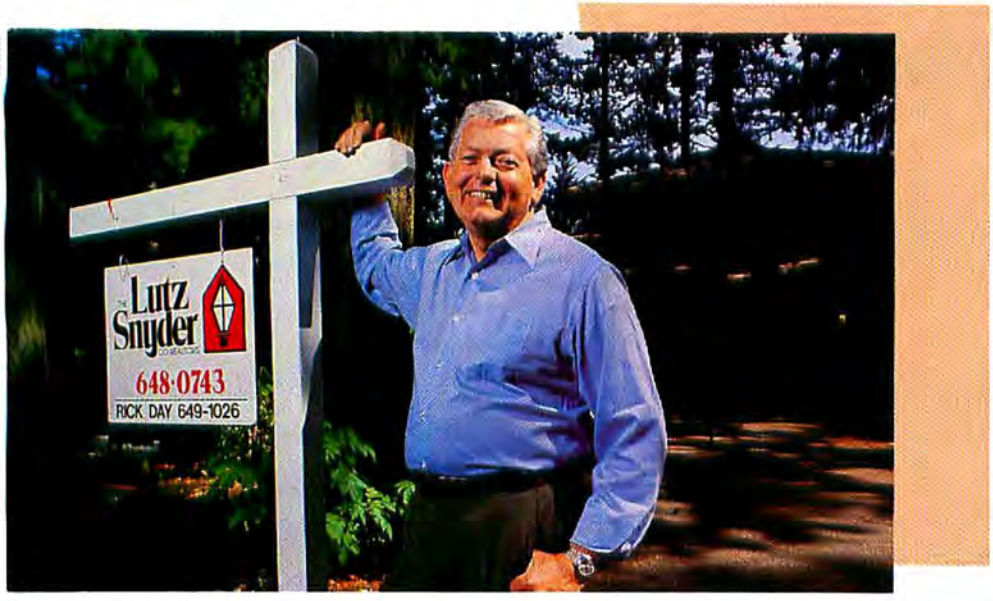
cash, credit cards, checks, coupons, special sales, returns, discounts, sales tax, and credit sales to regular customers. They may also need to print sales quotations or estimates, record customers' purchase orders, and perform a variety of other special transactions.

In addition, some retail businesses require strong inventory handling. Some need cash management features, such as bank deposit management or cash balance management for multiple salespeople. Retailers may also need to interface a cash drawer or bar-code reader to the system in order to record cash receipts or inventory-stock codes. Almost all retail operations require fast data entry and invoice printing (if invoices are used), so that customers don't end up waiting.

Since individual businesses vary considerably, no general accounting system for the Mac is perfectly suited for every retail environment. There are, however, two products that have the features necessary to work well in many stores.

Rags to Riches provides a special inventory module designed primarily for point-of-sale retail environments. It handles cash and credit sales, nonsale transactions like returns and inventory adjustments, and a variety of special cash transactions found only in a retail environment. However, this module is inappropriate if you need to interface to a cash drawer or point-of-sale terminal.

The second product to consider is the *Great Plains Accounting* order-entry module. This program includes some provisions for a point-of-sale environment, including a day-end summary report that can be used for balancing bank deposits and cash-drawer closing totals, and special data-entry features that simplify invoicing of walk-in sales and one-time customers. Great Plains is currently working on a cash-drawer interface for the *Great Plains Accounting* order-entry module.



ED KASHI

Rick Cotter uses all three Insight *modules to run a real estate firm, an apparel store, and several other businesses. The industry-standard ratios in* Insight*'s reports let Cotter compare his financial results with accepted norms.*

Wholesale/Distribution

Examples: *OEM suppliers, product distributors, nonretail sales.* **Key software requirements:** *Strong inventory management, flexible sales and order processing, fast data entry and invoice printing, multiuser capabilities.*

Wholesale and distribution companies, which sell finished goods to retail outlets or other wholesalers, represent an interesting mix of certain aspects of both manufacturing and retail environments. Like manufacturers, wholesalers and distributors

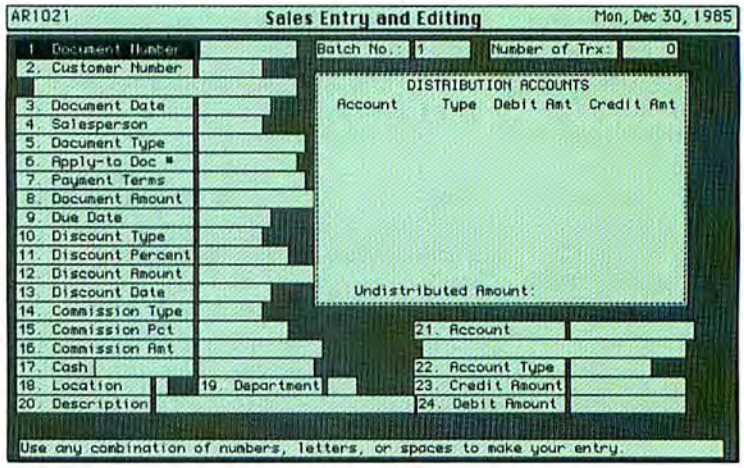


Figure 2
All the Great Plains *modules work with transaction batches. Each batch includes one or more multiline documents. The Sales Entry and Editing function handles commissions, discounts, cash payments, and payment terms.*

need strong inventory management tied to purchasing and order entry. Like retailers, they require sales- and order-processing flexibility.

Instead of getting involved in cash management and lots of special transactions, however, a good wholesale system must accommodate multiple price lists (or discount rates), multiple billing and shipping addresses for each customer, back-order handling, sales commissions, and other types of transactions. Wholesalers also need the data-entry speed and invoice printing of a retail environment.

A wholesaler's stock-in-trade is expediting the movement of goods from manufacturer to retailer. Since you won't move too many goods if only one person can take orders, wholesalers typically need multiuser capability.

Three Mac products can work well for wholesale and distribution businesses. The first two are *Great Plains Accounting* and *Flexware*. Both are appropriate for reasons explained in the sections on manufacturing and retail. Both handle sales commissions, a variety of discount structures, and multiple billing and shipping addresses. And both are multiuser systems.

The third product is Layered's *Insight*. Although Layered does not yet offer a separate inventory module, its accounts receivable system has a simplified inventory capability that is suitable for some wholesale and distribution companies. In addition, *Insight* has two invoice formats designed specifically for these types of companies.

While *Insight* (like *Rags to Riches*) works on a network and enables you to merge data from different modules into the general ledger, it's not a true multiuser system. Layered is working on an *AppleShare* version that the company says will be out by the end of this year.

Nonprofit/Government

Examples: *Churches, arts groups, state and local governments, school districts, charities.* **Key software requirements:** *Fund accounting.*

The most unusual type of business from an accounting standpoint is one that falls in the nonprofit or government category. Most organizations of this type follow a special set of accounting rules known as *fund accounting*. Fund accounting evolved partly from the fiduciary duty of these entities to the public (their taxpayers or members).

Such organizations have a responsibility to spend only what they receive from taxes or contributions, and they need accounting systems designed to make sure that's what they do.

Fund accounting has a terminology all its own, which I won't describe here. It's sufficient to mention the one off-the-shelf fund-accounting product for the Mac—*WOS Fund Accounting Software* from WOS Data Systems. Encompassing integrated general ledger/budgeting, purchase-order/voucher/accounts receivable, and payroll modules, this package follows generally accepted fund-accounting principles and works in a multiuser environment.

WOS also offers a companion database that creates custom reports and performs other special functions.

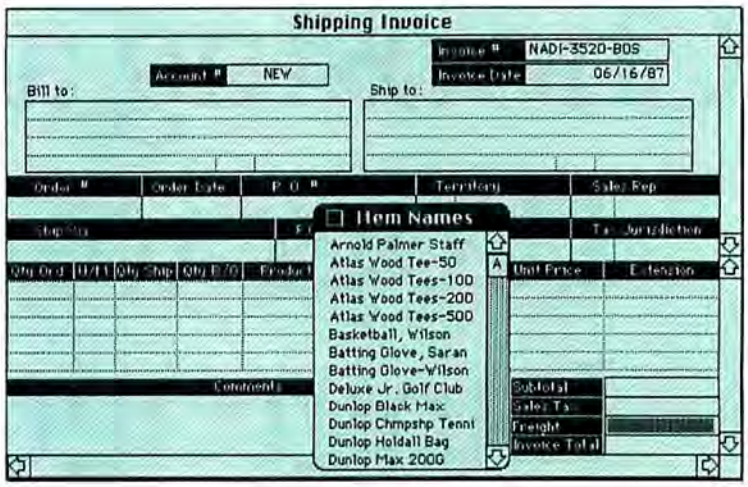


Figure 3
The Insight *shipping invoice, one of three formats, is useful for preparing invoices that require detailed information for each item sold. Each line includes ordered, shipped, and back-ordered quantities. Items can be looked up and inserted in the invoice using the Item Names window.*

Picking a Package

The five business categories described in this article should be treated merely as rough guidelines. For instance, a printing business has both service and manufacturing characteristics, as does a construction company. Some manufacturing firms sell direct to retail consumers through the mail, and so do some wholesalers. No simple taxonomy properly describes such hybrid businesses.

You need to carefully analyze your business and your accounting needs, match those needs against product features, and try out the products to make sure they work properly. Unless you're willing to do a lot of homework or your company's needs are relatively simple, you'll probably want to involve a qualified consultant, your CPA, or a value-added dealer in your accounting software selection process. These individuals often have checklists that you can use to pin down your specific requirements.

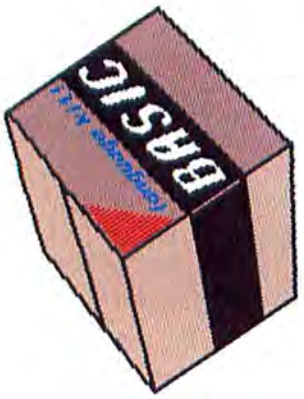
If you are considering their software, many vendors will provide you with a list of local consultants who can offer help. If you're more the do-it-yourself type, check your local bookstore for books that include feature checklists for selecting accounting software. Don't be discouraged if the only books you find are for IBMs; the checklists apply to your needs, not to the software.

After you've performed your needs analysis and compared it to various products' features, if you find no Mac software that seems appropriate, consider using an off-the-shelf package to create a custom accounting system. An authorized dealer can customize *Flexware,* or you can purchase a complete system with full source code, a general database engine, and other customizing features. WOS's companion database product for the *WOS Fund Accounting Software* lets you enhance the system's capabilities. Just be sure you have the in-house programming expertise before you take this approach.

If you have a complex business, no magazine article can tell you which accounting package to buy. But if you're in the market for accounting software, at least now you know what you don't know—and how to remedy that situation. □

See *Where to Buy* for product details.

Choosing a Programming Language



Pick a language that fits the bill and matches your problem-solving style

by Allen Munro

Macintosh applications have redefined the meaning of programming. Whereas a few years ago you would have had to write a program to design your environment, now you can use customizable applications, such as *4th Dimension, HyperCard, Microsoft Excel,* or *Stella.* If you need to enter data on forms and then search, sort, view, and print portions of that data, an application generator such as *Double Helix, Omnis 3,* or *4th Dimension* can meet your needs without the lengthy development time required by a conventional programming language. If your task calls for a great deal of specialized knowledge but does not require an elaborate customized user interface, you may want to use an expert system shell. Expert systems are good for the kind of question-and-answer exchange that often takes place between an adviser and an advice-seeker.

Because computer programming is hard work, most people will want to avoid it whenever possible. But if you must write a program, you'll find an abundance of languages and language implementations from which to choose. At least 11 major programming languages are available for the Macintosh, with more than 40 implementations. So you should be able to find a language that's not only appropriate for your task but also geared to your own problem-solving style.

Languages and Implementations

Programming languages are defined by their syntax–the set of rules defining how their elements can be combined to make programs. Language implementations are defined by the programming tools available for building programs. At a minimum these tools provide the programmer with a means of entering and editing program statements and a method of running programs. Other features may let you trace program execution, examine the values of variables, and so on.

Pascal, for example, is a programming language with at least six different Macintosh implementations. Programs written in any of these implementations will read similarly because Pascal's syntax is standardized. But other program characteristics may differ drastically. For example, the same program may run hundreds of times faster in *MPW Pascal* than in *Macintosh Pascal.*

Implementations differ greatly in their program-development and testing features as well as in the envi-

ronment they provide. Programming environments fall into three categories: separate applications, shells, and integrated environments (see "Three Programming Environments").

A Question of Style

Although different implementations of the same language can be radically different, programmers have come to expect that implementations for a given language will have certain characteristics. For example, BASIC is usually interactive and Pascal is not. (In an interactive system, a change can be tested almost immediately.) Yet some BASIC implementations (such as *PCMacBASIC*) are not very interactive, while some Pascal implementations (such as *Macintosh Pascal* and *Lightspeed Pascal*) are quite interactive.

Similarly, BASIC programs are generally expected to run more slowly than Pascal programs. Yet I ran benchmarks that showed *ZBasic* to be almost as fast as the fastest Pascal implementations, while Apple's *Macintosh Pascal* was almost as sluggish as the slowest BASIC I tested (see "Running the Sieve").

Since features such as interactivity and execution speed depend greatly on implementation, much of the difference between programming languages is in style. This doesn't mean that language differences are necessarily less important than implementation differences. But if you plan to use a programming language for hours on end, you ideally should use one that matches your programming style.

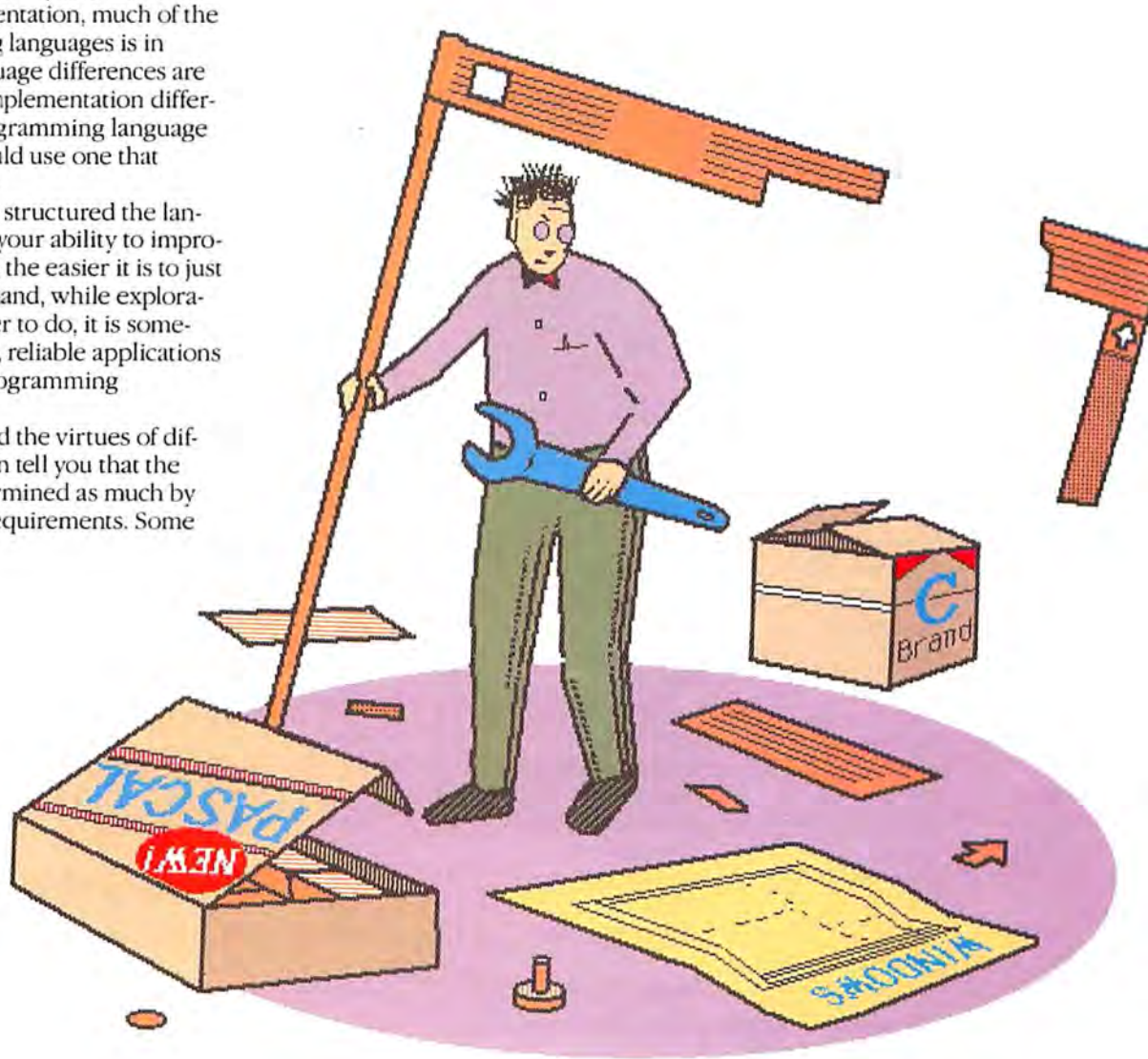
You should also find out how structured the language is, since that will influence your ability to improvise. The more freedom you have, the easier it is to just try something out. On the other hand, while exploratory programming is usually easier to do, it is sometimes more difficult to build large, reliable applications using this method (see "Three Programming Environments").

Anyone who has ever debated the virtues of different programming languages can tell you that the choice of a language is often determined as much by the user's personality as by task requirements. Some language debates are actually based on the differences in language definitions, rather than on comparisons of standard implementation features.

Pascal: "Please, may I do it this way?"

Pascal is a good programming language for people who like to do things right and don't mind being monitored while they do them. In effect, you must sometimes ask Pascal permission to do things the way that makes most sense in the context of your program.

Pascal is a readable language, but most Pascal implementations don't score very high on interactivity. One exception is *Macintosh Pascal* from Apple, an interpreter that has good interactivity but is hampered by slow program execution and limited program size. Another is *Lightspeed Pascal,* a compiler that offers a semi-interpreted mode as well. Both of these fine interactive Pascal environments were actually developed



ILLUSTRATIONS BY MICK WIGGINS

Programming Languages Compared

Language	Language Implementation	Company	Environment (I = Integ., S = Shell, T = Tools)	Interactivity	Builds Applications (double-clickable)	Builds DAs	Object Oriented	Minimum RAM/Disk	Recommended RAM/Disk
Pascal	Lightspeed Pascal	Think Technologies	I	high	●	●		512/400	512/800+
	Macintosh Pascal	Apple Computer	I	high	[1]			128/400	512/400+
	MPW Pascal	Apple Computer	S	low	●	●	●[2]	512/1600	1M/HD
	The MacAdvantage	Pecan	T	low	[1]			128/400	512/800
	TML Pascal	TML Systems	T	low	●	●	●	512/400	512/800+
	Turbo Pascal	Borland International	S	med.	●	●		512/400	512/800+
	UCSD Pascal	Pecan	S	low				128/400	512/800
Modula-2	MacMETH	Modula Corp.	S-T	low				512/400	512/800
	MacModula-2	Modula Corp.	T	low	●			128/400	512/800
	UCSD Modula-2	Pecan	S	low				128/400	512/800
	TML Modula-2	TML Sytems	S[3]	low	●	●		512/1600	1M/HD
	TDI Modula-2	TDI Software	S or T	low	●			512/400	512/800+
	SemperSoft Modula-2	SemperSoft	S[3]	low	●			512/1600	1M/HD
C	Lightspeed C	Think Technologies	I	med.	●	●		512/400	512/800+
	Aztec C	Manx	S	low	●	●		512/400	512/800+
	Hyper-C	WSM Group	T	low	●		●	512/800	1M/HD
	MacC and Toolkit	Consulair	T	low	●	●		512/800	512/800+
	MacC Jr.	Consulair	T	low	●	●		512/400	512/800
	MPW C	Apple Computer	S	low	●	●		1M/1600	1M/HD
Assembler	Consulair 68000	Consulair	T	low	●	●		512/400	512/800
	MPW Assembler	Apple	S	low	●	●		512/1600	1M/HD
	McAssembly	Signature Software	T	low	●	●		128/400	512/800+
FORTRAN	MacTran77	DCM Data Products	I	med/high	●			512/800	512/800+
	Microsoft FORTRAN	Microsoft	T	low	●			128/400	512/800
	FORTRAN77	Pecan	S	low				128/400	512/800
BASIC	Basic Power System	Pecan	S	low				128/400	512/800
	Microsoft BASIC Interpreter	Microsoft	I	high				128/400	512/400+
	Microsoft BASIC Compiler	Microsoft	T	low	●			128/400	512/800+
	PCMacBASIC	Pterodactyl	T	low	●			512/800	512+/HD
	True BASIC	True BASIC	I	med.	●			128/400	512/800
	ZBasic	Zedcor	I	med.	●			512/400	512+/800
VIP	VIP	Mainstay	I	high	[1]			512/800	512/800
FORTH	MacFORTH Plus	Creative Solutions	I	high	●			512/400	512+/800
	Mach2	Palo Alto Shipping	T	low	●			512/400	512+/800
	MasterFORTH	MicroMotion	I	med.				128/400	128/400
	Neon	Kriya Systems	I	high	●			128/400	512+/800
APL	APL Plus	STSC Inc.	I	high				512/400	512+/800
	MacAPL	Leptonic Systems	I	high	[1]			512/400	1M+/800+
Smalltalk	Smalltalk	Apple Computer	I	high			●	1M/HD	
	Smalltalk	ParcPlace Systems	I	high	[1]		●	1M/HD	2M+/HD
LISP	ExperLisp 1.5	ExperTelligence	I	high				512/400	1M/800+
	MacScheme + Toolsmith	Semantic Microsystems	I	high	[4]			512/400	512+/800+
Logo	ExperLogo	ExperTelligence	I	med.				128/400	512/400+
	Object Logo	Coral Software Corp.	I	high			●	128/800	512/800
	Terrapin Logo	Terrapin	I	med.				512/800	512+/800+
Prolog	Advanced AI Systems Prolog	Advanced AI Systems	I	med.				512/400	1M/800+
	Chalcedony Prolog	Chalcedony Software	I	med.				512/400	512+/400

[1] A run-time module provides the semblance of a stand-alone application.
[2] Also supports *MacApp* programming.
[3] Separate tool for *MPW* shell.
[4] Planned release will support stand-alone applications.

by Think Technologies, the company that produced *LightspeedC*.

Modula-2: "Pretty please, may I do it this way?"

Modula-2 is Pascal revised and updated. Niklaus Wirth, the Swiss computer scientist who designed Pascal, came up with Modula-2 eight years later. Modula-2's syntax is largely the same as Pascal's, with some simplifications and other improvements, as well as special features to provide for even greater modularity and information hiding. Modula-2 encourages more rigorous program development than do many languages, which can be an advantage when you're building very large applications that must be relatively bug-free. If BASIC is appropriate for 4-page programs, then Pascal may be right for 40-page programs and Modula-2 for 400-page programs.

C: "Whoops! Sorry, I didn't really mean to do that."

C is the language for people who think they know what they're doing and who want their compiler to think so, too. You don't have to ask a C compiler for permission to assign a value of one type to a variable of another type. Of course, being human, programmers sometimes make mistakes. C is a language for people who don't mind saying they're sorry.

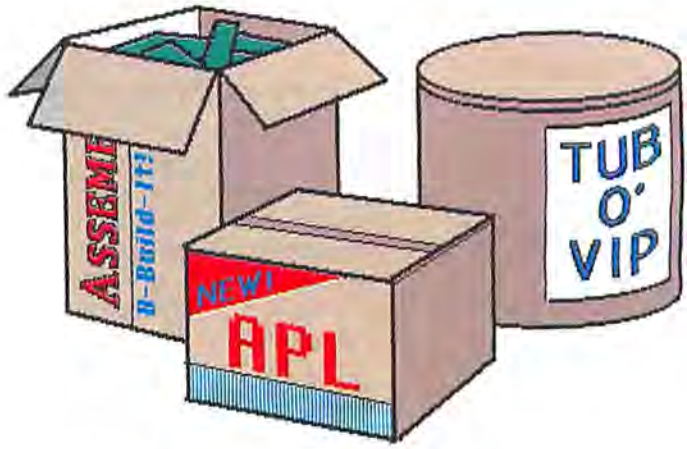
Since C is more cryptic than some other languages, you'll need a lot of practice before you can expect to become truly fluent. No C implementations offer the interactive development features of BASIC or the interactive Pascals, but C compilers compensate for this by creating faster applications than any of the other high-level languages. Some C compilers such as *Lightspeed C* are fast enough to make the edit-compile-test cycle reasonably interactive.

Assembly Language: "Doesn't everyone think in Hex?"

Do you love detail work? Is it really fun to memorize lots of obscure codes? Do you consider saving a few bytes of RAM or eliminating some wasted processor cycles the highest form of aesthetic expression? If so, assembly language is for you.

An assembler is somewhat like a compiler. You create a text file consisting of a sequence of short code words, called mnemonics. Each mnemonic represents one CPU instruction—Motorola 68000 instructions in the case of the Mac Plus or SE, or Motorola 68020 and 68881 instructions in the case of the Mac II.

Large applications are rarely written in assembly language because that would take too long, but you can use assembly language to write time-critical portions of applications. If you know where a Pascal or C application spends most of its time, you can rewrite that portion of code in assembly language to speed up the program. For routines where speed and compactness are essential, assembly language is definitely the way to go.



FORTRAN: "Gimme that old-time programming."

FORTRAN (*FOR*mula *TRAN*slation) and LISP are the oldest high-level languages around, and they're definitely showing their age. FORTRAN encourages modularity at the subroutine level, but it wasn't designed to provide additional modularity and information-hiding attributes. It doesn't support user-defined data types and is not particularly well suited to building an application incrementally.

What FORTRAN has going for it is the existence of vast libraries of routines for solving engineering and scientific problems. Engineers will probably find that the libraries they need for their work are available in FORTRAN. This is a language more appropriate for building small application tools for in-house use or limited distribution than for creating mass-market applications.

BASIC: "No program longer than four pages"

Early BASIC implementations for micros lacked the features for supporting separate program modules. As a result, large BASIC programs often grew into tangled webs of "spaghetti code," in which numerous GOTO statements created long, flat programs. This monolithic approach to programming—with no true subroutines—is acceptable only for the smallest tasks. In programs longer than a couple of pages, such code will likely produce unexpected results and will be difficult to understand and modify later. Fortunately, modern BASIC implementations incorporate some of Pascal's structured constructs, making it much easier to write modular, easy-to-read programs.

VIP: "Programming by flowcharting"

VIP is a programming environment that lets the user program by drawing and selecting options from menus, palettes, and dialogs. Only syntactically correct elements can be chosen at any point in the program.

Three Programming Environments

Macintosh programming environments can be loosely grouped into three types. In a separate-tools approach, the programming environment consists of a set of separate applications, all visible from the Finder. One tool, an editor, is used to enter and edit the source for a program. A separate compiler or assembler translates the source into a file of machine instructions. A third application, a linker, hooks together a number of code files, including files that provide the programmer's interface to the Macintosh ROM.

This separate-applications approach offers a number of advantages. You can assemble tools from different vendors, thereby customizing your development environment. For example, you can use any of several compatible program editors (such as *Edit* and *QUED*) with a variety of compilers and assemblers. Another advantage of this approach is that it often doesn't require as much memory as other types of development environments, making it possible to program on even a 128K Macintosh. With most of the current stand-alone language implementations, you needn't exit to the Finder after using each tool. A Transfer menu lets you go directly from one tool to another and may even offer a compile-and-go option that automatically launches all the tools needed to prepare an executable version of the program.

At the opposite end of the development spectrum are the integrated environments. In such an environment, one window may show the text of the program currently under development, while another displays debugging information for the program and a third shows the program's own window. Interpreted languages—such as most BASICs, LISPs, and Logos—are most often associated with integrated environments.

Programming is usually much more interactive when you can use an integrated environment. Recently, integrated environments for compiled languages such as *Lightspeed Pascal* have begun to appear.

The advantages of using an integrated environment include good symbolic debugging capabilities—being able to trace the flow of control or monitor the values of certain variables, for example, without rewriting the program. In addition you can usually make a small change and observe its effects in the running program very quickly. One disadvantage to using an integrated environment is that you are pretty much stuck with the basic tools provided by the vendor; you can't shop around for a better editor.

A shell environment is a compromise between the previous two approaches. Shell environments offer good features for professional applications development. Different vendors can provide competing tools for a shell; *MPW* and competing *MPW* compilers for some programming languages are already available. The *MPW* shell is currently the most customizable of the programming environments for the Macintosh, which may well explain its popularity among professional programmers.

VIP programs will never fail to execute, although (as with any other programming system) they may produce unexpected results. VIP is definitely a Macintosh-specific methodology; its primitives include calls to the ROM routines that are responsible for the familiar Macintosh user interface. VIP is interpreted and thus has the advantage of being interactive. In addition, VIP can produce a pseudocode version of your program that can be compiled in C to create a faster stand-alone application.

FORTH: "I won't have to read this again, anyway."

A special kind of interpreted language, FORTH creates programs that are usually much faster than those written in other interpreted languages, such as BASIC. FORTH encourages modularity at the routine level. Extending the programming language through the addition of user-defined terms is key to FORTH.

Regular FORTH users tend to be fanatical adherents of the language, but if you decide to take up FORTH, make sure you document your programs. Poorly documented FORTH can be almost impossible to decipher later when it has to be repaired or enhanced.

An interesting variant of FORTH is Neon, which has some of the object-oriented features of Smalltalk.

APL: "I also read hieroglyphics."

APL may win the award for the language least readable by novices, since it uses many symbols that

aren't used in English or any other spoken language. But because APL includes many complex actions as built-in procedures, these constructs can be easily used to accomplish many tasks. For example, a matrix inversion that might require many lines of Pascal or C code can be accomplished with a single line in APL.

APL is useful to the programmer who must create many small utility programs, each of which will be used only once or a limited number of times. APL is less useful for creating commercial applications, because APL programmers tend to write superficially simple routines that demand a great deal of CPU time, which results in a computationally expensive program.

Smalltalk: "It's got to do a lot, but it doesn't have to run fast."

Smalltalk is a development tool well suited for building large bodies of related utility programs for in-house use. Rather than building applications, the Smalltalk programmer modifies the environment to provide new features. The approach is useful for exploratory programming, and newer implementations may not make the language suitable for building stand-alone applications.

LISP: "Lost in silly parentheses"

LISP and Logo are functional programming languages. Every defined routine must return a value when it is called. This contrasts with procedural languages, such as C and Pascal, which have procedures as well as functions.

The basic unit of data in LISP is the list. LISP adherents sometimes point out that real-world application programming has a much greater need for list manipulation than for more structured constructs like arrays. In a simple utility program, if you know exactly how many data elements will be considered, a closed array structure is entirely adequate for representing them. In more complex applications, however, it is hard to determine in advance how much data will be used by the program, so a list would be appropriate.

LISP may be best suited to the design and prototyping phases of a project—the point in the process when you're not quite sure what you want to do. It is also the most commonly used language in artificial intelligence studies (despite the enthusiasm of the Prolog crowd) and is a good choice if your primary goal is to study classic AI methods.

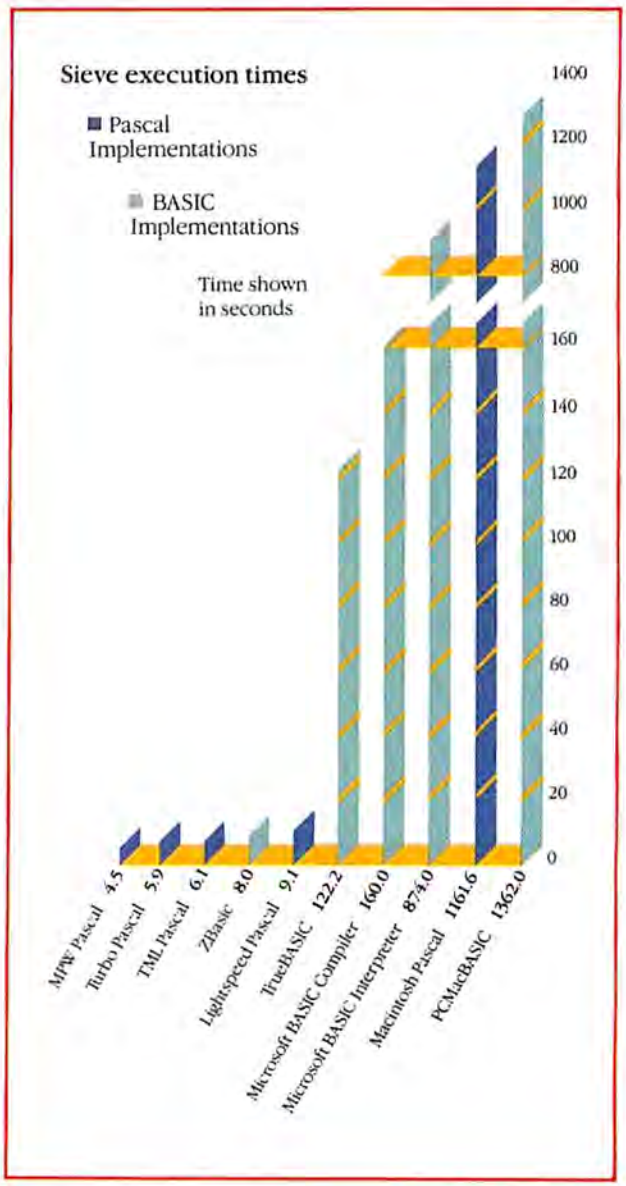
Logo: "A home for LISP heretics"

Logo is often thought of as a language that's used to teach children programming. While it does serve that function, it is also a powerful programming language—essentially a more readable LISP with a simple graphics programming model. In Logo you draw by writing routines that move a graphics pen (usually called a *turtle*) around the screen. The set of graphics commands is called *turtle graphics,* and can be found in some implementations for other programming languages, such as *ExperLisp* and *UCSD Pascal.*

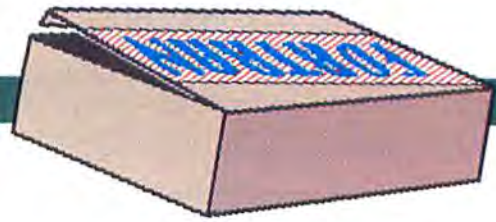
Although it has many of the attributes of LISP, Logo has so far achieved success only as an introductory programming language. Probably one reason it has not been used for applications is that it has always been implemented with interpreters.

Prolog: "Programming is just logic."

A Prolog program consists of numerous factual statements and a number of rules that describe the re-



Sieves Compared
Comparison of BASIC and Pascal compilers and interpreters running the Sieve of Eratosthenes. Depending on which language and which implementation you use, you can end up with widely varying results.



Features to Look For

Languages designed to improve program reliability–sometimes at the cost of programmer convenience–provide such features as modularity, enforced data typing, information hiding, and readability.

A language's modularity is the extent to which it encourages programs to be split into independent portions. All the modern languages support the definition of procedures or functions that can be called by their defined names. A more elaborate support for modularity encourages the programmer to develop packages of related routines that are stored in separate files and can be reused in different programs. Modula-2 provides an excellent example of this kind of program modularity.

Some languages are called *object oriented* because they improve modularity by grouping subroutines with the kinds of data elements to which they can apply. You define object classes by describing the structure of the data elements associated with an object of a given type and by defining the procedures associated with such objects. In a drawing application, for example, the class RoundRectangle might be defined as a subclass of the type Rectangle, with its own special data elements for describing the curvature of its corners. It would have its own procedures for drawing and for storing its data elements but would inherit methods and data from the parent Rectangle class. Smalltalk is the language that most completely follows the object-oriented paradigm.

Recently, new implementations of many conventional programming languages have extended language definitions to encompass object-oriented programming approaches. Such hybrid object-oriented languages include Object Pascal (implemented in *MPW Pascal* and *TML Pascal*), Common LISP (available in *ExperCommonLisp* on the Macintosh), Object Logo, and *Neon* (an object-oriented extension of FORTH).

Data typing is a feature that lets you make up new kinds of data elements. In Pascal, for example, you can invent a new type such as GradeBookEntry, consisting of a StudentName string and a LetterGrade character. If you have a number of variables that are declared to be of the type GradeBookEntry, then you can assign the value of one such variable to another (NewEntry := OldEntry), just as you would with simple data types such as integers, characters, or real numbers. In enforced data typing, the language compiler or interpreter makes sure that only values of the defined types can be assigned to variables declared to be of those types. Enforced data typing helps ensure that programs are correct so that they don't behave unexpectedly (as they sometimes do when a variable that is meant to hold one kind of value–such as ScreenWidth–is assigned some other kind of value–such as Red). All programmers find that they sometimes want to override strict typing. Most implementations of languages with strict data typing allow the programmer to bend the rules by explicitly demanding a data-type conversion. However, some programmers don't like enforced data typing and would rather be left alone to make their own mistakes.

Information hiding refers to the idea that a programmer should be able to use defined routines and data types without knowing all the details of their internal structure. The advantage of information hiding is that confusing details can be ignored by the programmer working on a specific task. If you don't have access to the details of a particular utility routine, you're less likely to write a program that depends on some obscure side effect of the routine. Consequently, your program is more likely to work correctly even when the utility routine is modified (perhaps as part of a ROM upgrade).

To some extent readability is in the eye of the beholder. For new programmers, languages in which most of the reserved words are taken from English are likely to be more readable than those languages that use more obscure terms or symbols. By this measure, BASIC, Pascal, Modula-2, and Logo are readable, and C, Assembler, LISP, FORTH, and APL are less readable. Readability for novices may not be the most important characteristic of a language, since the terminology and constructs of a language are likely to seem natural and readable after a few weeks of regular use. In exchange for English-like readability, languages like C and APL provide greater succinctness, saving typing time during program entry.

Readability also involves a subtler issue. Programs written in certain languages are difficult for even their own authors to read a few weeks after they're finished. FORTH, for example, is sometimes referred to as a WORN language: "Write Once, Read Never." (In fairness, a number of impressive Macintosh applications have been done in FORTH.)

lationships among those facts. Prolog responds to a query by checking for a statement of fact or, failing that, for a rule that would permit deriving the possible fact. If no facts return true, then the program returns false.

Prolog is sometimes referred to as a declarative language, in contrast with procedural languages like Pascal and C. When using a procedural language, the programmer is concerned not only with relationships among data but also with the flow of control within the program. In a declarative language, only the relationships among the data elements are the programmer's responsibility, not the flow of control.

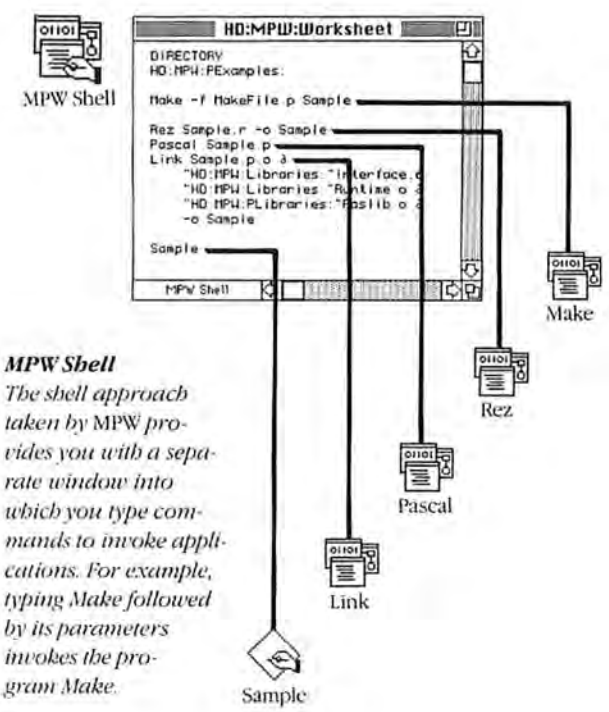
Application Shells

Application shells, source code examples, and libraries can provide tremendous value for the user of a language implementation. Source code libraries such as the Programmer's Extender—available for several implementations of C and Pascal—show you how to create particular Macintosh user-interface features, and they provide a foundation for complex programming efforts such as database systems. An application shell such as *MacApp* goes further by letting you implement most Macintosh user-interface features without having to understand how those features are coded.

MacApp has great potential for building full-featured Macintosh applications quickly. Normal interaction with desk accessories, full support for printing, automatic checking for out-of-memory problems, correctly displaying information on screens of different sizes, and many other features are automatically provided by *MacApp*.

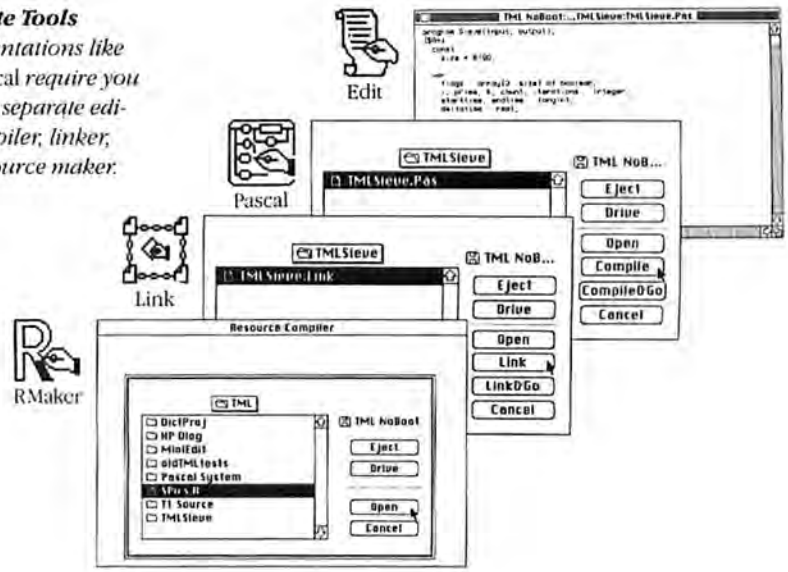
It makes more sense to ask who shouldn't use *MacApp* to develop applications than to ask who should use it. *MacApp* is not an ideal environment for programming novices. And at the other extreme, some experienced applications developers won't use *MacApp* if they've already created their own extensive libraries. But for the many developers who don't fit into either of these two groups, a *MacApp* application should run more quickly than one coded from the ground up. □

See *Where to Buy* for product details.



MPW Shell

The shell approach taken by MPW *provides you with a separate window into which you type commands to invoke applications. For example, typing Make followed by its parameters invokes the program Make.*



Separate Tools

Implementations like TML Pascal *require you to run a separate editor, compiler, linker, and resource maker.*

Integrated Environment

Lightspeed Pascal *provides its own environment from which you can edit, compile, link, and run programs.*

Acknowledgment

The author would like to thank David Wilson for reviewing and commenting on this article.

Reviews

AppleShare Revisited

***AppleShare** 1.1*

File server. ***Pros:*** *Easy to install and use; makes full use of Mac interface; wide variety of security access privileges.* ***Cons:*** *Requires dedicated Macintosh; access time is slower than with local hard disk.* ***List price:*** *$799.* ***Requires:*** *1MB.* ***Copy protection:*** *None.*

Will *AppleShare* capture the lion's share of the file server market? It's reliable, easy to install and use, and–let's face it–carrying the Apple name doesn't hurt. Nevertheless, after talking to numerous *AppleShare* users, I found that *AppleShare* is not altogether flawless. Some of the drawbacks of version 1.0 have been addressed by 1.1; others have been solved by third-party developers. Some work is still in order, however, if *AppleShare* is to become an ideal file server.

AppleShare requires a dedicated Mac and at least one hard disk (called a *volume*) as a central repository for information shared by a group of people. The file server's applications and documents are accessed by individual Macs, or workstations, via an *AppleShare* desk accessory. A network administrator controls network-wide access privileges, while individual users set access privileges to their own documents and folders. (For a detailed description of *AppleShare,* see "AppleShare–Multifaceted Networking," *Macworld,* March 1987.)

Although Centram's *TOPS,* Infosphere's *MacServe,* and General Computer's *HyperNet* also allow networked Macs to share information, *AppleShare* is the first server to offer extensive control over file access privileges. Another plus is *AppleShare*'s excellent implementation of the Macintosh user interface, allowing quick mastery of the basics of file sharing and access privileges. In general, *AppleShare* is a well-designed file server. But file servers are new to the Macintosh world, and several months of use have brought some problems to light.

The Needs of the Many

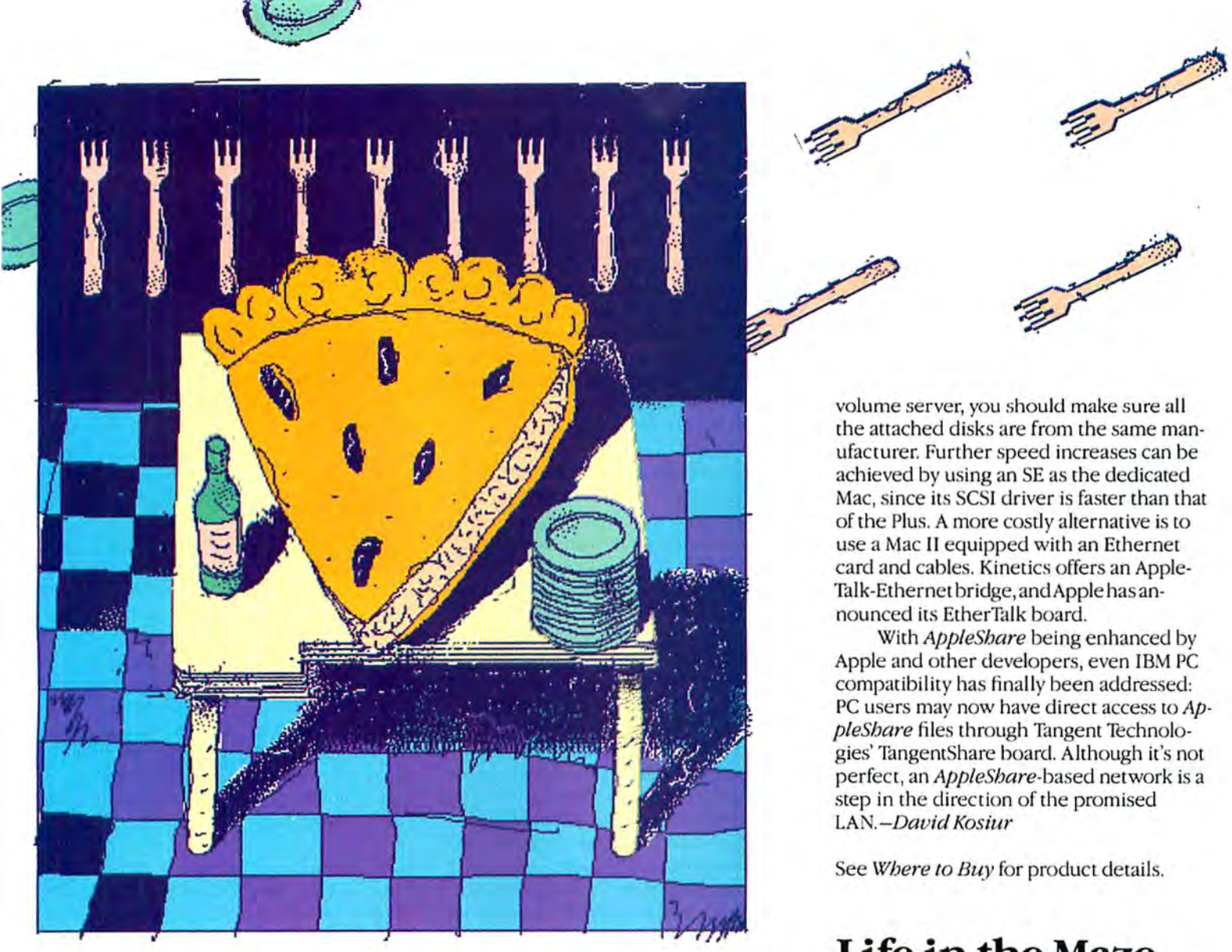
Installation of *AppleShare* requires careful planning on the part of the network administrator. The flow of information should be analyzed to determine who should be assigned to particular groups (departments, project teams, and the like). Since file access privileges are assigned by group, if a network administrator approaches these assignments in a haphazard fashion, certain users might be denied access to files they need.

Even a well-planned system will require some adjustments. The administrator can change the privileges for any folder on the server but must shut down the server to do so. Unfortunately, no matter how meticulous an administrator is about assigning access privileges, network users can make mistakes. For example, if a user forgets to assign access privileges to a private folder, no one else can read its contents. Problems can also occur if a user renames a folder or places a general-access folder inside a private folder. Such problems can be alleviated by making sure all users understand the basics of file server operation.

Launch Logistics

AppleShare allows more than one user to work with a document simultaneously. However, many current Mac applications are not sophisticated enough to recognize that the same file is being edited by two users and that both sets of changes must be saved. Normally, only the changes of the last user to save a document are kept. To avoid this problem, some applications simply deny subsequent users editing privileges once the first user opens a file. However, a better solution lies in *multiuser applications,* which allow several users to change a file simultaneously. Only a few multiuser applications are currently available for the Mac (Blyth Software's *Omnis 3* and Odesta's *Helix* offer multiuser versions, for example). The proliferation of networked offices will no doubt spur other developers into creating multiuser applications.

In addition to problems with sharing documents, network users may also encounter difficulties in sharing applications. Some programs (*MacWrite,* for example) were developed as *single-launch applications,* so opening a second copy of the program presents a conflict. In such cases, storing extra copies of the application in different privileged folders allows *AppleShare* users to open multiple copies simultaneously. This dilemma can also be solved by launching applications from workstation drives rather than storing them on the server. Many programs are *multilaunch applications,* which allow several people to open and use a single copy stored on the server, posing no problem for *AppleShare.* (However, users of 512K workstations can't share multilaunch applications.) Unfortunately, there's no easy way to tell for certain whether a program is single- or multilaunch. (A tip: if multiple copies of a program can be run simultaneously with *Switcher,* the program is probably a multilaunch application.)



Enhancements by Apple

Although the cost of purchasing a dedicated Mac to run *AppleShare* may seem prohibitive, with its upgrade to version 1.1 Apple has attempted to further distribute the cost by increasing the number of workstations supported from 25 to 50. The new version also allows users to cut costs by using a Mac II without a monitor as the file server (a monitor must be attached when the network administrator installs or updates *AppleShare*). Version 1.1 further enhances the utility of the server Mac by supporting concurrent applications such as Apple's *LaserShare* print spooler and various electronic mail packages (only one concurrent application may be installed at a time, however). Finally, version 1.1 reportedly crashes less frequently than its predecessor when a workstation is disconnected from the network.

Performance Tips

Whenever a server is installed on a network, there's always concern about speed. Server performance is a function of networking speed, network traffic, and disk access speed. Large work groups using *AppleShare* have complained of the degradation in server response as the number of users increases. This is caused as much by the AppleTalk network as by the *AppleShare* server. Some companies have found that 10 to 12 users on a network is optimal, even when sharing applications stored on the server. As more users are added to the network, slowdowns become more noticeable.

One of the most important factors in optimizing *AppleShare* is the selection of a fast hard disk for connection to the Mac's SCSI port. Tests have shown that the speed of the file server's disk has the greatest effect on server reponse. To guarantee best *AppleShare* performance with a multi-volume server, you should make sure all the attached disks are from the same manufacturer. Further speed increases can be achieved by using an SE as the dedicated Mac, since its SCSI driver is faster than that of the Plus. A more costly alternative is to use a Mac II equipped with an Ethernet card and cables. Kinetics offers an AppleTalk-Ethernet bridge, and Apple has announced its EtherTalk board.

With *AppleShare* being enhanced by Apple and other developers, even IBM PC compatibility has finally been addressed: PC users may now have direct access to *AppleShare* files through Tangent Technologies' TangentShare board. Although it's not perfect, an *AppleShare*-based network is a step in the direction of the promised LAN.—*David Kosiur*

See *Where to Buy* for product details.

Life in the Maze

Maze Wars+ 1.1

Network arcade game. ***Pros:*** *Fast and absorbing; real-time play against multiple opponents; good graphics and digitized sound effects; lots of fun.* ***Cons:*** *Unchallenging for single player; performance degrades when more than five or six players occupy one maze level.* ***List price:*** *$49.95 for two players, site license $20 per node.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

You may have been led to believe, dear knowledge worker, that the modern office has become a bastion of professionalism and good behavior. Networked in unison, you pursue excellence—fulfilling your responsibilities in the seamless perfection of decentralized work groups. Tranquilized by the bluish flicker

ILLUSTRATIONS BY MARK ULRICH

of your Macintosh screen, you may not have recognized the familiar pecking order of authoritarian managers, backbiting colleagues, and obsequious assistants. But why mince words when I can recount how a simple game exposed the dark side of my own co-workers, the editorial staff of *Macworld*.

Nature of the Game

MazeWars+ is an arcade-style game that can be played over an AppleTalk network by up to 30 people. Players hunt each other relentlessly through a shared maze, trying to destroy each other with missiles. Every time you're annihilated, you send a message over the network (usually inflammatory, like "drop dead, worm eye"), after which you're resurrected. The object of the game is to build up the best win/loss ratio.

Each player assumes a name (such as "The Terminator") and chooses one of five appearances: an eyeball, a boot, a taxi, a standing arcade game, or a Macintosh. As they scurry through the maze, you can see the front, back, and profile of other players' characters. In addition to your main character, you can also use a Robot Sidekick to battle network opponents or play against yourself. Using a robot against other players usually erodes your win/loss ratio, though, because it's difficult to defend two characters at once. However, when you're first learning the game, the robot is useful as a practice opponent.

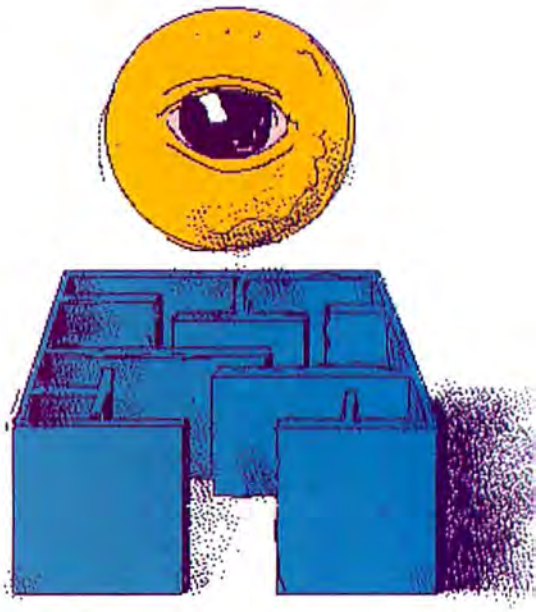
You control your character or robot with either the mouse or the keyboard, but you'll find the mouse a real handicap when competing against players who use the keyboard. Moving into a teleporter booth, indicated by a small circle, transports you to another random location in the maze. Firing into teleporter booths peppers the maze with random shots.

Cast of Players

One day someone at *Macworld* proposed that playing *Maze Wars* might be a good way to get more people to use the network, and at the same time boost staff morale. Little did anyone realize how a seemingly harmless game could expose our atavistic personalities. We should have known better when our screens showed us a maze that resembled all too closely the labyrinth of cubicles that forms the *Macworld* editorial office.

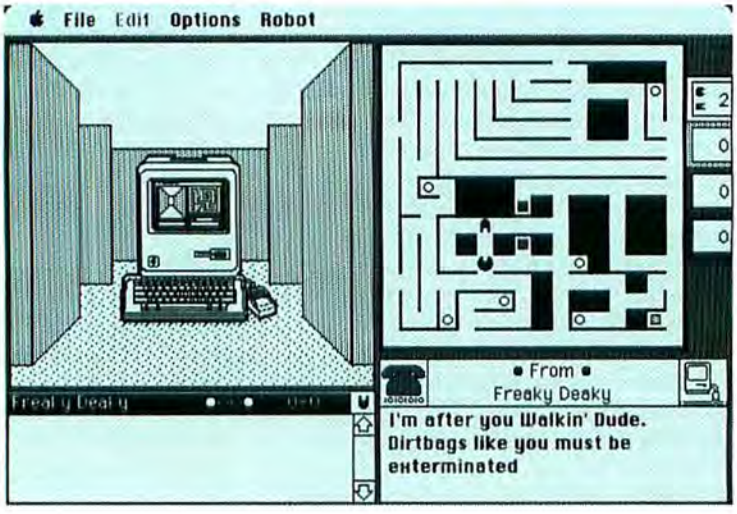
As each of us wound through the maze engaging in an endless struggle of destruction and rebirth, we began to recognize disturbingly familiar characteristics in the behavior of our game personas. It began when we noticed how Copy Editor Cathy "The Tarantula" Abes would hide behind a corner until a passerby exposed an unprotected flank, at which point she would incinerate the poor devil without hesitation. I've noticed the same sadistic delight when she uncovers a stylistic mistake in one of my articles. Another Copy Editor, Felicity "Vanna" O'Meara, seemed to revel in confrontation, darting out to surprise opponents with face-to-face attacks before they could respond quickly enough to meet her missile salvo. And I suppose it was a coincidence that Editorial Assistant Otto "Walkin' Dude" Waldorf trounced his prey one by one, as each was locked in a mindless standoff with an enemy.

As we explored some of the game's options, other staff idiosyncrasies soon emerged. When we activated the Maze Black-out option, which blacks out other players' overhead view of the maze for a couple of seconds each time someone enters a teleporter booth or an elevator, Assistant Editor Valerie "The Void" Kuletz took the opportunity to repeatedly enter the maze teleporters. We then chose the 4 Mazes option, which adds three new levels to the maze (each with a different floor plan) and connects those levels with elevators. Technical Editor Dave "Voltron" Ushijima, keeping his characteristic low profile, slipped off unseen to the backwaters of a remote level and familiarized himself with its convolutions. When other players began to explore these regions, Dave systematically eradicated the less-knowledgeable players with what one might call "technical" proficiency.



The battle quickly escalated. At one point 16 staff members were waging countless office vendettas. With so many players, especially on a single level, there was a noticeable degradation in performance. Some players experienced lapses, during which it was impossible to move or fire for several seconds. At any rate, what had begun as a novel idea for raising staff morale ended with an office full of awakened suspicions. But we did have fun—and where games are concerned, fun is always more important than professionalism.

—Adrian Mello



View of the Maze
As you play Maze Wars+ *you see two views of the maze: a three-dimensional ground view (left) and an overhead view of the current maze level (right). You can encourage use of the ground view by having all players enable the Stationary Radar option, which lets a player see opponents only when that player is standing still.*

See *Where to Buy* for product details.

Key Replacements

PC MacKey

Replacement Macintosh keyboard. ***Pros:*** *Easy to set up and use; good placement of Caps Lock key.* ***Cons:*** *No macro utility included; poor labeling of ⌘ and Option keys.* ***List price:*** *$120 (with software).* ***Requires:*** *128K; PC MacKey software 2.2.* ***Copy protection:*** *None.*

Mac-101 *3.21*

Replacement Macintosh keyboard. ***Pros:*** *Macro utility included; extra cursor and function keypads; Cancel key.* ***Cons:*** *Inconvenient placement of Caps Lock key.* ***List price:*** *$169.95 (with software).* ***Requires:*** *128K; Mac-101 software 1.0.* ***Copy protection:*** *None.*

The 128K Macintosh keyboard with its clunky feel, small Return key, and lack of function and cursor keys may have contributed to the business community's perception that the Mac wasn't a serious personal computer. The expanded Mac Plus keyboard offers more functions (a numeric keypad and cursor keys were added and the return key was enlarged) but has other problems (the tiny right Shift key, for example). Although Apple introduced new keyboards for the Macintosh II and Mac SE with function keys and improved key action, these new keyboards aren't compatible with the Macintosh 512K or the Mac Plus. Fortunately, Tangent and DataDesk offer keyboards that improve on Apple's keyboards for the older Macs. (DataDesk International also plans to offer keyboards for the Macintosh II and SE.)

PC MacKey

Tangent Technologies' PC MacKey plugs into the Mac with its own cord. This keyboard is over 3 inches wider and 2 inches deeper than the keyboard that comes with the Mac Plus—most of the extra width is taken up by two columns of extra keys on the left, labeled F1 through F10. Built-in pegs pop out underneath the back to tilt the keyboard slightly.

To quote the brief manual, the control keys are in the "industry-standard IBM format," with the ⌘ key labeled "Ctrl" and the Option key labeled "Alt." Although you learn which is which after a short while, I would have preferred the Apple labels. The numeric keypad also differs from Apple's, with four peripheral keys—plus (+), asterisk (*), slash (/), and comma (,)—which double as cursor controls. The Caps Lock key is well placed, out of the way, below the right Shift key. A green light above the numeric keypad glows when Caps Lock is active.

Mac-101

DataDesk International's Mac-101 Enhanced Keyboard shares some of its competitor's features; Mac-101 has the same size and shape, a numeric keypad on the right, and pop-out pegs underneath. The

FRED STIMSON

Tangent Technologies' PC MacKey (top) and DataDesk International's Mac-101 Enhanced Keyboard.

main keyboard layout of the two keyboards is similar, except that Mac-101 offers two sets of Option and ⌘ keys—one on either side of a narrower space bar. The Caps Lock key is located above the left Shift key, where it's easy to hit by mistake.

There are major differences between the keyboards, though. The Mac-101's 15 function keys (5 more than on the PC MacKey) are arranged in a single row at the top. The keyboard also provides two extra mini-keypads to the left of the numeric keypad: the upper one consists of six keys (Paste, Home, Page Up, Cut, End, and Page Down), while the lower sports four cursor keys in an inverted-T arrangement. Finally, there's a single key labeled "Cancel" at the top left. Pressing this key activates the familiar Macintosh ⌘-. (period) cancel sequence. All told, the Data Desk keyboard offers 17 more keys than the Tangent keyboard.

Key Functions

Even die-hard proponents of the Macintosh user interface admit that reaching for the mouse sometimes slows things down. Many applications take this into account by providing ⌘-(key) combinations for common menu selections (like ⌘-Q for Quit). Function keys go a step further by replacing multiple operations with single keystrokes.

To make use of PC MacKey's function keys, you must place a copy of a special file into the System Folder of your start-up disk; without this file, the function keys won't work, although the other keys will. Each function key carries two preset ⌘-(key) assignments: pressing F4, for example, is the same as typing ⌘-V (paste), while hitting the Alt key and F4 is the same as ⌘-S (shadow). Most of the keys in the numeric keypad carry extra labels ("Home," "End," "PgUp") that describe their functions in *Microsoft Word,* a feature that's not well covered in PC MacKey's documentation.

Function keys can't do much to reduce your workload if all they do is replace two-key combinations with single (or worse yet, double) keystrokes. To make full use of PC MacKey's extra keys, you can assign *macros* to them—sequences of multiple keystrokes and mouse movements. Used in conjunction with a macro utility like Affinity Microsystems' *Tempo,* PC MacKey works very well. The Mac-101 keyboard comes with its own macro utility in the form of a desk accessory called 101-Keys. Once installed (using its own installer program), 101-Keys lets you assign macros to all 15 function keys, the keys on the numeric keypad, and the two mini-keypads. Add the possibilities offered by using various combinations of the ⌘, Option, and Shift keys and you've got more than most users will ever need or remember. There's also a glossary feature to store abbreviations for frequently-used text. Mac-101's documentation does a good job of explaining the keyboard and the software, and a file of macros and a keyboard template for *Microsoft Word* are included.

The 101-Keys macros consist of sequences of up to 500 keystrokes, including other function keys (see "Assigning Macros"). Macros aren't limited to what you can type on the keyboard: you can assign menu selections and mouse clicks to function keys and include them in macros. (A menu item with a function key equivalent shows up in outline text, even if it already has a ⌘ key equivalent.) 101-Keys also lets you assign standard Macintosh window operations (including scrolling, zooming, and closing) to function keys. Using the 101-Keys glossary function, you can associate long sequences of text with one- or two-character abbreviations—the expanded form automatically appears when you type the abbreviation followed by a space.

101-Keys does suffer from a few problems. Creating complex macros is a painstaking process of chaining together strings of shorter macros, and it's easy to lose track of what you're doing. In addition, there's a serious bug that lets you insert a function key into its own definition, with unpredictable results. And the definition box where you enter macro and glossary sequences has some quirks: characters sometimes aren't erased completely or appear outside the box, and the lack of a scroll bar makes it hard to edit long sequences. (In all fairness, 101-Keys isn't meant to be a replacement for *Tempo;* in fact, you can use them together.)

Key Decisions

I found both keyboards to be a big improvement over the ones that come with the Mac and the Mac Plus. The keys have a softer touch, with a light click that you can both hear and feel, and the keyboards' low profile makes for a more comfortable hand position. By automating repetitive tasks, function keys increase your effective typing speed and efficiency.

With its lower list price, macro accessory, and extra keys, DataDesk's Mac-101 would be my first choice. But if the placement of the Mac-101's Caps Lock key bothers you, you might want to give Tangent's PC MacKey a try. Either way, your work will become easier and more productive.
–Franklin Tessler, M.D.

Assigning Macros
Two function-key assignments (Save and Page Preview) have been combined into one macro and assigned to function key F15. Because standard Macintosh fonts don't include function-key characters, 101-Keys displays them using a custom font.

See *Where to Buy* for product details.

Riding the Desktop Express

***Desktop Express** prerelease*

Communications software for MCI Mail and Dow Jones News/Retrieval Service. ***Pros:*** *Simplifies MCI Mail and Dow Jones access with icons and menus that reduce typed commands; allows exchange of Macintosh documents; includes text editor.* ***Cons:*** *Poor error handling when sending mail to MCI address with multiple mailboxes.* ***List price:*** *$149. Includes MCI Mail mailbox for one year, and password to Dow Jones News/Retrieval with one hour free connect time.* ***Requires:*** *512K memory, 800K disk space, Hayes-compatible modem.* ***Copy protection:*** *None.*

What do you get when you combine MCI Communications, Apple Computer, and Dow Jones? No, not discount phone rates for counterculture stockbrokers. You get *Desktop Express,* a software package that adds a Mac facade to MCI Mail and Dow Jones News/Retrieval Service.

Desktop Express is a recent entry in the category of humane telecommunications software—programs that use the mouse, menus, and icons to rescue you from typing arcane commands that only a cryptographer could love. Currently it shares this category with one other product, *OfficeTalk,* an electronic mail service and desktop publishing service bureau (see *Reviews, Macworld,* September 1987).

Desktop Express is different, however. It isn't a telecommunications service in itself, but a program that simplifies access to MCI's popular electronic mail service and Dow Jones's business-oriented information service by providing an on-screen desktop with an In Box, an Out Box, and icons for writing memos and sending documents (see "MCI Mail, Macintosh style"). When you click a button labeled Send/Receive, *Desktop Express* signs on and controls MCI Mail and Dow Jones by sending commands you'd normally type.

That's useful enough, but it isn't all *Desktop Express* can do. With a conventional communications program such as *MicroPhone* or *Smartcom II,* MCI Mail subscribers are limited to sending and receiving text-only communiqués. With *Desktop Express* you can send electronic mail along with Macintosh graphics. Users can share, view, and print documents created with any Mac application, even if the recipient does not have that application, by means of the image-saver driver included with *Desktop Express.* This means you can exchange documents such as *Excel* worksheets, *MacPaint* graphics, and *PageMaker* publications with other *Desktop Express* users. You can also trade fully formatted word processing or spreadsheet documents with IBM PC users who run *Lotus Express,* another program that streamlines MCI Mail access.

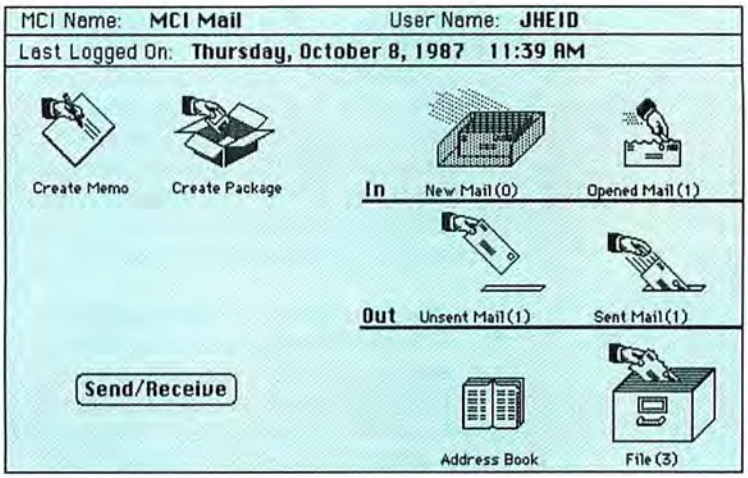
Furthermore, *Desktop Express* documents can be delivered to recipients who don't own a Mac. MCI has LaserWriter print sites throughout the United States. If you send your correspondence to a street address, MCI will route your document to one of its print service centers and then deliver it by overnight courier. (Overnight courier delivery costs $8.00; two-day postal delivery costs $3.00.)

Post Office

To appreciate the program's ease of use, consider the steps involved in a typical *Desktop Express* session—first write a letter, then tell *Desktop Express* to send it. Double-click the desktop's Create Memo icon to summon *Desktop Express*'s built-in text editor. Lacking search-and-replace and formatting features, the editor is no word processor, but it does have word wrap-around. That makes it superior to MCI Mail's editor, which requires that you press Return at the end of each line and retype an entire line to fix an error.

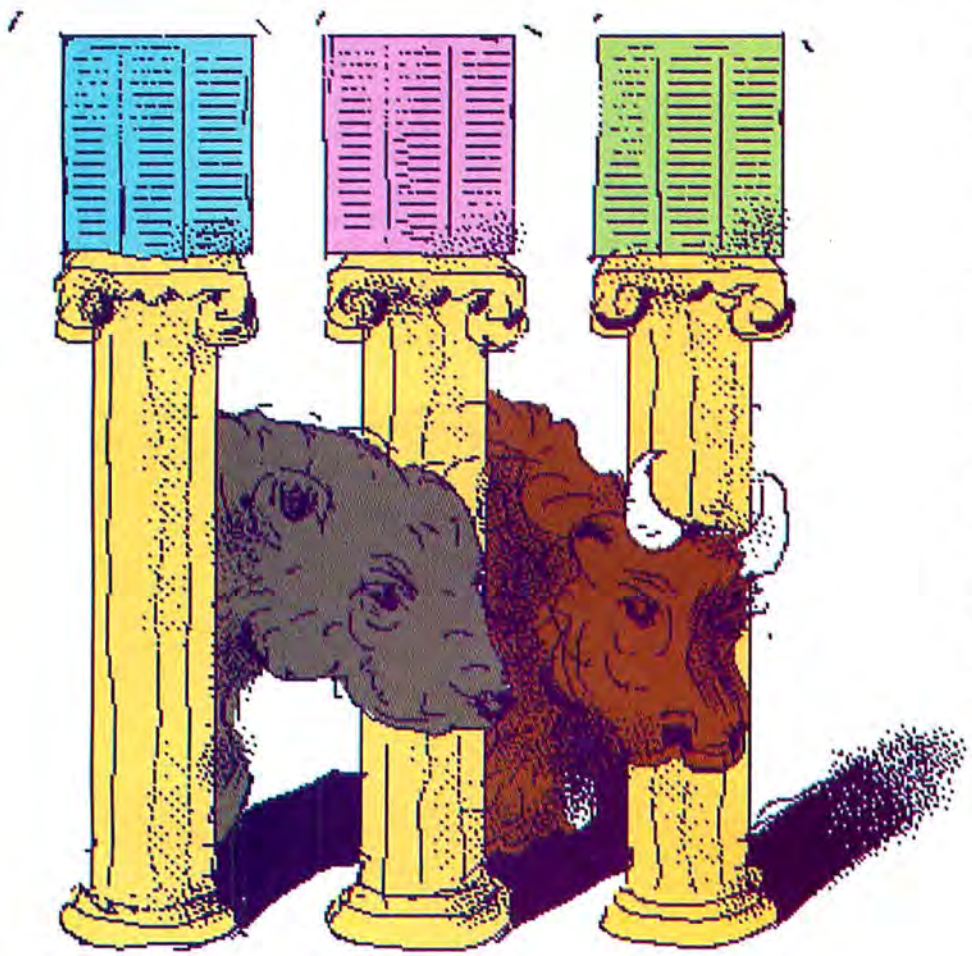
After typing a letter, click the editing window's Address button to display the address book—a list of potential correspondents whose MCI Mail, postal, or Telex addresses you enter and modify by double-clicking the desktop's Address Book icon. (If you specify Postal, MCI Mail prints the letter on a LaserWriter at the MCI Mail print site closest to the recipient, then delivers the hard copy overnight.) Next, select each recipient's address book entry and click OK. When the desktop reappears, the Out Box's Unsent Mail icon shows any letters remaining to be sent. Sending a Macintosh document involves similar steps, except that you double-click the Create Package icon instead of Create Memo, then choose the document to be sent in the subsequent dialog box.

After you've created and addressed your mail, you send it by clicking the desktop's Send/Receive button. *Desktop Express* signs on to MCI Mail, retrieves any new mail, sends your outgoing correspondence, then signs off. If you have received mail, you can double-click the In Box's New Mail icon to read it. The whole process of composing, addressing, sending, and reading mail relies on the mouse and on *Desktop Express* icons and menus, relegating the keyboard to the job of text entry. That graphic and intuitive approach is what using the Macintosh is all about, and it's been missing from Mac telecommunications for too long.



MCI Mail, Macintosh Style
Desktop Express's *menus and icons allow access to MCI Mail without typing commands. The In Box and Out Box icons let you review mail you've received and sent. An address book holds your electronic pen pals' MCI Mail, postal, or Telex addresses.*

Desktop Express also simplifies access to Dow Jones News/Retrieval by providing several menu commands that take you to Dow Jones's various services, such as world news, current stock quotes, or historical averages. *Desktop Express*'s mouse-and-menu facade doesn't hide Dow Jones's text orientation as completely as it does MCI Mail's, but the program does eliminate memorizing and typing the most frequently used Dow Jones commands.



Addressing a Flaw

Desktop Express does have one major weakness. On MCI Mail, an address can have numerous mailboxes within it; a company named Acme Services, for example, might have an address called ACME containing ten mailboxes, each for a different employee. In such cases, you must supply the specific address for the person you're trying to reach.

The problem occurs when you don't know that address. When you're accessing MCI Mail with a conventional communications program, you type the company address, ACME, and then MCI Mail lists the ten mailboxes and asks you to choose one. *Desktop Express,* however, simply displays an error message saying, "More than 1 MCI Mail user matches recipient information," then disconnects. The program should display the mailbox addresses, ask you to choose one, then continue the session. Your only alternatives are to connect to MCI Mail conventionally to find the address, or to call the recipient and ask for the mailbox address.

This flaw aside, *Desktop Express* does an impressive job of making MCI Mail look and work like a Macintosh application. Even if you're an MCI Mail veteran who's used to typing its commands, you'll appreciate *Desktop Express*'s address book, text editor, and ability to send and receive Macintosh documents.—*Jim Heid*

See *Where to Buy* for product details.

More Than Just an Upgrade

***SideKick** 2.0*

Desktop Organizing Program. ***Pros:*** *Unique spreadsheet and outliner desk accessories.* ***Cons:*** *Some large DAs may use too much disk space for floppy-disk-based systems.* ***List price:*** *$99.95; $34.95 for registered* SideKick *owners.* ***Requirements:*** *512K or Mac Plus with one disk drive.* ***Copy protection:*** *None.*

Borland's *SideKick* began life on the IBM side as a linked set of desk-organization programs residing in RAM alongside the primary application. A set of hefty desk accessories, *SideKick* on the Mac was one of the first major crossovers (see "Accessories to the Facts," *Macworld,* March 1986). But, because the Mac System and Finder already took up the better part of a 400K disk, running *SideKick* almost precluded using anything else at the same time. Disk space is no longer a Mac problem, however, and Borland has released a *SideKick* 2.0 that leaves its PC cousin in the dust. Not only have the original desk accessories been upgraded, but the package now includes a fully functional spreadsheet and an excellent outliner.

Organization of the Organizer

Designed to be there when you want it, *SideKick* 2.0 for the Mac consists primarily of a set of 11 desk accessories, some related utilities, and a base application called the SideKick main display. The main display is dominated by a telephone-number database sortable by name, company, or category (see "The SideKick Main Display"). This is a program designed for people who conduct a large part of their business by phone and need to be able to account for their online time. *SideKick* automatically dials selected numbers, logs online time, calculates consultation charges, tracks long-distance rates, and creates a time-stamped record of each call. While talking to a client you can jot down notes in the Phone Notes window; they will be appended to the call log automatically. The resulting log can be sent to a word processing program for reformatting or printed out by *SideKick*'s PrintManager utility.

The Original Accessories

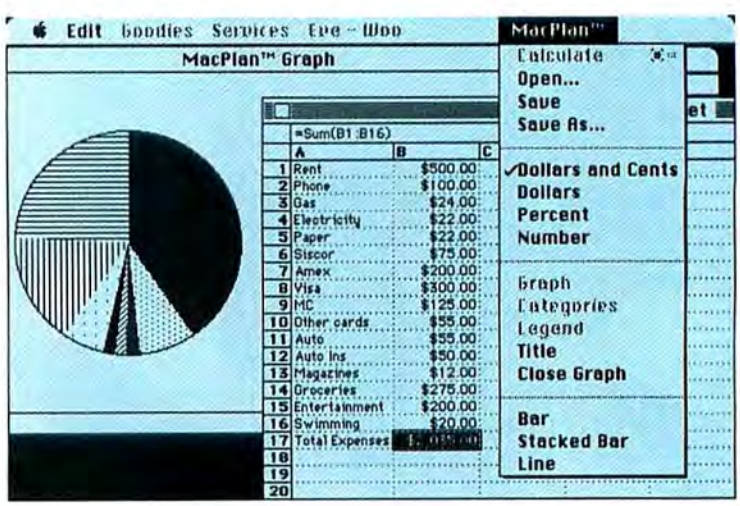
SideKick 2.0's organizational desk accessories are MacDialer, MacTerm, Notepad+, Area Code Lookup, MacClock, CalendarBook, QuikSheets, Calculator+, ReadiPrinter, Outlook, and MacPlan.

MacDialer is an abbreviated DA implementation of the main display application. MacTerm is *SideKick* 2.0's terminal DA; it runs at 300, 1200, or 2400 bps and now supports Xmodem and MacBinary file-transfer protocols. MacTerm is compatible (via the Clipboard) with Notepad+, *SideKick* 2.0's generic text editor. Area Code Lookup does just that. It's a shame this useful item wasn't built into the MacDialer accessory, saving a valuable DA slot. CalendarBook is an appointment calendar that can be viewed one month at a time, with a daily note page, or in a Week-at-a-Peek format, which displays the note pages for an entire week simultaneously.

One of *SideKick* 2.0's more interesting features is QuikSheets, a set of interactive lists. QuikSheets consists of documents made up of cells that can be defined as one of three different types: text, time, or numeric. As text, the cells may be used in conjunction with automatic check-off boxes to indicate the stages of a project's completion. Time cells interact with the Mac's internal clock to set off preprogrammed alarms. And numeric cells do simple calculations. With QuikEditor, another stand-alone utility, you can create as many as 21 different customized lists.

The New Additions

Formerly marketed as *Click-On Worksheet,* MacPlan is a new full-featured spreadsheet in desk accessory form. MacPlan looks and behaves much like Microsoft's *Multiplan* (see "Spreadsheet at Your Fingertips"). Unfortunately, it doesn't open *Multiplan* or *Excel* files, although spreadsheet information from those programs can be transferred through the Clipboard. MacPlan has 20 columns and 50 rows; it offers a built-in chart-making function featuring bar, line, stacked-bar, and pie charts; and it's there whenever you need it. This program was efficient when it was mar-



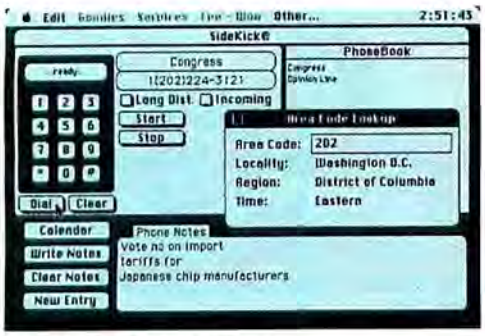
Spreadsheet at Your Fingertips
With the MacPlan desk accessory, you can run a column of figures or create a business graphic without leaving your current application. It's not Excel, *but it's there whenever you need it.*

keted as *Click-On Worksheet,* and it remains so today.

The other new program included with *SideKick* 2.0 is Outlook, an outliner that comes as an application or a desk accessory and functions identically in either format. I recommend the DA. It's like having *ThinkTank 512* under the Apple menu, and Outlook is fully compatible with *ThinkTank 512* files.

For those who have never used one, an outliner is a program that allows you to create headlines and subheadlines with attached text and graphics. Each headline and its attachments can then be manipulated as a unit, and these units can be ordered and reordered in priority, collapsed to view major topics, or expanded to reveal detail. Outlook is a very good outliner.

Outlook's small bent-page icons appear at each new level of an outline. The appearance of the icon changes to indicate whether the headline has attached text or graphics. Outlook supports the most



The SideKick Main Display
While dialing by keypad, keyboard, or a click on a phone book entry, you still have access to all the other SideKick *2.0 desk accessories as you make your calls.*

widely accepted forms of outline numeration: modern, mixed, standard, and short modern. A sort function reorders heads or subheads alphabetically.

Printing from within the program follows Macintosh guidelines and offers the option of including automatic running headers and footers. For presentations, there is also an option to print the headlines as a boxed chart.

Even if it offered just MacPlan, MacDialer, QuikSheets, and Outlook, *SideKick* 2.0 would probably still be the most useful desk-organization package available for the Mac.—*Eric Baldwin*

See *Where to Buy* for product details.

Masterpiece: Theatre It's Not

Masterpiece *2.42*

Professional financial planning. ***Pros:*** *Excellent financial planning reports; source code available.* ***Cons:*** *Weak documentation; marginal product design.* ***List price:*** *Version 2.43 $3500, or $1850 per module.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

Although you can't always identify experts by their tools, you can gain insight into their professionalism. *Masterpiece,* from Strategic Planning Systems, is a financial-planning and office-management system specifically designed for professional financial planners. It consists of two modules. The first includes over 60 *Microsoft Excel* templates and macros, which you use to enter financial information for a client and to print a detailed plan. The second, based on *Omnis 3 Plus,* is for office management in a financial-planning firm. You can use the two modules separately or together by exporting data from the financial-planning templates to the office-management module.

When you first load the financial planning templates with *Microsoft Excel,* the main menu appears. From here you can activate various modules, enter data for a client, print all or part of a financial plan, or export data to the office-management module. All the templates are macro-controlled and reasonably straightforward. You can enter a variety of detailed data about a client's assets and liabilities, income and expenses, as well as information for projections, like investment growth rates and the inflation rate.

The printed output from the financial planning module is comprehensive and detailed. It includes 23 separate sections, totaling almost 100 pages, that cover an amazing range of financial-planning considerations. General topics include a client's financial position, taxes, retirement plan, insurance, cash flow, and investments. The extensive reports make use of *Excel*'s formatting and graphing capabilities and look impressive enough to serve as finished exhibits. Formulas are often embedded in strings to produce custom-analysis paragraphs describing a client's specific position.

Managing the Office

The client/office-management module is useful, but awkwardly designed. It includes functions for client management and tracking, meeting scheduling and tracking, client billing, portfolio and other investment management (with commissions), income and expense tracking, and contact and mailing list management. You can export and merge name and address information with *Microsoft Word.* There are a variety of reports available, too numerous to list.

This module is designed to track day-to-day office and client activity, and it can also show a client's status at any time. Client information includes net-worth data, summary financial information, and a portfolio of investments. The primary report is a balance sheet summarizing a client's financial position. One command updates investment prices across all portfolios, while others track income and expenses for clients or other companies. The program provides an appointment calendar, a history of meetings, and a separate reminder function—just a few of *Masterpiece*'s practice-management capabilities.

The Good and Bad News

Masterpiece's origin is its strongest advantage, as well as its most serious flaw: it was created and documented by a certified financial planner, rather than a professional programmer and a technical writer. Although it provides comprehensive analysis and financial-planning reports, it's somewhat lacking in efficiency and clarity.

For instance, the client/office-management module is full of redundancies. There are two ways to track investments, three ways to manage time (reminders, meetings, and a calendar), and two ways to track income and expenses, with only minor differences between the duplicate functions. A professional software designer could have delivered the same functionality in a much simpler design.

Some other problems can be overcome by proficient *Microsoft Excel* users. How the templates fit together isn't initially apparent, and the process of setting up a client file may be confusing until you've done it a few times. Error handling is not nearly as thorough as it could be. Integrating the two modules is a far-from-seamless operation, and the overall user interface is a bit rough around the edges.

With only about 35 pages of explanatory material, the accompanying documen-

tation is pretty poor. The setup instructions are sketchy, virtually no instructions exist for operating the financial-planning templates, and there's neither an index nor a tutorial. The client/office-managment module provides good online help, but that doesn't compensate for the problems.

Masterpiece is competitively priced and one of the few multiuser products available for financial planners. And you can modify the programs to suit your own needs (if you're willing to learn *Excel* and *Omnis 3 Plus*) by getting the modules' source code from Strategic Planning Systems.

Masterpiece is worth checking out, but you'll probably have a tough time at first because of its design and documentation. Once over the learning curve, you may still find this unnecessarily complex product awkward to use. It will be worth your while, though, if it effectively manages your financial-planning practice.
–Steve Mann

See *Where to Buy* for product details.

Where Did All the Slide Rules Go?

Frame Mac *1.11*

Computer-aided-engineering package. ***Pros:*** *Provides fast and easy methods for graphically defining, modifying, and analyzing 2-D structures; publisher supplies free support.* ***Cons:*** *No spooling of multiple report printing; disk-based AISC Section Table is too abbreviated.* ***List price:*** *$595; demo disk and site licenses available.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

Once, to obtain calculations to 5-place accuracy you needed a jumbo 36-inch slide rule that resembled an English broadsword. Today, using a sophisticated yet easy-to-use computer-aided-engineering (CAE) software package, *Frame Mac,* an engineer can produce a complete design analysis calculated to 19 to 20 digits, accompanied by precisely drawn diagrams. *Frame Mac* will help architects and mechanical, civil, and structural engineers who design structures or mechanical parts that are subjected to stresses (for example, structural beams, building frames, or machine parts).

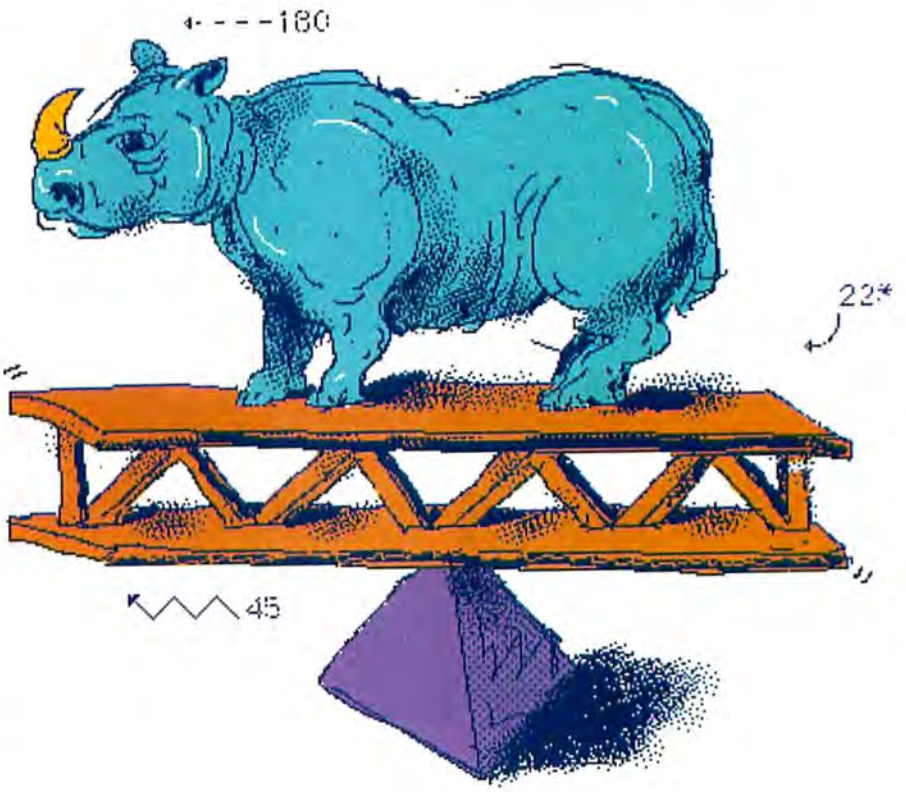
The Structure

Frame Mac elegantly applies the simplicity of the Macintosh user interface and mouse operations to a formerly difficult design application. You define a structure by drawing it on the screen using a grid; the screen resembles an engineer's version of *MacDraw* (see "Input"). The program lets you incrementally zoom as well as control grid size and scale. Any number of nodes (or connections) and elements are possible. Nodes snap to the grid–each node may represent a rigid or hinged connection, and each element may be pinned or rigidly connected at each end. To quickly define repetitive structures, such as multistory buildings, you can duplicate groups of elements using *Frame Mac*'s Rectangular Mesh Generator feature.

The complexity of the structure you can analyze depends on available RAM. A 512K system can analyze structures with 100 nodes and 200 elements, and a 1-megabyte system can handle twice as many. With 4 megabytes, you can theoretically handle 800 nodes and 1600 elements–more than enough for most design jobs.

Once it's entered, a structure's definition can easily be changed. You can also renumber the nodes by invoking one of eight possible renumbering schemes. Any number of static loads can be graphically applied on each element and each node. These can take the form of concentrated loads and uniform or trapezoidal distributed loads. Loads can be sloped and can be multiplied by a load factor. You can assign each load to one of 25 possible groups; load groups can be applied in varying combinations.

You end up with an accurately scaled screen picture of the structure, showing as much information as you desire (see "Viewing the Data"). You can define and choose a screen display as large as 6912 by 3456 pixels (a drawing area approximately 48 inches high by 96 inches wide). You can also zoom in and out–varying scale parameters, ruler markings, and coordinate origin locations. Thus, the largest or smallest structure can be created, edited, and viewed at convenient sizes. From a 64-item Units menu, you can choose from various English and metric units to express force, load, distance, weight, moment, deflection, or stress, for example. You can change these units any time you wish, so your European office can receive data in metric form while you retain the information in feet and pounds.



Frame Mac takes full advantage of the Mac's graphic, real-time user interface. Errors show up immediately. Other structural analysis packages that require you to define the structure by typing in numbers don't let you see your mistakes until you're done.

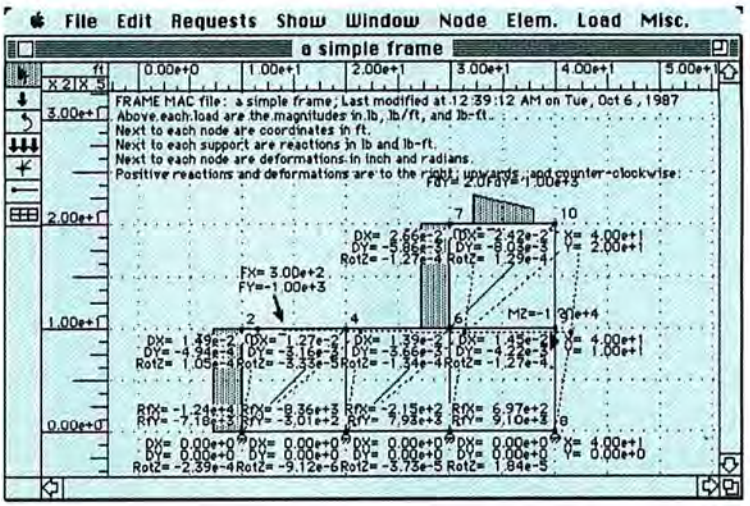
The Analysis

Once you define the structure, *Frame Mac* analyzes it. According to the program's author, *Frame Mac* performs "a linear elastic analysis on the structure by the stiffness matrix method. The matrix is created and calculated as the upper half of a symmetrical band matrix in order to save RAM and time. The modified Cholesky method is used to solve the matrix." The analysis is fast, even on a plain vanilla Mac.

When the analysis is completed, *Frame Mac* graphically displays the results in a number of useful ways. For example, the structure is shown in both normal (undeformed) and deformed states. The amount of deformation is magnified for clarity, and each deformed element appears as a dashed line. You can examine each element individually, and *Frame Mac* will display deflection, moment, shear, tension, and load diagrams for it. Having examined the initial analysis results, you can go back to the original design and easily explore other conditions. In the Display What on Each Element menu, no less than 23 choices are presented, including 19 calculated maximum values for an element. Nodes, elements, and loads can be added, changed, or removed.

In addition to providing graphic analysis results, *Frame Mac* lets you save the calculated results in a format compatible with spreadsheet programs like *Microsoft Excel*. There are six different reports that show input, output, and other data in as many as 18 choices of data type. These reports are automatically time- and date-stamped for easy identification. However, *Frame Mac* does not let you print selected diagrams and reports unattended, nor does it let you produce a standard documentation package with one command.

Frame Mac includes an abbreviated Section Table from the AISC (American Institute of Steel Construction) handbook. Although it contains only 4- to 36-inch-wide flange sections and their *x-x* Section Properties, this table can be expanded to include *y-y* data. Unlike with the printed American version, the user can choose either English (feet, pounds) or SI (mm, newtons) units, and selected data can then be associated and recorded with a particular element. Though limited in content, the table is quite useful, particularly if you take the time to add the properties of other frequently used sections. Users can easily add to the Section Table by following the well-written instructions found at the beginning of the file.

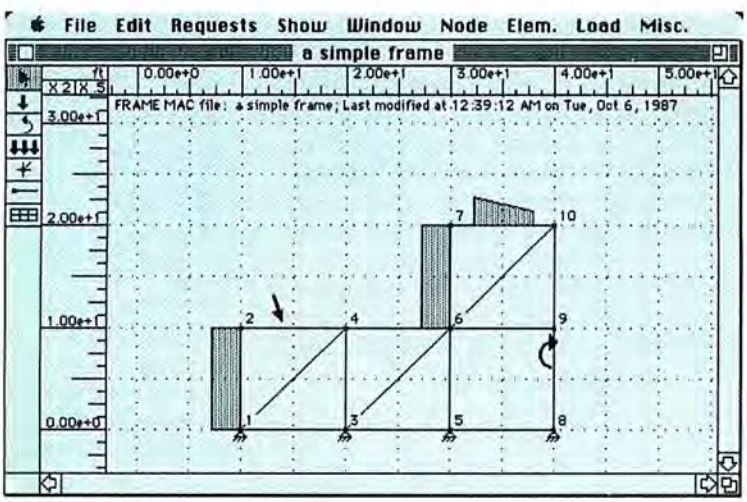


Viewing the Data *A structure diagram shows as much or as little data as you want. The tool palette includes, from top to bottom, a selection tool followed by the (force, moment, distributed-load node, and element tools. The mesh tool provides a one-step method of generating large rectangular arrays of nodes and elements.*

Frame Mac is a well-proven productivity tool already in use at numerous major engineering firms, government organizations, and universities. The program outperforms MS-DOS packages that cost more than twice as much. Any engineer could easily learn and make use of this program. *–David L. Peltz*

See *Where to Buy* for product details.

Input *Nodes, elements, and loads that make up the design are easily and quickly entered directly on the screen using the mouse. The process is familiar to anyone who has ever used one of the many Mac graphics programs.*

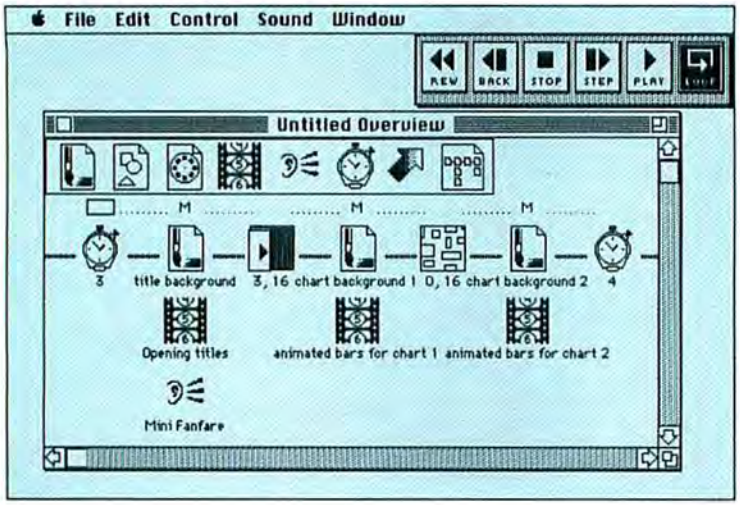


The Video's in the Works

VideoWorks II 2.0

Animation and slide-show presentation tool. ***Pros:*** *Vast improvement over original program; icon-driven slide-show module; new painting tools and modes; partial color animation support for Mac II.* ***Cons:*** *Confusing animation module.* ***List price:*** *$195.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

MacroMind's *VideoWorks* remains one of the most sophisticated graphics and animation programs available for the Macintosh. Teachers have used it for visual simulations; executives, for business presentations; and developers, for prototypes of Mac programs. The new version, *VideoWorks II*, adds a wide variety of features that dramatically increase its overall usefulness. The program now consists of two separate yet integrated modules: the VideoWorks animation module and the Overview module.



The Overview Window
To create a slide show, link documents from a variety of programs in a flowchart. VideoWorks II *lets you add transition effects, tempo changes, sound, and* VideoWorks *animations.*

Overview Slide Shows

To make a slide show, use the Overview window to link together documents from several programs, including *MacPaint, MacDraw, Glue,* and *VideoWorks.* Timing icons specify how long a screen is displayed. Between frames you can use full-screen wipe, fade, and dissolve effects. Any of the vast array of *VideoWorks* sound effects (including *SoundCap/SoundWave* sampled sounds) can be layered onto specific frames. You can also add *VideoWorks* animations to slide-show screens, a feature that will probably produce an instant market for clip-art animations. With the Overview module, you can quickly and easily create attractive slide shows without getting deeply immersed in *VideoWorks* animation techniques. But to tap the full potential of *VideoWorks II,* you will need to take time to master the program's intricacies.

VideoWorks, Too

The VideoWorks module includes substantial improvements on the original program, making it the most powerful two-dimensional animation program on any microcomputer. Like *Microsoft Word* 3.0, *VideoWorks II* has two menu levels. Beginners can use the short menus, which disable some of the more sophisticated features of the full menu.

As in the original version, the animations are based on *sprites,* objects that can be animated independently of other elements on the screen. In *VideoWorks* terminology, a sprite is referred to as a *castmember.* A Castmember window allows you to scroll through a list of all the castmembers, select one, and drag it onto the screen.

One way to animate a castmember is to hold down a key combination, which lets *VideoWorks* record the movements of the mouse as you drag the castmember around the screen. *VideoWorks* also enables you to program the movement precisely, frame by frame, using the Tweak window. The In-Between command lets you indicate a sprite's beginning and ending on-screen positions. You can insert full-screen wipe and dissolve effects between frames of animation. You can also program speed changes directly into animation as well as control the overall animation speed.

The Score window shows the detailed codes that make up an animation. This window now offers several new modes, including an extended view that shows all of the information for a castmember–movement, Ink setting, and castmember number–within a specific frame of the animation. There's also a Search and Replace command for castmembers. The Reverse command reverses the order of a selected group of frames to make animation clips run backward.

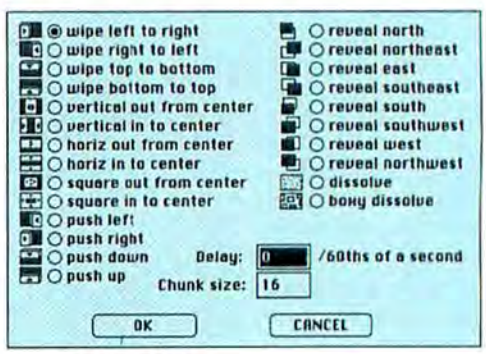
To add sound to your animation you can use sampled sounds from *SoundCap* or *SoundWave* or synthesized *Macintalk* speech (not supported on the Mac II). Adding text to animations is much easier in *VideoWorks II* than it was in the original version: a new window, Text, lets you enter type in an editorlike environment, where you can modify text even after it has been placed into an animation. In the Text mode you can find or search and replace text, as well as choose from the full range of Macintosh fonts, styles, and sizes.

In addition to its original Clickart Effects (perspective, distort, rotate, and skew), the Paint window supplies some excellent new tools for modifying castmembers, including an airbrush from *GraphicWorks,* a lasso, and a registration-point marker (to help line up the images to be animated). *VideoWorks II* also provides a wide range of Ink modes for determining how sprites interact with each other when they overlap on the screen.

VideoWorks II has some Ink effects that produce spectacular color results with the Mac II. A fixed color-palette window automatically adjusts itself to the number of colors available on the video card. Although the program supports color animation, many of the program's features–the full-screen wipes, the fades and dissolves, the Clickart Effects tools, the lasso, and the selection marquee–don't work in color.

MacroMind has extended *VideoWorks'* printing capabilities. You can automatically create storyboards and print them with one frame per page or with combinations of frames on a single page. You can add headers and footers to each page, print frames in a single column, and precisely choose which frames will make up the printed document. All of these print options also work with the Overview module.

The program's documentation is complete, with an 80-page tutorial section, a reference section, and various appendixes that describe advanced animation techniques. Owners of the original *VideoWorks* package can upgrade to *VideoWorks II* for $100, which really is reasonable in light of the vast improvements made to the original. For newcomers, the $195 price is a bar-



Transition Effects
VideoWorks II *offers an ample selection of full-screen wipes, fades, and dissolve effects. The Delay control varies the overall speed of the effect, while the Chunk size regulates the increments in which the effects occur.*

gain, especially considering the color paint and animation environment for the Mac II. *VideoWorks II,* an extensive and complex program, can perform just about any two-dimensional animation or slide-show task. You couldn't ask for much more.
–David Biedny

See *Where to Buy* for product details.

The Big Picture

***Stepping Out** 1.0*

Software screen extender. ***Pros:*** *Lets you work with windows larger than the physical screen size; easy to customize.* ***Cons:*** *Cursor flickers; on-screen action slightly delayed.* ***List price:*** *Version 1.1 $95.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

If you don't want to invest in a large-screen monitor, consider *Stepping Out,* a $95 program from Berkeley System Design. It simulates a full-page display by fooling the Mac into working as if it had a larger screen. As you move the cursor to the edge of the display window, a new portion slides into view. If you want to see the entire page displayed at once, you can reduce it to fit in the Mac window. You can also enlarge a portion of the screen by magnifying it up to 16 times. *Stepping Out* even has a few features that large-screen monitors don't.

Will It Do Windows?

Stepping Out extends the screen by making programs write to a large virtual screen in memory and then copying parts of the virtual screen to the Mac's actual display. When you run the *Stepping Out* application, a dialog box lets you set the size of the virtual screen. The default values are 572 pixels in width by 720 pixels in length, or 8 by 11 inches (about 2.3 times as large as the Macintosh screen).

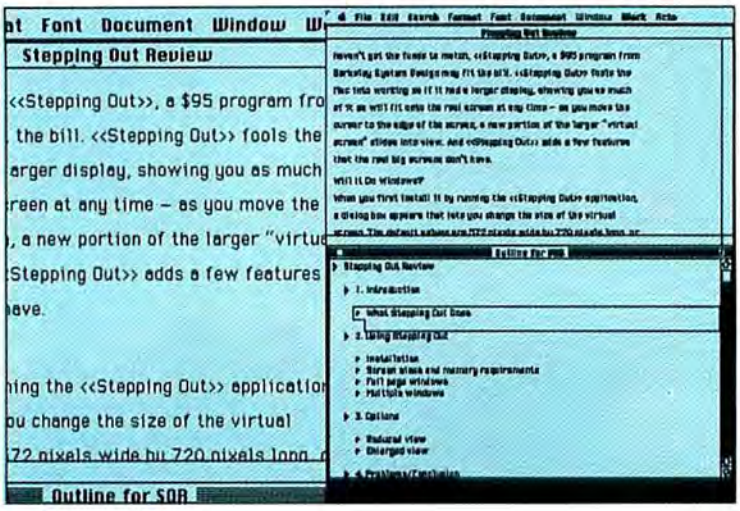
Although the manual claims a limit of 2048 by 1368 pixels, I was able to set a virtual screen of 2048 by 2048 pixels, or about 28 by 28 inches. However, keep in mind that larger virtual screens use more memory. Some applications may not leave enough memory to run *Stepping Out* properly, a potential problem on a 512K Macintosh. Fortunately, the manual does a good job of explaining the relationship between screen size and memory requirements. Once installed, *Stepping Out* remains active until you shut down.

Stepping Out really shines when you work with applications that let you resize their windows to the full area of the virtual screen. You no longer have to use the scroll bar to move from one part of the window to another. Once you get used to it, the illusion of using a large monitor is quite convincing. (Unfortunately, neither of the two original Mac programs, *MacWrite* or *MacPaint,* let you properly enlarge their windows to take advantage of *Stepping Out.*)

Stepping Out also lets you work with several smaller windows at the same time. Let's say you need to refer to a set of notes in one window as you write a chapter in a second one. Ordinarily, you'd have to compromise by resizing both windows to fit the Mac screen or by placing one window on top of the other. With *Stepping Out* you can have both windows fully open and you can quickly flip between them by moving the cursor.

Making It Small

Since you can't see all of the page at once, you can lose your place when using *Stepping Out.* A ⌘-key combination splits the Macintosh screen into two views: a normal-size view on the left and a reduced view of the entire virtual screen on the right (see "Split Screen"). The cursor remains active on both sides of the screen—you can do anything on the reduced view



Split Screen
On the left is the normal-size view showing a part of the large virtual screen that Stepping Out *creates in memory. The entire screen (with two open windows in this case) appears in reduced form on the right. The cursor is active on both sides. Hitting Option-⌘-spacebar returns the screen to the normal view.*

that you can on the normal one. Invoking the ⌘-key combination a second time restores the normal screen view.

For detailed work, *Stepping Out* lets you enlarge the right side of the display. This area can be magnified from 2 to 16 times, and the magnified area can be resized. (*inLarge,* another program from Berkeley System Design specifically created for visually impaired people, shares some of these features (see *Reviews, Macworld,* August 1987).

Nothing's Perfect

For a fraction of the price of a large-screen monitor, *Stepping Out* can't be expected to function in exactly the same way. Although the program's scrolling action is very smooth, its response time sometimes seems slow. Because of the way *Stepping Out* works, dialog boxes appear to pop out of nowhere after a short delay. Also, the cursor flickers noticeably, especially when it's in the menu bar.

Minor criticisms aside, *Stepping Out* is an ingenious, inexpensive solution to the problem of the small Macintosh screen. The manual states that *Stepping Out* works well with most Macintosh applications, a claim that I found to be valid. If you're in doubt, test the program's compatibility with the applications you use most. You may never work with a regular Mac again. *–Franklin Tessler, M.D.*

See *Where to Buy* for product details.

The Digital Audio Workstation

Sound Designer *1.12*

Digital audio sample manipulator. ***Pros:*** *Versions available for a wide variety of keyboards; digital equalization and mixing at a fraction of the cost of other systems; 3-D Fourier analysis of sample.* ***Cons:*** *Significant investment if purchased with a sampling keyboard; needs hard disk for sample storage; slow disk access and sample transfer.* ***List price:*** *$495 ($395 for Mirage version).* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

Softsynth *2.0*

Digital synthesis software. ***Pros:*** *Provides additive and FM synthesis for many brands of sampling keyboards.* ***Cons:*** *Slow resynthesis into sampler format; needs mass data storage; may be too complex for the amateur user.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

It's no wonder that the Macintosh is the preferred computer among professionals in the audio recording industry. From sequencing to synthesizer parameter editing to score printing, the Mac offers the most comprehensive and cost-effective software for the professional musician.

Two programs that strengthen this claim are Digidesign's *Sound Designer* and *Softsynth.* Both manipulate digital sound data on a wide variety of digital sampling keyboards, or "samplers." *Sound Designer* loops, equalizes, and manipulates samples, while *Softsynth* provides software control of additive and FM synthesis. Both programs offer unique features that until recently were only available on extremely expensive computer keyboard systems.

Suave Manipulation

Sound Designer provides sophisticated manipulation of digital audio samples. Like Blank Software's *Sound Lab* (see *Reviews, Macworld,* July 1987), *Sound Designer* takes sampled sounds and lets you graphically display, reverse, edit, and loop them. *Sound Designer*'s capabilities, however, extend beyond those of *Sound Lab,* and it is available for six sampling keyboards. The different versions of *Sound Designer* share a standardized file format that allows exchange of sound files. Thus the owner of a Prophet 2000 can take advantage of sounds sampled with an Emu Systems E-Max by simply taking E-Max *Sound Designer* files and downloading them using *Sound Designer* for the Prophet 2000. Samples stored in 16-bit format are downloaded to correspond to the sampler's resolution (usually 8 or 12 bits). Although the sampler's analog processing of sounds is not transferred from machine to machine, loop points are kept intact, which means you don't have to redo the sustain loop. The only problem with this process is that sounds sampled at one pitch cannot be combined with a sample at another pitch to create a unison.

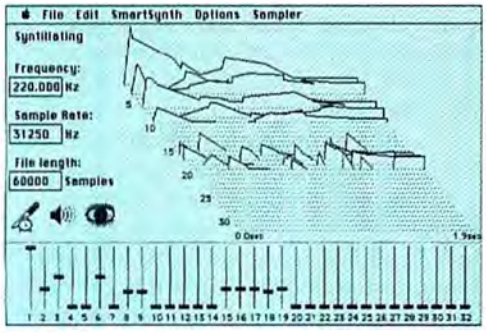
Sound Designer's main strength lies in the five digital mixer modules, which provide digital mixing, equalization, and other features unique for a computer keyboard system under $85,000. The Mix module allows two sounds to be mixed in any proportion (for example, 40 percent flute to 60 percent muted trashcans, 20 percent kettle drum to 80 percent car crash). Mixes can be offset by sample bits to change the tone of the combined sound or to synchronize different attacks or decays within the two sounds. The Merge module enables you to splice two sounds together, so the beginning of one sound can be cleanly faded into the ending of another. The Crossfade Looping module creates

smooth sustain loops where normal looping techniques fail. While not infallible, crossfade looping is so useful that it has been incorporated into the on-board operating systems of some keyboards.

Often samples need to be carefully equalized and balanced in volume to make the sample truer to the original sound. *Sound Designer*'s Digital Equalizer and Gain Change functions let you build equalization and amplitude changes into any sample at twice the resolution and a fraction of the cost of traditional analog equalizers. The Digital Equalizer provides five different types of high-quality filters: peak notching, high and low shelving, and high and low pass. The Digital Equalizer module alone can greatly improve the quality of samples–for example, the right amount of peak-notch equalization adds more punch and vitality to a brass section.

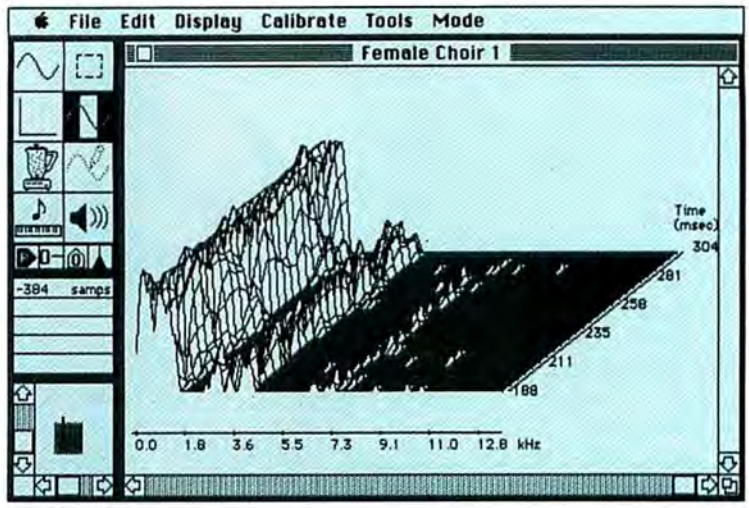
The Gain Change module increases or decreases volume output of the sample by dbV (decibel values) or by percentage. If a sample's gain is increased too high, samples can be lost or clipped. To let you find a better gain-change value, the program displays the amount of clipped sample before the gain change is executed. The Gain Change module also provides a Normalize function to increase the highest point of the sample until its peak amplitude reaches 100 percent full scale. Thus sounds that were sampled at too low a volume can be easily improved to take advantage of the full dynamic range of their keyboard.

Finally, *Sound Designer*'s Fourier Analysis module gives a 3-D display of a sample's harmonic content throughout its duration (see "Frequency Analysis Window"). The display field can be shown from either the front or the back in mesh, graph, or chart form.



Partials

Softsynth's *partials can be viewed four different ways: by the attack of the lower partials or upper partials, or by the decay of the lower or upper partials. The display shows the partials' amplitude and envelope shape.*



Frequency Analysis Window

The frequency and amplitude of a sample are displayed in Sound Designer *as a series of hills and valleys, showing how a sound changes over a period of time. This graphic analysis is a useful reference tool when using the digital equalization module.*

The Catch...

Sound Designer makes manipulating sampled sounds much easier, but the program has its drawbacks. For those who do not own a sampling keyboard, the complete package costs $1500 to $7000, depending upon which sampler you purchase. Moreover, the large size of sample files (20K to more than 90K) and the disk space required for backup of the sample make a hard disk a virtual necessity. With the exception of the Emulator 2 and E-Max versions of *Sound Designer,* transferring samples from the Mac to the sampling keyboard can take a long time. Also, *Sound Designer* accesses the program disk for nearly all functions–a time-consuming process, as some modules have to access the disk three or four times just to complete one function. However, considering that the next-least-expensive hardware-and-software package with similar capabilities costs about as much as a house, these drawbacks can be overlooked.

An Eclectic Addition

Softsynth is a software-based 32-oscillator synthesizer that creates sounds through additive synthesis, a process formerly restricted to expensive computer synthesizer systems. Sounds are created within the program using software-based oscillators or *partials,* displayed on a 3-D grid (see "Partials"). Each of the 32 partials can have different waveform, frequency,

and filter/amplitude envelopes. These can then be modulated using FM synthesis. *Softsynth* has 32 operators, which can be modulated singly or collectively to create an endless variety of sounds. Unlike *Sound Designer,* a separate version of *Softsynth* is not required for each brand of sampler.

While *Softsynth* is a powerful tool, it is not for the impatient. To hear a *Softsynth* sound on the sampling keyboard, you must resynthesize the parameter file into a *Sound Designer* file format, save it to disk, reopen it, and then send it to the sampling keyboard–a one- to four-minute process, depending upon the size of the file and whether the information is sent via MIDI or RS-422. Musicians used to real-time synthesizer adjustment will find this delay frustrating. Even when you play a parameter file through the Mac's speaker, it still takes a while for the program to formulate the parameter data into an external sound.

Sound Designer and *Softsynth* both offer high-end digital sound creation and manipulation. *Sound Designer*'s universal file standard allows access to large libraries of sampled sounds. The ability to exchange sound files, combined with the graphic manipulation of all keyboard parameters, makes *Sound Designer* an excellent investment. *Softsynth* further complements *Sound Designer* by providing additive and FM synthesis. Together these programs offer the most sophisticated, flexible, and cost-effective software packages currently available for manipulating digital sound.
–Erik Holsinger

See *Where to Buy* for product details.

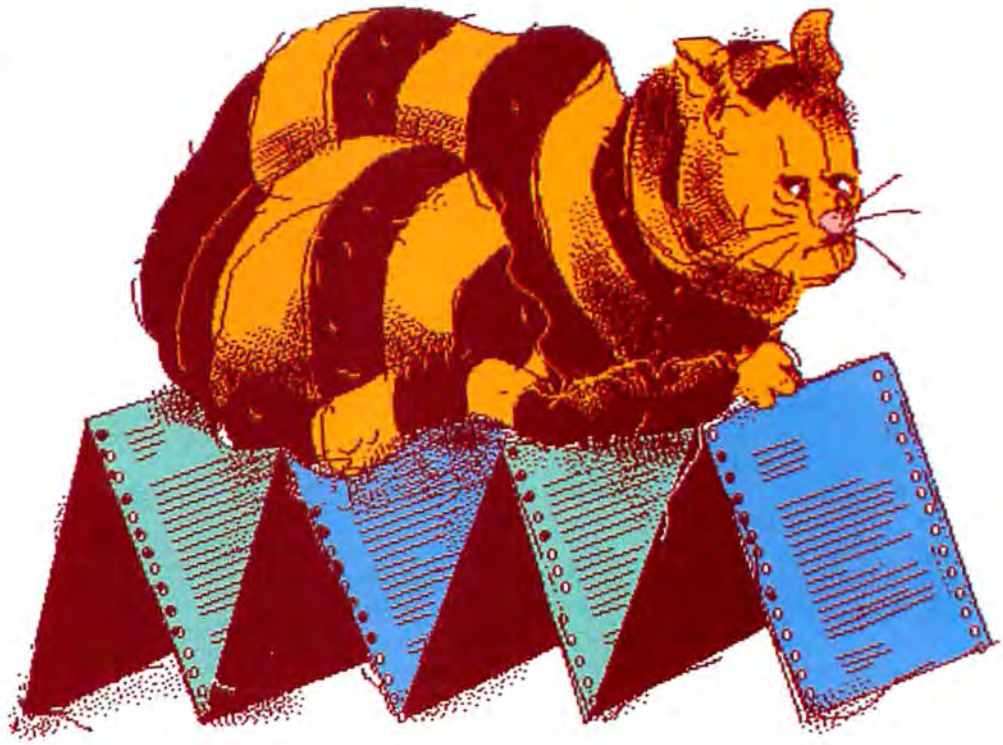
Current Events

C.A.T. *1.0*

Desktop management system. ***Pros:*** *Flexible activity management; custom reports; good documentation.* ***Cons:*** *Long learning curve; too complex for simple tasks.* ***List price:*** *$295.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

There's a new genre of software evolving: *desktop management.* The term refers to the management of personal and business contacts and your interactions with them.

At its simplest, desktop management involves maintaining lists of names, telephone numbers, and related information, like *Sidekick*'s MacDialer function does. At its most sophisticated, desktop management might also include time management, task scheduling, and flexible reporting. *C.A.T.* is currently the only sophisticated desktop manager available for the Mac, and Chang Labs' description–a "relational database for managing Contacts, Activities, and Time"–doesn't fully capture the extent of its power.



Nine Lives

You can use *C.A.T.* for a nearly unlimited number of tasks, depending on your imagination and the amount of time you are willing to spend learning the program's subtleties. You can track sales prospects, do systematic market research, manage a fund-raiser, track expenses, create a minimal but functional billing system, maintain To Do lists, use *C.A.T.* as a Rolodex, maintain mailing lists, and organize many other things. *C.A.T.* is appropriate for anyone who has a Mac, interacts with people, and manages time-based events.

C.A.T. is based on a fixed-format relational database with the following primary components: accounts, contacts, activities, and events. An account is normally a company; a contact is someone within a company; an activity is a task like a meeting, a telephone call, or a letter; and an event is an activity involving a specific contact at an appointed time.

To use the program, you start by entering your accounts and then your contacts–including names, addresses, telephone numbers, and up to 16 pages of notes for each. In addition, accounts can have up to eight user-defined identifiers that can be filled in from lookup tables; contacts have four. The lookup tables can contain anything, such as job title, function, or country. You might label the first lookup table "country," key in appropriate country names, and then assign the country identifiers for each of your accounts.

Once you've entered the basic information, you can create up to 14 views–subsets of accounts and contacts selected according to user-defined criteria, including simple Boolean operators and wild cards. There is a separate menu that lists all the views, so you can readily switch from one to another.

Activities are generic tasks used in day-to-day business. There are six user-defined sets of activities. Appropriate categories might include letters and phone calls. Each activity can have up to 16 pages of associated text, which can include mark-

ers for account and contact data, such as name and address, or perhaps lists such as questions for a market survey. When an activity is scheduled (becoming an event), the markers are replaced with the data they reference, creating a set of notes for that event.

An event is a scheduled activity for a specific set of contacts or accounts (see "Event Snapshot"). You first select a contact and an activity, and assign the event a date and time. A simple event would be scheduling a meeting or sending out a finished form letter using account name and address markers. *C.A.T.* does a lot more than that, however. You can clone an event for all members of a view, letting you do things like schedule a form-letter mass mailing or send out 200 invitations to a fund-raiser. In addition, each activity can have up to four attached activities, called tactics, that are automatically scheduled when the primary activity is added as an event. This makes it easy to schedule things like follow-up calls to a mailing.

C.A.T. produces a variety of reports, including full-page and pocket-size event calendars and dossiers (detailed account and contact notes), mailing labels, and all the custom letters, memos, and so on, that you create in the note fields. You can define up to four custom reports for both accounts and contacts. To a certain extent you can control the format of the different types of reports, and all reports can be previewed on the screen or printed.

Stretching It

C.A.T. has a lot of strengths. It's flexible, powerful, customizable, and fast. You can use it to manage just about any type of task or activity that fits the *C.A.T.* database structure. A variety of data entry mechanisms make the program easy to use.

On the other hand, *C.A.T.* is not that easy to learn. Before you can fully exploit its power, you'll have to use the program for a few days to familiarize yourself with the underlying database structure and all the ways you can manipulate it. Even something as simple as tracking meetings requires several hours of experimentation. You might find yourself reclassifying your data a few times–changing view members, modifying lookup designators, and so on–before you find a scheme that makes your desktop management easier. The documentation is quite good, but it can't tell you the best way to use the program for your own purposes–there are just too many possibilities.

C.A.T. could very well be essential for serious business users who are willing to pay $295 and spend some time learning the program, and who want sophisticated help managing their professional or personal lives. I hope, however, that in future versions Chang will hide the underlying complexity of the database so that you can concentrate on using rather than on learning the program.–*Steve Mann*

See *Where to Buy* for product details.

Event Snapshot

A C.A.T. event is an activity, scheduled at a particular time and date, with a specific contact. Contacts are grouped into higher-level entities called accounts. The Event Snapshot window has a variety of options for controlling the events shown in the window.

Amazing Space

Space Quest–Chapter 1: The Sarien Encounter *1.5D*

Animated space-fantasy adventure game. ***Pros:*** *Superlative animation in a well-scripted, humorous interactive adventure.* ***Cons:*** *Some scenes featuring two or three animated elements run very slowly.* ***List price:*** *49.95.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

Space Quest–Chapter 1: The Sarien Encounter, from Sierra On-Line, rates four big shooting stars. It will score biggest with those who enjoy humorous, *Star Wars*-like space adventures, solid comic art, and advanced Macintosh animation.

As a *Space Quest* player, you control a sometimes bumbling space janitor–an engaging, fully animated little fellow–who has awakened from snoozing in his closet aboard a large spaceship. Guiding him through the ship's corridors, you discover dead crew members and learn that a great secret has been stolen. The Star Generator, a machine developed to preserve life (but potentially life-threatening), has been captured by the evil Sariens. First, your little janitor must escape before his defeated spaceship explodes. Then he must somehow locate the Star Generator and destroy it, or perish along with his entire race.

Space Quest is boldly drawn, and its images are free of excess detail. This can also be said of the storyline. The animation gives life to a nicely scripted, far-out tale that doesn't require players to divine absurd solutions like so many computer games do. The animation is usually funny, and the 3-D effect is often a source of humor–at times the plucky janitor disappears out of sight behind a rock or wall. To find him, you must click the mouse where you guess your hero to be.

It can take several clicks to make the character respond (even in routine situations), which may be fatal for the little guy (if you're not careful, you can walk him off a cliff) and annoying to you. Keyboard controls will bail the janitor out.

If you're not in the habit of saving games as you go along, *Space Quest* may hang you up in an infuriating manner. However, the story is told in a straightforward fashion, so it's relatively easy to recognize key save points. Save wisely and the many comical deaths of your lowly alter ego will be savored, not mourned.

Alone in an Alien Landscape
As a diligent explorer, sometimes you direct the little guy out of sight behind things. Often the "camera angle" or perspective makes the location seem like a real place.

Data Compression

Space Quest's programming is tight. One of the most surprising things about *Space Quest* is the amount of animation and sound it contains on two disks, still leaving room to store about 20 games-in-progress. (If you use an external drive, you can save without swapping disks, which is not a possibility with many overloaded two-disk games.) Anyone who has experimented with a Macintosh animation program knows that animation consumes huge amounts of memory. *Space Quest* turns the Macintosh into a special environment for animated games; each graphic element is represented by only one letter in the program rather than by many lines of computer language. This data compression pays off not only in the efficient use of memory but also in processing speed. The busiest of the animated sequences run pretty slowly, but they're still faster than similar sequences created with programs like *VideoWorks*.

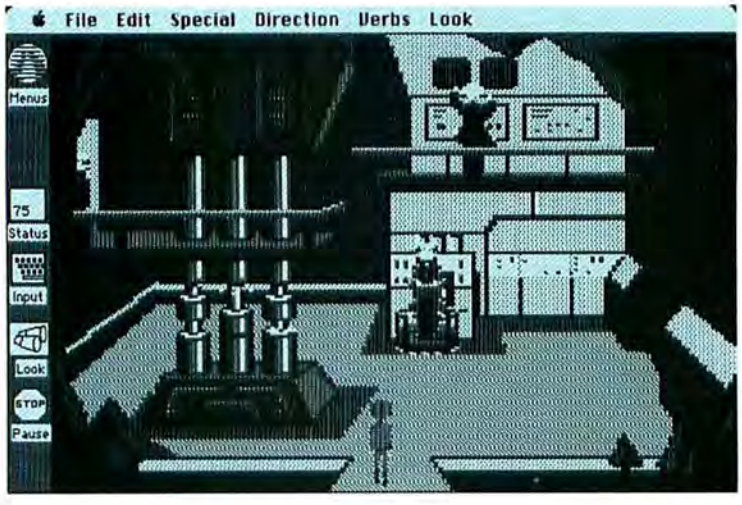
Featured Entertainment

Two major musical productions seem to occupy most of the memory allocated for sound in the *Space Quest* program. At a slot-machine bar on an alien planet, three musical acts appear in rotation, including a duo resembling the Blues Brothers performing *Can't Turn You Loose*. And there is a long, rousing musical theme for *Space Quest*'s indulgent title sequence and its grand conclusion. While there are numerous sound effects throughout the rest of the game, there are also many silent scenes that could benefit from sound. A more modest credits sequence might have permitted a few more sound effects. Also, the use of digitized real sounds would be an improvement over *Space Quest*'s cartoonish, synthesized sound, although the existing sound suits the Saturday morning spirit of the space janitor's pratfalls.

Space Quest displays great technical quality but does not feel like the product of technicians. Although it is not an advanced-level game, the most accomplished players are still likely to appreciate its sophisticated production, ingratiating style, and humor. Many of us who are not so accomplished will pay $7.95 (ouch!) for a bubble-packed hint booklet, which includes a marking pen to reveal the invisibly inked answers.

Space Quest is like a good popcorn-burner of a Saturday matinee. The two promised sequels are anticipated with pleasure.—*Keith McCandless*

See *Where to Buy* for product details.



Who Pays the Light Bill?
Answering basic questions about absolutely everything is essential to winning. The pistons here really move. Animated aliens in lab coats walk in and out. What's going on in this place, anyway?

Financial Plans for Pros

Optum-3 *1.2A*

Financial-planning software. ***Pros:*** *Flexible design of custom financial plans; reasonably priced.* ***Cons:*** *Seriously inadequate documentation; error-prone; awkward interface.* ***List price:*** *Version 1.3 $699.95.* ***Requires:*** *512K.* ***Copy protection:*** *Key disk.*

Financial planning shares one perplexing characteristic with accounting: everyone wants to do it a different way. That makes it tough for developers to create a product with universal appeal. Most of the time you get a fixed set of features and must adjust your requirements accordingly.

Optum-3 from JLC Software solves that problem. It lets you design custom financial plans using any of the data stored in a client database. *Optum-3* is actually three programs that perform separate functions: Optum-3, for entry and retrieval of client information; Optum-Design, for page design of a custom financial plan; and Optum-Print, for specialized printing functions.

The Client Profile

Optum-3 is the central module. It enables you to enter, store, and retrieve financial data for one or more clients (see "The Client File"). The 14 predefined data categories cover most items commonly needed for financial planning, including assets, liabilities, income, expenses, tax information, and retirement data. The program tracks

only simple amounts within each category, not detailed information such as all the investments contributing to the total value of an IRA. That may be insufficient detail for some planners.

Once you've entered client information, you can produce reports, calculate projections, and prepare custom financial plans. The Present menu gives you fixed-name report slots (balance sheet, income statement, cash flow statement, tax estimate, and seven other key financial-planning categories) that can be assigned to any custom report you create using the Optum-Design module.

You can calculate projections of data for 1, 3, 5, 7, and 10 years. Projections can also be graphed in simple pie-chart format. You can export tab-delimited data for an individual client or graphics-formatted projections (PICT files) to the Clipboard. In addition, there are 30 marginally useful reports, simple extractions from the client database, that cannot be edited. Each simple report lists one item for all clients, such as address, mutual fund investments, or bank account balances. To print the reports, you must switch to another module.

The Client File

You enter basic client information in the main Optum-3 *window. To enter more detailed data, use the Questionnaire menu. You select reports from the Present menu and use the Project menu for calculating projections.*

Most important, *Optum-3* lets you prepare custom financial plans. You first create an 8½- by 11-inch page using an application like *MacPaint, MacDraw, Microsoft Word,* or *PageMaker;* then cut or copy the page to the Clipboard. Using Optum-Design, you then paste the page into the program's main window, position one or more variables from the client database anywhere on the page, and save it. The page can be assigned to one of the ten *Optum-3* reports or to a custom plan that can be printed with Optum-Print.

Optum-Print has three functions: printing the 30 noneditable Optum-3 reports that can only be viewed, printing a custom plan as one large report, and creating custom plans that are a collection of individual pages created with Optum-Design.

A Lack of Finesse

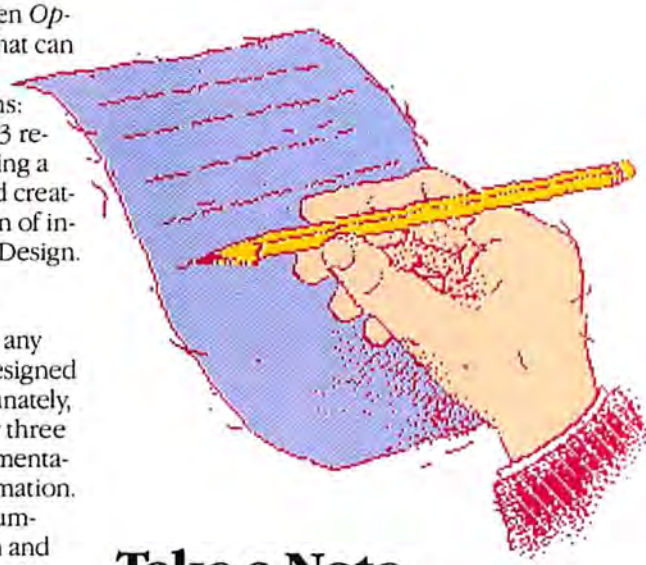
I know of no other program–at any price–that lets you create custom-designed financial plans from scratch. Unfortunately, that uniqueness is overshadowed by three major flaws. First, the 30-page documentation contains almost no useful information. The only way I could figure out Optum-Design was to first start the program and then call the vendor. Second, it has quite a few bugs. Although none of them seem to result in lost data, several cause system crashes. Almost inevitably when you click the Cancel button in a file dialog box, the programs will crash. *Optum-3* won't prevent you from entering inappropriate values, either (for example, you can enter alphabetic characters for numbers or negative numbers for client ages), and the pie-charting functions work only sporadically.

Finally, all three modules are awkwardly designed. Optum-Design is about as unintuitive as a Mac program can be. Instead of selecting fonts, styles, and point sizes using pull-down menus, you have to enter the System file number for the font, style, or size. You cannot enter client variables while you're viewing the page format–there are separate modes for each function. Switching back and forth between modes is disruptive and makes it hard to maintain a coherent view of your data. A variety of other problems hamper the learning and using of all three modules.

The Future

Although *Optum-3* is less expensive and more innovative in many ways than its competitors, the program can't really be considered a contender until JLC simplifies the overall design and interface, thoroughly tests the product, and drastically improves the documentation. JLC is a small company with a large potential market, but it may lose the opportunity to exploit that market. Recommended, only because it's unique and has possibilities.–*Steve Mann*

See *Where to Buy* for product details.



Take a Note

Comment *1.0*

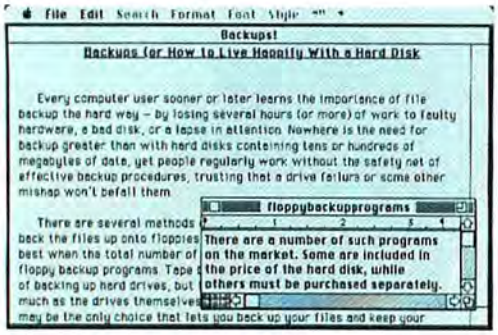
Desk accessory note writer and manager. ***Pros:*** *Easy to use; notes attach to any window, text, or spreadsheet cell; useful for creating help windows.* ***Cons:*** *Incompatible with some applications; notes can't include both text and graphics; conflicting ⌘-key equivalents.* ***List price:*** *$99.95.* ***Requires:*** *512K.* ***Copy protection:*** *None.*

Comment is a new desk accessory inspired by the original Macintosh Note Pad. Although Deneba Systems bills *Comment* as the electronic equivalent of those sticky yellow tags so common in homes and offices, it's actually capable of much more.

Making Notes

Comment installs easily with Apple's Font/DA Mover. It occupies 90K, a large amount even by today's standards. Like all desk accessories, *Comment* can be accessed from the Apple menu–*Comment*'s own menu appears under an asterisk (*) in the menu bar, or you can set it to load automatically when you return to the Finder. You can even specify which applications you want to use with *Comment*.

Comment notes are created in *MacWrite*-style windows with a ruler at the top and icons for text justification at the bottom (see "The Note Window"). Selecting Type Specs from the *Comment* menu



The Note Window

Comment *notes are created in* MacWrite*-style windows. In this case, the note will be attached to the text "floppybackupprograms" (words are run together) wherever it appears in the document "Memorandum File."*

brings up a dialog box that lets you choose a note's font, point size, and style. Although you can paste graphics into notes, you can't put text and graphics in the same note.

Comment's power lies in its ability to attach Standard Notes to specific points in a document. For example, you can annotate a specific cell in a spreadsheet by selecting the cell and choosing Note from the *Comment* menu. In word processing documents, notes are attached to selected portions of text. You can also attach notes to text in other types of applications, including fields in a database or text received by a communications program. If there's no text selected when a note is created, the note attaches itself to whatever's on the Clipboard at the time. You can also attach Window Notes (so called because they take on the title of the active window) to an entire document, even if it doesn't include any text.

How you recall a note depends on the application in which it was created. Notes associated with spreadsheet cells pop up whenever you double-click on an annotated cell. When you scroll through a word processing document while holding down the Option key, as soon as you stop scrolling, all the notes attached to any visible text string will instantly reappear. The Show Visible Notes feature in the *Comment* menu lets you call up all the notes attached to any text or cell currently visible in the active window.

Two other types of notes round out *Comment*'s impressive array: Time Notes pop up at a specified date and time (as long as *Comment* is loaded), and can be made to reappear at hourly, daily, weekly, monthly, or yearly intervals. Scratch Notes aren't attached to anything; you can use them to jot down information that isn't associated with any item or document.

Managing It All

The Note Manager, activated by a command in the *Comment* menu, lets you keep track of your notes by listing them in a scrollable window (see "Organizing Notes"). The small icons at the top let you search, open, merge, duplicate, trash, and print selected notes. Clicking the Light Bulb icon activates a spreadsheet note so that a single click on its cell will make the note appear. And because you can save any subset of notes in a separate file, you can easily send comments about a document you've already sent.

Like their paper counterparts, *Comment* notes can be easily pulled off and stuck someplace else. The Note Manager lets you change a note's document or attachment point. Notes are associated with single files when they're created, but by setting the document name to *any* you can attach a note to every document containing the note's point of attachment. You might use this capability, for example, if you wanted a note explaining a particular phrase to appear regardless of the document it was in. Unfortunately, notes can't be attached to subsets of documents.

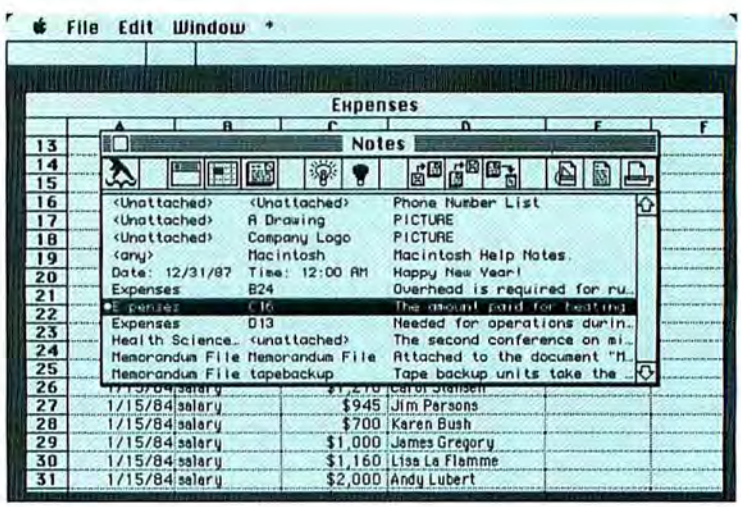
Final Notes

Comment does suffer from a few flaws. The ⌘-key equivalents in its menu often conflict with those in applications; although you can edit them with *ResEdit*, I would have preferred a set of user-selectable preferences. The way *Comment* attaches notes to text is also annoying. Although the text in the document doesn't change, the attachment points in both the Note Manager List and the Note Window title bar appear with all the spaces removed (see "The Note Window"). It takes a few minutes to decipher the words and locate the related text.

More seriously, *Comment* causes certain applications to behave strangely. (I ran into major problems using it with *SuperPaint*, for example. In *Microsoft Word* 3.0, toggling between full and short menus with *Comment* loaded caused the menu bar to disappear one item at a time, like the Cheshire cat.) According to the manufacturer, this problem should be resolved by the time you read this.

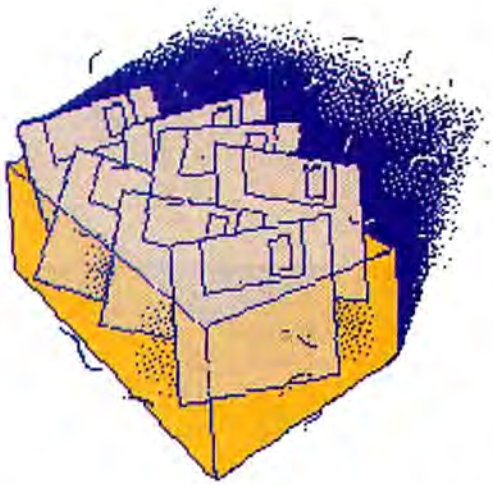
If you can live with its few faults, you'll find *Comment* helpful–even if you do no more than write, edit, and manage simple notes for yourself. But *Comment* is most useful for making notes that others can use: sort of customized help windows. For example, a database file could include notes giving acceptable values for fields, or notes for a communications program could describe how to respond to prompts from an online service. If other people regularly work with your applications and documents, *Comment* is a must.–*Franklin Tessler, M.D.*

See *Where to Buy* for product details.



Organizing Notes

The Note Manager presents a scrollable list of all notes in the current note file, giving each note's document name, attachment point, and the first few words for text notes. Notes labeled PICTURE contain graphics.



Hold Those Disks!

This review compares seven disk holders that range in style from cardboard boxes to a three-tiered filing system. The holders are priced from $2.00 to $74.95.

Seven desktop disk holders from six companies—Bede Tech, Innovative Technology Communications, International Datawares, Kensington Microware, Total System Integration, and Weber & Sons—provide a desktop disk-storage solution. These disk holders come in three basic designs: boxes, flip packs, and carousels. Those categories can be further divided into several filing phyla: cardboard boxes, plastic Rolodex-type boxes, a small flip pack, and a dial-a-disk box.

Mass Storage Solution

Simple cardboard holders from Bede Tech and Weber & Sons house up to 100 disks per box. They come in sleeve or lidded styles and can be stacked several high or stored under your desk.

The Bede Tech Disk File is a smooth, white, lidded cardboard box divided into six sections. Narrower than a shoebox and cheaper than a pair of shoes ($7.95 per box or $27.95 for four), Disk Files provide inexpensive, no-frills storage.

Weber & Sons' Disk-File System offers a more elaborate, but more expensive, storage solution—a complete labeling, filing, and storage system for $74.95. Two versions of the box are available: a drawer that slides in a cardboard sleeve, or a box with a lift-off cover. Both styles have convenient plastic pull handles on the front. Weber's NoLabelSystem is an innovative way to file disks: you stick a self-adhesive clear plastic pocket on each disk, write the disk's name and contents on a colored tab card, and insert the card into the pocket. You can insert a new card whenever necessary, saving yourself the trouble of tearing off a gummed label or sticking on layers of labels. The Disk-File package also includes see-through plastic pockets in which to store disks, brightly-colored warning disk labels (to indicate write-protected disks, master disks, and so on), and color-coded labels for categorizing disks.

Rolodex Type

If you prefer the look and feel of a desktop Rolodex, consider International Datawares' Micro Disk Minder or Kensington Microware's Disk Case. These identical plastic cases have flip-top lids, hold 36 disks, and provide five plastic separators that snap into place. The Kensington version comes with ten disk labels and a plastic Disk Pocket that holds 5 disks for easy carrying. International Datawares' case sells for $8.50; Kensington's case, disk wallet, and label combo sells for $29.95.

The Flip Pak

International Datawares also offers the Flip Pak, a clear plastic box with a cover that flips back to make a sturdy stand. For only $2 you can store up to 12 floppy disks. You can carry the box in your briefcase, and it stands up easily on your desk.

Dial-A-Disk

Total System Integration (TSI) has created a unique design with its $7.95 Dial-A-Disk box, which holds up to 20 disks. It too is a plastic box with a flip-top lid; at a height of 5½ inches, it is the tallest of the desktop disk holders. Each disk fits neatly into its own slot and stands up high enough for you to read the label. To see the labels and select a disk, you turn a knob on the front of the box. The disks stand up one at a time with a click of the knob, so you can use one hand to click the knob and grab a disk. Unfortunately, the first and last disks in the series don't pop up, forcing you to use two hands to retrieve them. This can interrupt your work if you maneuver the mouse with one hand and reach for disks with the other.

The Library

Another innovative design is The Library from Innovative Technology Communications (ITC). This holder stands 8½ inches square and rotates on a carousel base like a lazy Susan. Each quadrant of the box holds up to 20 disks, and Library boxes can be stacked two or three high. The $34.95 Library comes with a set of self-adhesive disk directory labels, which you stick to the side of the box to indicate a disk's position. The package also includes several strips of replacement labels for updating information.

Hold It

Each of these designs is well-constructed and durable. So which would I select?

The Disk Minder from International Datawares is a good buy. You can't beat the $8.50 price for storing up to 36 disks, and the design makes it easy to flip up the cover and grab a disk with one hand. (You might want to affix a strip of adhesive tape to the back edge of the flip top so it won't scratch your desk when you open it.)

Although I commend ITC and TSI for their design innovation, their products have several features I dislike. Having to use two hands to grab a disk is inconvenient; if TSI could improve Dial-A-Disk's dialing mechanism to flip and stand up each disk, I'd consider this design. As for The Library, it takes up too much room on my crowded desk. In addition, since I recycle and rename my disks frequently, the idea of writing on tiny stickers and affixing them one on top of the other doesn't appeal to me. The Library, which holds 80 disks, is an expensive alternative when you consider that you can buy two Disk-Minders that hold a total of 72 disks for one-third the price.

For the Macintosh disk collector who amasses hundreds of floppies, either the Weber & Sons Disk-File System or the Bede Tech Disk File will do nicely. The Weber NoLabelSystem is ideal for those who want a flexible method of organizing their disk collection, but Weber's elaborate system is considerably more expensive than Bede Tech's simple box.

Disk holders cover a wide range of designs and prices. Whether you choose a disk carrier that can be transported easily or a desktop holder for stationary storage, make sure a product suits your work habits before you buy it.—*Barbara J. Chan* □

See *Where to Buy* for product details.

Tallgrass, The First Name In Tape Makes Backup Second Nature.

Even people who jump out of airplanes believe in backup. They don't just carry a chute. They carry parachutes!

INTRODUCING THE TG-4040! Designed specifically to meet the expansion needs of the complete Apple Macintosh™ family, by combining 40 Mbytes of tape backup and 40 Mbytes of optional hard disk in a completely integrated solution.

With backup that's every bit as sophisticated as you expect from Tallgrass, a leader in the mass storage marketplace for over 6 years.

Tallgrass has made backing up your Macintosh more practical than ever. And so simple, backing up data becomes second nature.

APPLE ENDORSED IT. TALLGRASS MADE IT BETTER!

Apple endorsed the industry standard QIC 100 tape backup format which, by the way, Tallgrass invented. Now Tallgrass has made it even better.

TWICE AS FAST.

Our tape drive works double-time, backing you up twice as fast as our closest competitors. Including Apple. But the Tallgrass 4040 will slow down, if need be, to read an Apple tape. And we'll guarantee that compatibility.

WITH OR WITHOUT DISK.

Our high performance disk won't slow you down either. Plus, only Tallgrass offers you the ability to add the hard disk at a later date. With or without disk, it's the only solution flexible enough to grow as your business grows.

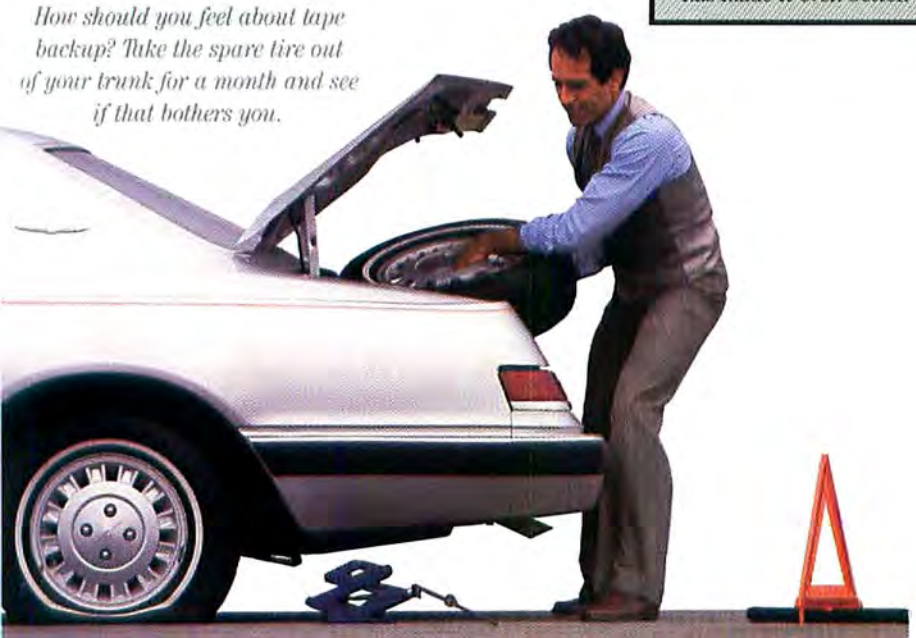
A TRUE 40 MB OF TAPE BACKUP.

Most competitors won't allow you to back up the full capacity of your 40 Mbyte disk. Tallgrass corrects this problem by providing a formatted tape capacity of over 42 Mbytes. A unique tape overflow feature allows you to back up disks of even larger capacities.

WHEN YOU CARE ABOUT YOUR DATA, BACK IT UP.

When the lights come back on, your data may not. That's why Tallgrass took the industry's most reliable medium—magnetic tape—and perfected a format that's becoming an Apple standard.

How should you feel about tape backup? Take the spare tire out of your trunk for a month and see if that bothers you.



Breakthrough: We store 40 Mbytes of backup on this tiny tape cartridge, with legendary Tallgrass simplicity and reliability.

You think they filmed 22 years of Lassie with just one dog? Never. There were always at least two backup Lassies in the wings.

Nobody ever broke their No. 2 pencil during a test. Unless they had just one.

The TG-4040 is available in Apple platinum or beige.

This Apple "sider" fits neatly beside your Apple for easy tape access. An ideal companion for your Mac Plus, Mac SE and Mac II.

THE SIMPLER, THE BETTER.

Tallgrass provides the solution with software that's smart enough to keep things simple. Yet with the features all systems should have, but don't.

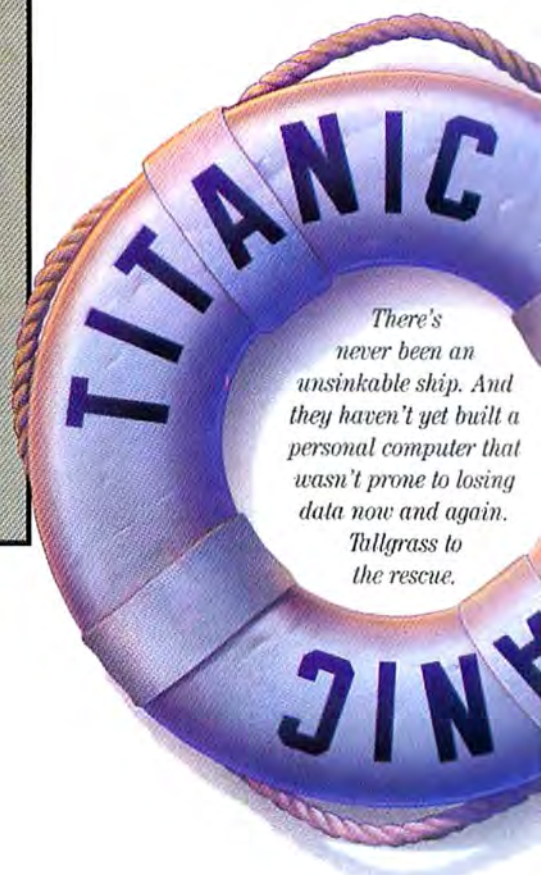
- User-friendly icon-interface software.
- Mirror image, file-by-file and volume backup modes.
- Automatic, unattended backup operations. Set it once and forget it.
- Incremental or modified file option backs up only files that have been changed since the previous backup.
- SCSI interface for compatibility with all internal and external hard disks for the Macintosh.
- Apple Tape Backup 40 SC,™ Apple Share™ and A/UX™ compatible.

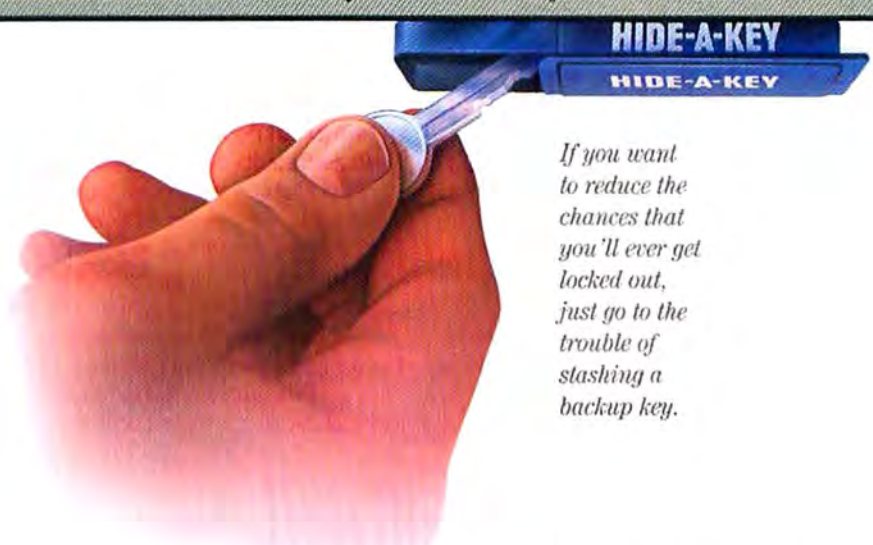
TALLGRASS BACKS *YOU* UP WITH SERVICE AND SUPPORT.

Tallgrass has been backing its products since 1981, a statement that very few of our competitors can make. Our reputation for service and support is second to none. And you can be sure we'll be here to back you up as you move forward.

TALLGRASS TECHNOLOGIES
When It's Worth Saving.

11100 W. 82nd, Overland Park, KS 66214
CALL 1-800-228-3475
For information or the dealer nearest you.





If you want to reduce the chances that you'll ever get locked out, just go to the trouble of stashing a backup key.

Circle 6 on reader service card

Macintosh, Apple Tape Backup 40 SC, Apple Share and A/UX are trademarks of Apple Computer, Inc.

POWERFUL TIME BILLING & MAIL LIST FOR YOUR MAC!

LEGAL BILLING

Legal Billing is a time billing package designed specifically for attorneys and accountants. **Legal Billing** is a full featured system, and yet it is incredibly easy to use. Most firms are up and running in 30 minutes or less!

Here's what **Legal Billing** can do for your office:

- Allows simple and fast entry of information, automatically sorted by date, client, employee and activity
- Customized productivity reports
- Automatic interest added to past due balances
- Client statements formatted in most any way
- Multiple billing rates for each employee
- Aging Report can be customized
- True Work-In-Progress feature holds activity details from month to month

$595.

LEGAL BILLING II

Legal Billing II is an easy-to-use, advanced system designed for small to medium size firms. Includes all features of the basic system plus much more!

- Full trust account reporting
- Archiving of billed services and costs
- Additional billing options
- Handles more employee and activity codes
- Multi-user option available

ABA APPROVED

$895. **$1295.** Legal Billing II + – Multi-user version

NEW from Satori Software

PROJECT BILLING

Project Billing is a time billing package designed for ad agencies, graphic designers, architects and engineers. This package will track all aspects of your project billing including budgets for time and expense, actual costs and billed out amounts for both employee and expenses, and project profitability.

It will also automatically mark-up expenses, and provide productivity reports by employee or project, plus print your client bills in a variety of formats.

This is how **Project Billing** can help you office:

- Tracks employee productivity by cost and billable rates
- Automatically marks up expenses
- Provides profitability analysis by project
- Tracks budgeting of time and expense
- Prints bills and adds interest
- Work-In-Progress holds detail from month-to-month
- Enables progress (partial) billing, while holding all detail
- Multi-user option available

$695. **$1095.** Project Billing + – Multi-user version

BULK MAILER

NEW VERSION! **Bulk Mailer** is a powerful program specially designed for managing lists. **Bulk Mailer** does everything you want in a mail list program, including duplication elimination, zip and alpha sorts, 1 to 4 up labels printed, easy-entry defaults, multiple label format, plus, much, much more.

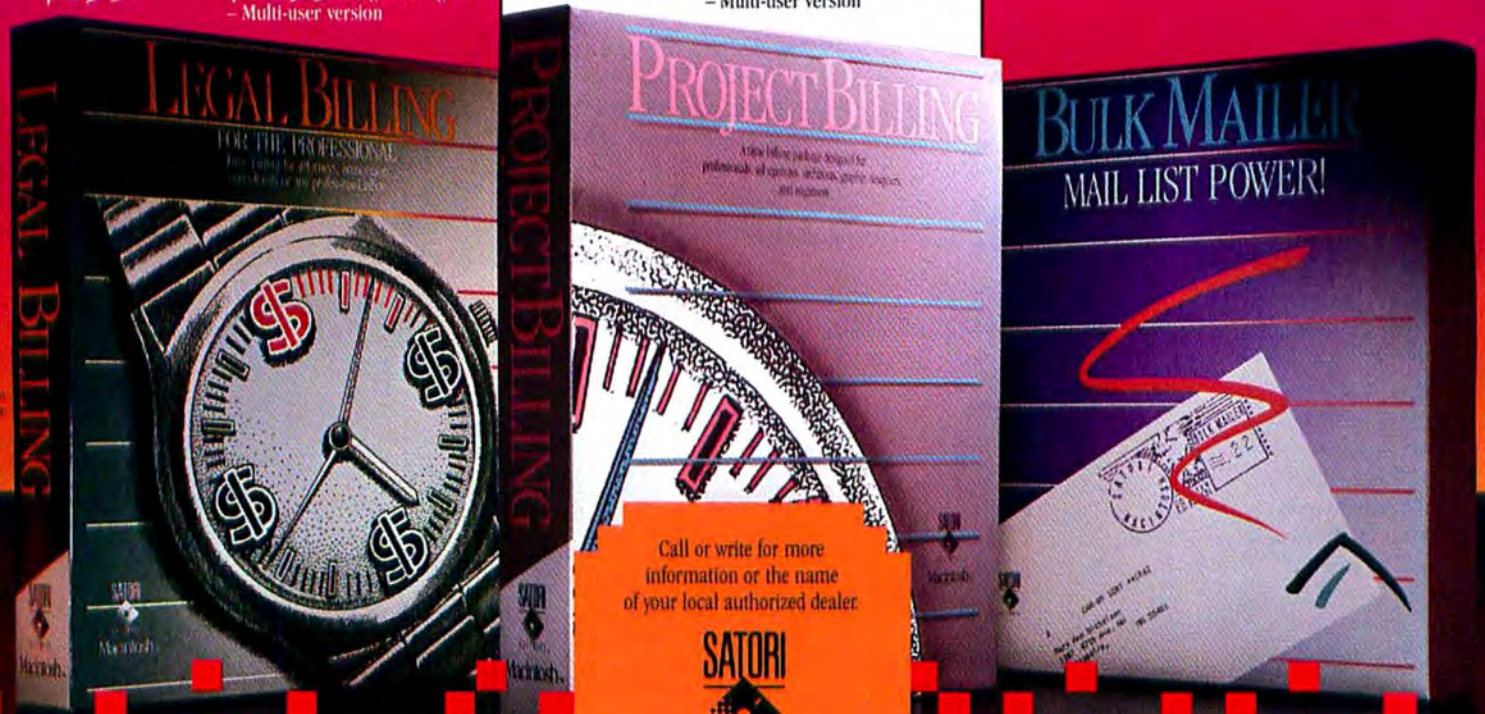
This is the only program to offer all these features:

- Duplication elimination
- Zip or alpha sort
- Car-rt sort or zip + 4
- 1 to 4 up labels or roster format
- Powerful coding capabilities
- Sophisticated global editing and deleting
- Mail merge with Microsoft Word
- Easy-to-use entry defaults
- Coding and date expiration fields
- Large record capacity (up to 90,000 names)
- Hard disk compatible

Now shipping version 3.0

$149. Bulk Mailer – up to 8,600 names

$350. Bulk Mailer + – up to 90,000 names



Call or write for more information or the name of your local authorized dealer.

SATORI SOFTWARE

Satori Software
2815 Second Avenue, Suite 590
Seattle, WA 98121 206/443-0765

New Products

Information on the Mac's latest software, hardware, and accessories

Edited by Eileen Drapiza

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.

SOFTWARE

Aatrix Payroll Generates reports for bookkeeping, federal and state taxes, FICA, and insurance and withholdings; calculates checks; tracks deductions. 512K min. memory. $79.95. Aatrix Software, 701/746-7202.

AutoSave Automatically saves current file to disk at user-specified time intervals. 512K min. memory. $24.95. Magic Software, 800/342-6243.

BodyWorks and EarthWorks Additions to the MacKids educational software series. *BodyWorks* and *EarthWorks* tutor children in human anatomy and geography, respectively. 512K min. memory. $39.95 each. Nordic Software, 800/228-0417.

Canvas and Canvas DA A graphics application that works as a stand-alone or as a DA. Integrates *MacPaint* graphics, 300- to 2400-dpi scanned images, PostScript, and *MacDraw*-style objects in a single layer. 512KE min. memory. $195. Deneba Systems, 305/594-6965.

ChemIntosh Desk accessory for drawing chemical structures. 512K min. memory. $295. SoftShell Company, 716/334-7150.

Drawings by Leonardo and Comicards Two clip-art collections in *MacPaint* format. $29.95 each. Scanmaster, 714/548-5967.

DXF Transfer Data-transfer utility converts *AutoCAD* DXF files into *Design Dimensions* format and vice versa. 512KE min. memory. $495. Visual Information, 818/918-8834.

The Fool's Errand Fantasy puzzle. 512K min. memory. Miles Computing, 818/341-1411.

K-Spool Print spooler for Mac and UNIX systems, which requires no special Mac software. $495. Kinetics, 415/947-0998.

MacRacquetball 3-D racquetball simulator. Play against the computer or against another human via cable or modem. 1MB min. memory. $59.95. Practical Computer Applications, 612/427-4789.

MacRun *Excel* or *Multiplan* templates for runner's log, with daily record, weekly summary, charts, training plan, and competition record. 512K min. memory for *Excel*, 128K for *Multiplan*. $29.95 to $69.95 depending on application and projected length of use. Run Soft Products, 503/256-4806.

MacPS Macro/command language for the Finder that can be used as a procedural/batch-processor utility. 512K min. memory. $19. Neff Systems Group, 408/274-1110.

MDA (Multiuser Desktop Accounting) Tracks, projects, and controls every aspect of financial operations. Designed with *Omnis 3 Plus*. 512KE min. memory for single-user version; 1MB for multiuser version. $1795 and $2495, respectively. Circo Business Solutions, 408/998-1132.

Micro In-ATE Expert system for fault diagnosis of mechanical and electronic equipment. 512K min. memory. Includes rule editor, digitized photo support, and IEEE-488 support. $9500. Automated Reasoning, 212/206-6331.

Multiuser Appointment Diary Up to 21 people on an AppleTalk network can read and write to this desk accessory. Create individual or master schedules. $149.95 plus $10 per node; node upgrading available. Requires server software. Imagine Software, 415/453-3944.

PageTutor Series Hands-on *PageMaker* tutorials consisting of three audio- and disk-based modules. Self-paced for users at all levels. 1MB min. memory. $49.95. Personal Training Systems, 408/559-8635.

PhotoCalc Solves photographic lens calculation problems. 512K min. memory. $150 to $155, depending on configuration. Russ Bundy Photography, 515/753-3525.

Physics Equivalent to one-year course in classical mechanics; allows vector manipulation and graph interpretation. 512K min. memory. $99. Brøderbund Software, 415/492-3200.

Schedule Maker For building and maintaining an employee database. 512K min. memory. $295. Craig Management Inc., 504/291-6348.

Sea Life Clip-art collection ranging from invertebrate to sea mammal images. Available in PICT files. $29.95. A.A.H. Computer Graphic Productions, 408/980-7363.

(continues)

Testament Integrated software allowing quick search and reference to multiple Bible translations. 512K min. memory. $99.95. Exclusive Technologies, 214/869-2775.

Track, Lead, For Sale, and List *Track* is a realtor's client- and prospect-tracking system. *Lead* is for coordinating solicitation of owners trying to sell properties. *For Sale* is a real estate farming package. *List* is a property listing system. 1MB min. memory. *Track* $395, *Lead* $595, *For Sale* $695, *List* $795. Softworks Inc., 203/926-1116.

UpBeat Rhythm programmer for all MIDI drum machines and synthesizers. Includes 32-track graphic editing capability, device recognition, random accent generation, and MIDI file compatibility. 512K min. memory. $150. Demo disk $5. Intelligent Music, 518/434-4110.

HARDWARE

Asher JT FaxMac Group III fax machine works with all Mac printer drivers, via printer or modem port. Software phone directory, scheduling system, and transaction log included. $695. Asher Technologies, Inc., 800/334-9339.

Fast-20 20MB SCSI hard disk includes backup/restore, spooling, and disk optimization utilities. $1195. AST Research Inc., 714/863-1333.

SuperScan/AST TurboScan Hardware/software scanning system that displays and edits up to three scanned documents simultaneously. Supports line-art, halftone, and combination scanning modes. Brightness, contrast, resolution, grain settings, a floating toolbox, and other paint/editing features available. $2395. AST Research Inc., 714/863-1333.

Giga Cell SCSI storage subsystems in 250MB, 330MB, 660MB configurations with either a 40MB tape drive or a 10MB removable cartridge, with hardware SCSI select. Includes memory-management utilities. 250MB $8100, 330MB $9700, 660MB $17000. NuData, 408/727-1049.

Infinity and Infinity II 10MB removable media, 5¼-in. format disk drives. Requires SCSI port. Infinity $1095, media $18 each. Infinity II $1095, media $59 each. Peripheral Land, 415/657-2211.

IntelliModem 2400 Hayes-compatible 2400-bps modem. $599. Bizcomp Corp., 408/733-7800.

LaserView Display System Video card and 15-in. or 19-in. monochrome monitor (1664 by 1200 pixels) with paper-white phosphor. Scans at 75 KHz; refresh rate is 60 Hz, noninterlaced. 15-in. version, $1795, 19-in. version $2295. Sigma Designs, 415/770-0100.

macTape SCSI tape-backup device with 60MB capacity. Uses Mac file manager to back up and restore data (MFS of HFS). Approximately $2300 (U.S.). Wollongong Computing Sciences, P.O. Box 380, Wollongong East, New South Wales 2500, Australia, 042/270-777.

MacTwenty External 20MB SCSI hard disk with four AC power outlets; fits under Mac. $850. Franklin Telecom, 805/373-8688.

NetModem V1200 Hayes-compatible multiuser modem for AppleTalk. Software includes online help, on-screen status indicators, and call monitoring. $599. Shiva Corp., 617/470-3292.

(continues)

Computer communications made simple, made affordable. And made in America.

A new line of modems from $139. At prices this low, you might expect a modem to come from across the ocean. But the beautifully compact Sportster 1200™ comes from USRobotics, a leading American manufacturer for over 10 years.

A Sportster internal or external modem teamed with your computer connects you to a world of information at 1200 or 2400 bps. Choose from three models, $139 to $299. Easily the USA's best modem value.

The Sportster features auto-dial, auto-redial and auto-answer. And it uses the industry standard AT command set, so it works with all data communication software.

For quick reference, the bottom panel contains a printed operations summary. You also get a 28-page user's guide, a two-year warranty, USR's Telpac™ Communications Software for IBM users, and a free subscription and connect time to the CompuServe® information service.

Call us today for your nearest dealer.

1-800-DIAL-USR Ext. 23
In Illinois, call 312-982-5001

USRobotics™
The Intelligent Choice In Data Communications

Circle 61 on reader service card

The next computer revolution.

If you can hold a pen, you can use a computer. Forget about punching keyboards or chasing a mouse. With the Personal Writer system, all you do is write on paper and your words appear typewritten on screen, instantly!

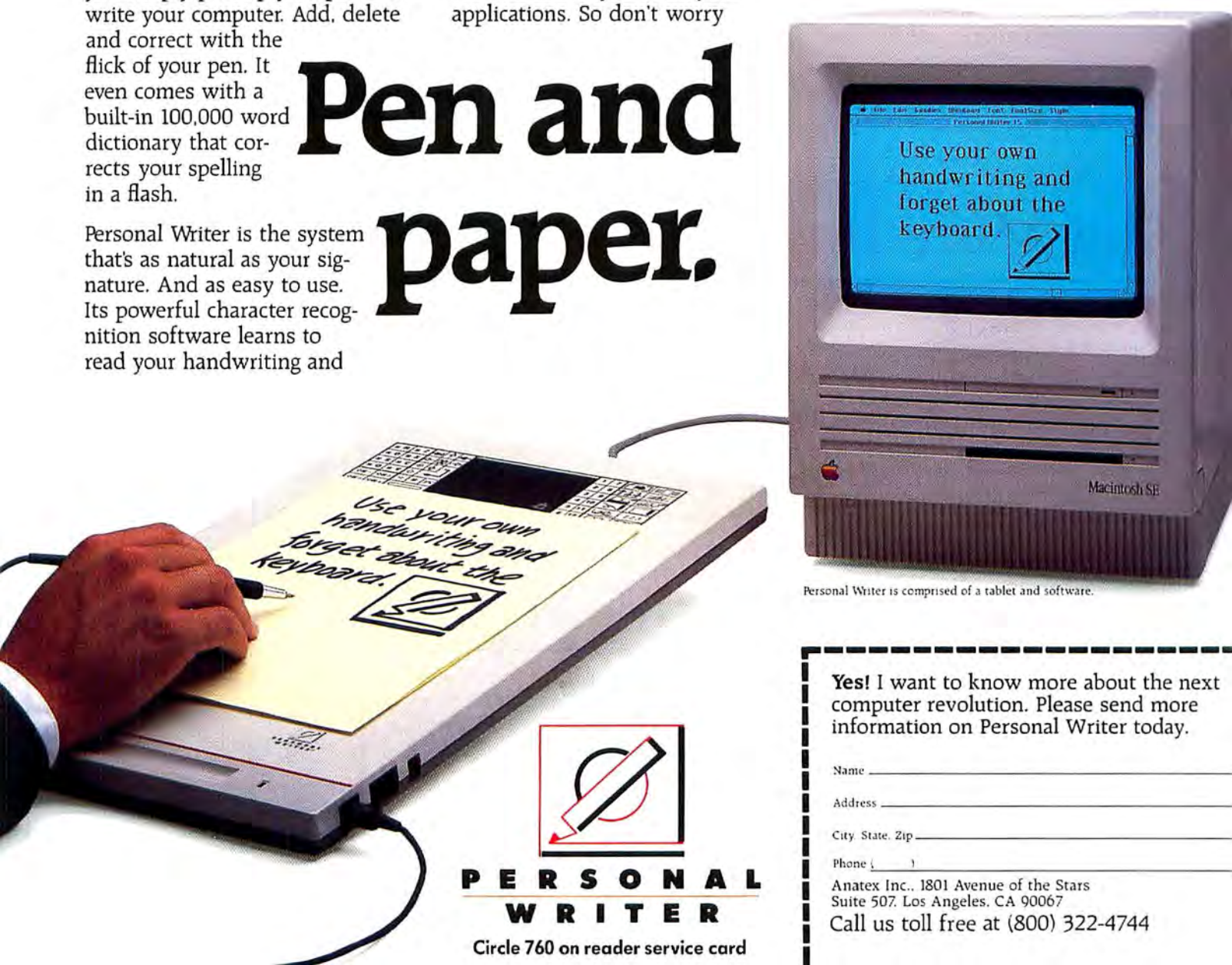
Whether you want to write text, input figures, or create graphics, you simply pick up your pen and write your computer. Add, delete and correct with the flick of your pen. It even comes with a built-in 100,000 word dictionary that corrects your spelling in a flash.

Personal Writer is the system that's as natural as your signature. And as easy to use. Its powerful character recognition software learns to read your handwriting and makes interaction with your computer a breeze.

Whether your needs are in word processing, spreadsheets, data base management, or graphics, the Personal Writer system works for you. Fully compatible with virtually any software on the Mac market, Personal Writer's ease of use will follow you in all your applications. So don't worry about tedious typing. Use the power of your own handwriting.

Call us toll free today for more information at (800) 322-4744 or write us at Anatex Inc., 1801 Avenue of the Stars, Suite 507, Los Angeles, CA 90067. (213) 556-1628. Dealer inquiries invited.

Pen and paper.



Personal Writer is comprised of a tablet and software.

PERSONAL WRITER

Circle 760 on reader service card

Yes! I want to know more about the next computer revolution. Please send more information on Personal Writer today.

Name _____

Address _____

City, State, Zip _____

Phone ( ) _____

Anatex Inc., 1801 Avenue of the Stars
Suite 507, Los Angeles, CA 90067
Call us toll free at (800) 322-4744

Novatape 110 SCSI ½-in. tape drive. $895. Novastor Corp., 818/707-9900.

NS8/16 16MB memory card for Mac II with 4-, 8-, 12-, or 16MB of RAM. $400 per MB. National Semiconductor Corp., 800/538-8510, 800/345-4006 in California.

PL40i and PL60i Internal hard disk for Mac SE. Includes utilities and an external case for displaced second disk drive. Automatic head parking. 40MB $1295, 60MB $1450. Peripheral Land, 415/657-2211.

Pro80-II/i and Pro43-II/i Internal hard disk systems for Mac II. Cables and utility software included. Automatic head parking. Pro80-II/i $1795, Pro43-II/i $1195. CMS Enhancements, 714/259-9555.

QMS-PS 800 II PostScript laser printer. 8-ppm, 500-sheet input/400-sheet output paper handling, and 10,000-print-per-month duty cycle. First/second-sheet input and faceup or facedown output. 35 resident typestyles. $6495. QMS, Inc., 205/633-4300.

Rodime 450 RX, 1000 RX, 1400 RX The 450 RX is a 45MB internal hard disk for Mac SE and Mac II. The 1000 RX and 1400 RX are internal hard disks for Mac II in formatted capacities of 102MB and 144MB. 450 RX $1595, 1000 RX $2995, 1400 RX $3495. Rodime Systems, 216/765-8414.

R-Server Communications server for modems accesses AppleTalk network over phone lines. One serial port, AppleTalk adapter, RAM expandable to 2MB, and a high-speed composite data link based on ISO's OSI communications protocol. $495. Solana Electronics, 619/566-1701.

QT-Mac40 A 40MB SCSI tape drive. Uses a DC2000 or equivalent mini ¼-in. data cartridge. $1395. Tecmar, 216/349-0600.

Ventuno 3 Autoloader Stand-alone 3½-in. diskette duplicator with 20-disk capacity and optional expansion capability. $1995. Ventuno, 415/651-1936.

Vista 1600 for Mac II 19-in. noninterlaced monochrome display (1600 by 1280 pixels); screen refreshes at 67Hz. $2195. Cornerstone Technology, 408/433-1600.

ACCESSORIES

Accessafile Disk filing system. $59.95 (Canadian). Canada Corporation, 403/455-4113.

Omnium Mouse Pad Antistatic mouse pad. 8 by 10 inches. $14.95. Omnium Corp., 800/328-0223.

RealClean Cleaning kit for computer mice. $14.95. Tacklind Design, Inc., 415/322-2257. □

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

Get More from your Macintosh™ . . . for less.

Memory upgrade kits for the Macintosh Plus™ — Up to four megabytes of RAM, instantly accessible to all your applications with no modification. Completely non-destructive installation uses existing memory expansion sockets. All RamPlus and Ram II™ kits use the new 1 Megabit CMOS DRAM technology.

- **RamPlus 2** - Two megabytes† $299
- **RamPlus 4** - Four megabytes† $799

†*Not guaranteed compatible with internal devices.*

VA: Composite Video Adapter for Macintosh 128 to SE.
Connects your Macintosh Computer to large screen displays, monitors, and projectors. Completely harmless installation clips in and requires no hole cutting in your computer case.

- **VA-Plus** for the 128 to Plus $99.95
- **VA-SE** for the Macintosh SE $149.95

Memory expansion kits for the Macintosh SE and Macintosh II — Up to 8 megabytes additional memory for the powerful new members of the Macintosh family. Install in minutes, and are completely compatible with all internal enhancements.

- **Ram II** - Two megabytes $599
- **Ram II + II** - Four megabytes $999
- **Ram II/s** - Two megabytes $699
- **Ram II + II/s** - Four megabytes $1199

(Note: "s" models are surface mount)

SCSI port for the Macintosh 512e
Completely Apple compatible. Non-destructive installation. Works with all SCSI devices. Installation Tool included. $99.95

RESELLER INQUIRIES INVITED

• 2 year full replacement warranty •
• Shipment within 72 hours •
(24 hour shipment available)

OPEN MAC Enterprises

140 Mason Circle, Suite H
Concord, CA 94520

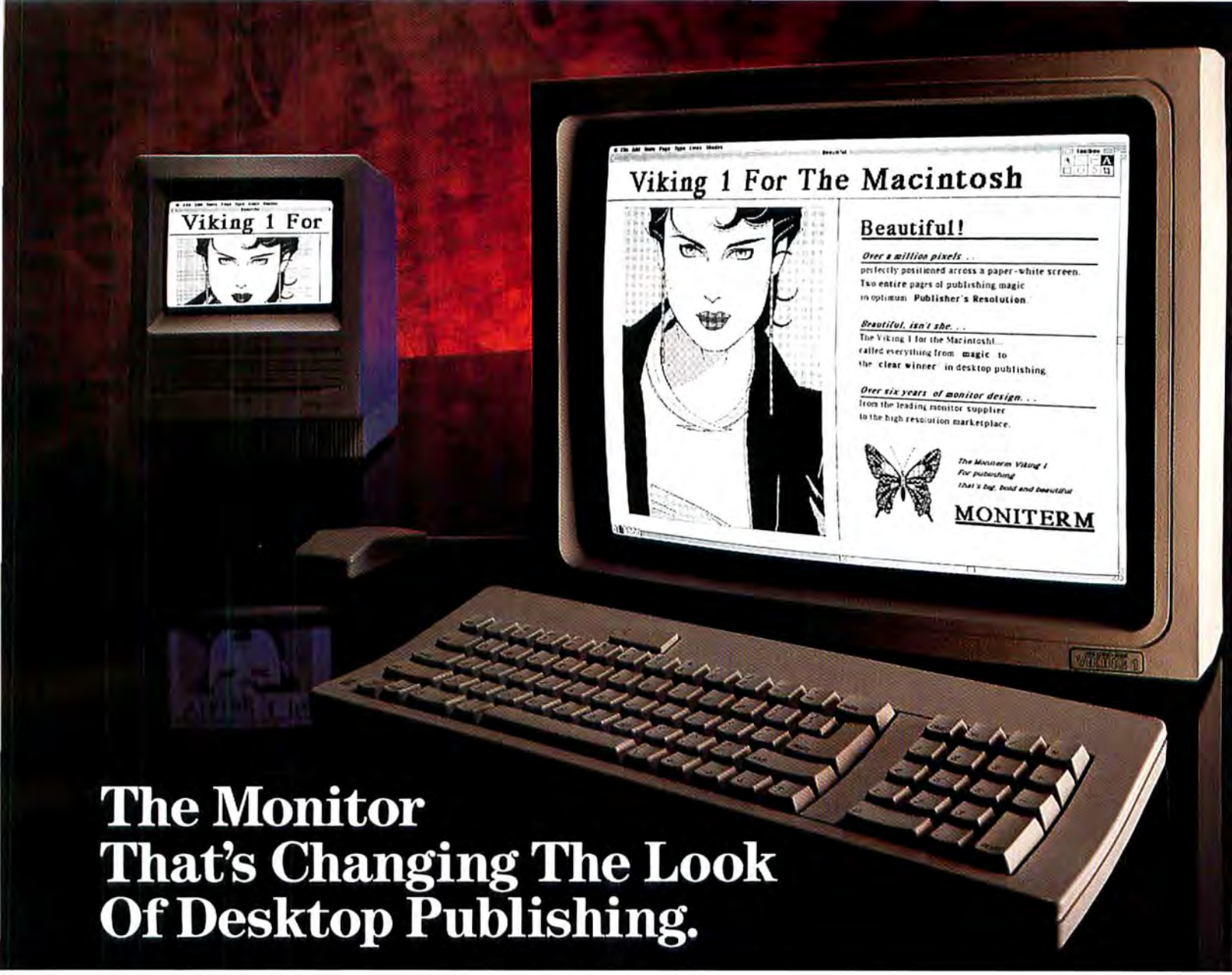
415/682-0440

Terms:

- Prices reflect cash discount for prepaid orders.
- Discover, MasterCard, Visa, and AMEX accepted.
- COD orders accepted.
- Educational & Institutional Orders Accepted (Status Verification Required)

Macintosh and Apple are registered trademarks of Apple Computer Inc.
RamPlus, Ram II, and SCSI-Mac are trademarks of Open Mac Enterprises.

Circle 718 on reader service card



The Monitor That's Changing The Look Of Desktop Publishing.

Introducing the 19-inch Viking 1 for the Macintosh™ SE.

The critics have praised the Viking 1 as **"magic"*** *and* **"the clear winner"**** *for desktop publishing on the PC. Now this exciting new monitor is about to change the look of desktop publishing on the Macintosh.*

Here's why:

Introducing "Publishing Resolution."™
The Viking 1's 19-inch screen allows for a full two-page layout. Its ultra-high 1280 x 960-pixel resolution provides a precise, tack-sharp image–unlike lower-resolution monitors that make it tough to read the fine print. Or higher-resolution monitors that create letters too tiny and fuzzy to read. And the Viking 1's unique square pixels assure that screen and laser-printer characters match perfectly.

Eliminates Flicker.
Some monitors have an annoying flicker that can frazzle your nerves. The Viking 1's exceptional non-interlaced 66 Hz refresh rate provides rock-solid stability.

Fast Screen Update.
With over a million pixels, screen updating can get sluggish on some monitors. The Viking 1 accelerates screen update by avoiding processor wait states.

Gets Your SE Involved.
With most large-screen monitors, your Macintosh is turned off–or just a repository for surplus windows and toolboxes. With the Viking 1, your Mac SE can serve as a 7x11-inch scrollable extension to the large-screen image. Or "roam and zoom" in the large-screen image, zooming in at two levels of "fat bits" magnification of whatever the cursor is pointing to.

IBM® Compatibility.
The Viking 1 is the only monitor that's compatible with both the Macintosh SE and the entire IBM line of PC/XT/AT and PS/2 computers. So you can stay flexible and grow.

Spend A Minute With Moniterm.

That's all it takes to *really* visualize the benefits of the **Viking 1.** For a screening, contact the dealer in your area, or return this card for more information.

Name_____
Company_____
Street_____
City_____ **State**_____ **Zip**_____
Tel. No._____
Dealer Inquiries Wanted.

MONITERM

Moniterm Corporation
5740 Green Circle Drive
Minnetonka, MN 55343
(612) 935-4151
TELEX–753626
FAX–(612)933-5701

Circle 779 on reader service card

*Jim Seymour, *PC Week* **Jim Felici, *Publish!*

Screen image: P. Nagel "Michelle" © 1982, Mirage Editions, Inc.

Macintosh is a trademark of McIntosh Laboratories Inc. IBM is a registered trademark of International Business Machines Corporation. "Publishing Resolution" is a trademark of Moniterm Corporation.

The best is yet to come.

WordPerfect® for the Macintosh®.
Landing in October on dealers' shelves everywhere.

Circle 40 on reader service card

Quick Tips

Answers to your questions

by Lon Poole

¿Que es mas macho, heat or noise? The Mac SE and Mac II have noisy fans to keep them cool. Perhaps you'd like to cool your fanless Mac Plus, 512K, or 128K but would resent the aural intrusion. I just discovered a silent, inexpensive alternative to adding a fan, called MacChimney. It sits atop your Mac and works like a fireplace chimney to increase the flow of warm air out of the Mac. Tom Swain, an engineer at the Lawrence Berkeley Laboratory in Berkeley, California, designed MacChimney and claims it boosts airflow 60 percent. You can build a MacChimney from tape and stiff cardboard as described in an article by Swain in the Spring 1986 Berkeley Macintosh Users Group *BMUG Newsletter*. He'll also sell you a kit ($19.95) of precut cardboard pieces, plastic clips, and instructions that make fabrication much easier. Write to Silicon Comforts, 2560 Bancroft Way #117, Berkeley, CA 94704.

Q Jumbo Font Sizes

I would like to use *MacDraw* to compose poster titles for professional presentations, but *MacDraw* accepts font sizes up to only 48 points. Is there some way that I can modify *MacDraw*, possibly with *ResEdit*, so that it can handle larger font sizes? I am working with a Mac 512KE and an ImageWriter II.

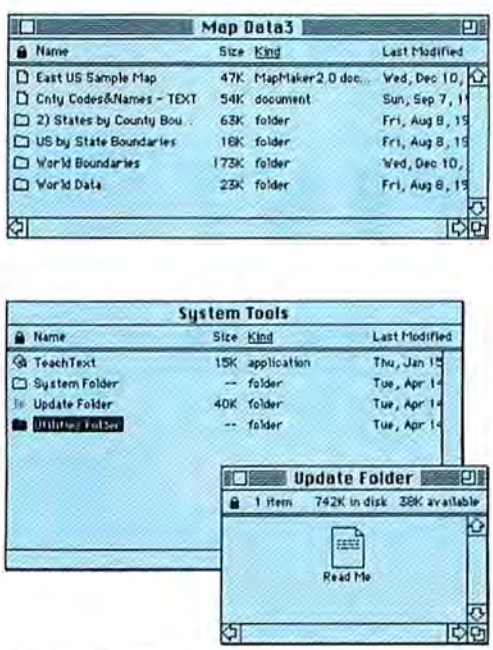
John Kaumeyer
Mishawaka, Indiana

A If you were using a LaserWriter, I would suggest using the Page Setup command to specify an enlargement greater than 100 percent. For example, printing 48-point text at 150 percent yields 72-point output. However, the ImageWriter's Page Setup dialog doesn't have an enlargement option.

With an ImageWriter, the first task is finding large sizes of fonts. If the largest size in your System file is 24 or 36 points, 72-point type will look ugly in print. You need a 72-point font for standard quality printing and a 144-point font for high-quality printing. Large font sizes require lots of disk space. For example, a 72-point Geneva would enlarge your System file at least 60K. If you can't find the size you need, you can use Altsys's *Fontastic* program to scale up an existing size and refine the result.

To use a point size that's not listed in *MacDraw*'s Font menu, lie about the size. Using Font/DA Mover, you install a font *MacDraw* thinks is one size but which is actually a different size. For example, install a "Geneva 24" that is actually a 72-point font. (You might call the disguised font "Geneva3X" to differentiate it from regular Geneva.) *Fontastic* easily disguises fonts. Just open the 72-point font in *Fontastic*, then choose Save As from the File menu. In the dialog box that appears, change the point size (and name, if you like) to one of the sizes that appears in *MacDraw*'s Font menu.

You can avoid the font disguise rigmarole altogether by using a drawing program like *SuperPaint* instead of *MacDraw*. *SuperPaint* lets you specify any point size from 1 to 127.



Size Unknown
The old-style MFS disk directory (top), normally used only on single-sided floppy disks, shows folder sizes. An HFS disk directory (bottom), used on double-sided floppy disks and most hard disks, shows sizes only of opened folders.

Q Lost Folder Sizes

I followed the instructions in the May 1987 *Quick Tips* to force HFS (the Hierarchical File System) on single-sided (400K) disks by pressing the Option key during initialization. After HFS initialization, folders appear without size information (see "Size Unknown"). However, when I close a folder, its size appears just for an instant before the window zooms closed.

There appears to be a bug in the Finder that causes folders to lose their size info under HFS. Can something be done about this?

David S. Lifton
Los Angeles, California

A On MFS (Macintosh File System) disks, the Finder creates and maintains the illusion of folders, including folder size. MFS knows nothing of folders. That's why you don't see folders in an Open or Save dialog box.

On HFS disks, folders are "real." You can see and use folders in Open and Save dialogs, and the Finder gets folder information from the HFS disk directory. The HFS

(continues)

directory does not include folder size. The Finder could calculate all folder sizes, but that might take lots of time on the larger disks that use HFS. Instead, the Finder only displays the size of a folder while it is open. The size appears next to the folder icon in a By Size or another text view. You can also see a folder's size by selecting its icon and choosing Get Info from the File menu.

Incidentally, be sure you use Finder 5.3 or later with any HFS disk. Finder 4.1 (and earlier) does not recognize HFS directories and shows no folders on an HFS disk.

Q MacTelex

In our flower wholesale business we use an archaic telex machine. Is there a way to use our Macintosh 512K or Macintosh Plus to receive and send telexes?

Franklin H. Musschе
Edmonton, Alberta
Canada

A To turn a Mac into a telex terminal, you need a modem, a terminal program such as Apple's *MacTerminal* or Software Ventures' *MicroPhone,* and a subscription to Western Union's EasyLink or MCI Mail. Modems and the *MacTerminal* program are described in the book *MacTelecommunications,* by Jonathan Erickson and William D. Cramer (Osborne/McGraw-Hill, 1985). The book *Online,* by Steve Lambert (Microsoft Press, 1985), describes modems and terminal programs in general terms. *Online* includes subscriptions to EasyLink (800/336-3979), MCI Mail (800/MCI-2255), and other online services and explains how to send telexes.

Q Mimeograph

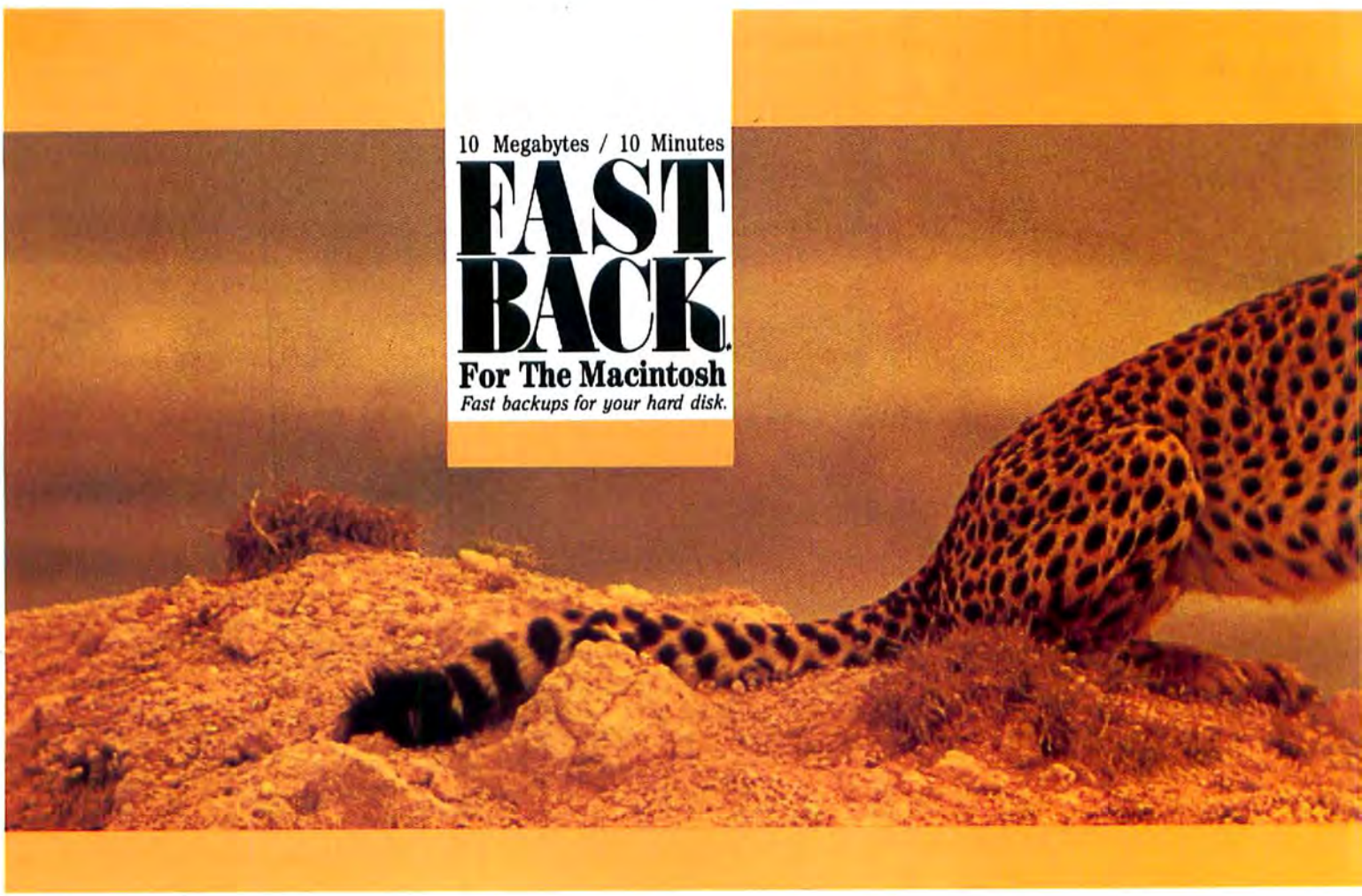
I, and perhaps thousands of others, produce newsletters by mimeograph, the most economical form of printing available. Editors of very small newsletters can't afford the very high cost of printing by LaserWriter or photocopying.

I would like to use my Macintosh and ImageWriter II for mimeographed newsletters. Will the ImageWriter print on a regular mimeograph stencil? Will the ImageWriter run without a ribbon? Can multiple columns be printed without the printer doing one column at a time?

Lloyd C. Fowler
Santa Barbara, California

A The ImageWriter II does work without a ribbon. No one I talked to uses it to print mimeograph stencils. However, Shelley Regan, a school teacher in Oakland, California, regularly prints ditto masters for tests, and so forth, on her ImageWriter II. For best results, she writes in Geneva Bold and selects Best quality in the Print dialog box. She can get 100 to 150 copies from a good master.

A number of word processors print multiple columns in one pass, including *WriteNow for Macintosh* (T/Maker, 415/962-0195), *Laser Author* (Firebird Licensees, 201/444-5700), and *Microsoft Word* (Microsoft, 206/882-8080).



Q MD BBS

I am trying to set up a bulletin board system (BBS) in which people could access my computer database of medical information as well as leave medical questions, which I would answer later. I have been unable to find BBS software for the Mac. Does such software exist? If so, would a Mac SE be capable of multitasking? I need something that will handle more than one incoming phone line and allow me to do spreadsheets or other non-BBS tasks concurrently.

Michael D. Schoenleber
Minneapolis, Minnesota

A I have not personally set up a BBS, but the Berkeley Macintosh Users Group (BMUG) has had one in operation for years. The group now enthusiastically uses *Red Ryder Host* software, written by the legendary and dedicated–some might say fanatic–Scott Watson.

BMUG has two phone lines for its BBS. Because *Red Ryder Host* can only handle one line per Mac, it has a separate computer system for each line. One system consists of a Mac Plus with a 50-megabyte hard disk, and the other a Mac Plus with a 20MB hard disk.

Multitasking is currently not available with the standard Macintosh operating system, so there's no way to do another task while the BBS is in operation. Such a scenario may be possible with upcoming system software, but it's not clear whether a standard Mac SE would have the power to handle such a workload. Depending on BBS activity, you might need to add an accelerator card to your Mac SE.

Red Ryder Host is actually a BBS construction set. It gives you, as system operator, control over the appearance and operation of your entire BBS. You create menus, database (file-transfer) sections, message sections, and so forth. *Red Ryder Host* allows up to 20 different message sections and an unlimited number of database sections. Your needs and ingenuity determine the number of menus, their appearance, and their structure.

You also have plenty of control over access to BBS services. *Red Ryder Host* recognizes up to 256 clearance levels for each user, menu command, and downloadable file. You define the relationships that must exist between user clearance levels and clearance levels of individual menu items and downloadable files. If a user has the wrong clearance level for a particular service, *Red Ryder Host* denies access.

Users can download files using either Xmodem-checksum or Xmodem-CRC file-transfer protocols, with full MacBinary format recognition.

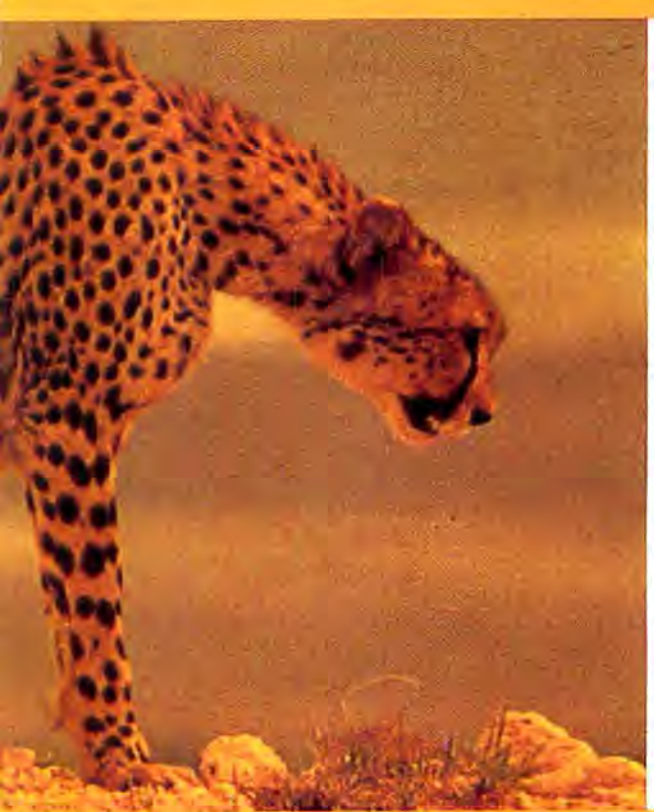
The irrepressible Watson is now revising *Red Ryder Host*. He plans to improve it so that a BBS will look to the users like a typical Macintosh application running on their local Macs. That means graphics, menus, buttons, scroll bars–the whole MacSchmear.

For details about *Red Ryder Host* ($65 shareware), contact The Freesoft Company, 10828 Lacklink, St. Louis, MO 63114, 314/423-2190.

Q Upgrade Path Trailhead

It seems that all the upgrade ads I read in *Macworld* begin with either upgrading a 512K Mac or upgrading a 128K to

(continues)



UNLEASH THE POWER

Now for Macintosh!

Speed, accuracy, and power. Now Fastback, the leader in disk backup software, is available for the Macintosh.

Fastback for the Macintosh is the **only** program that can back up a full 10-megabyte hard disk in less than 10 minutes! This can mean an over 85% savings in time and money! Fastback is also the **only** program that uses advanced **error correction** techniques to recover data from damaged backup disks. And Fastback is **powerful** -- you can backup all your files, select folders and files for backup, or have Fastback select only the files which have changed.

Protect the data on your hard disk now. Remember, among those who use hard disks on their Macintosh systems, there will only be two types -- those who use Fastback, and those who wish they had! See your dealer today, and unleash the power of Fastback as your Macintosh defense!

Fifth Generation SYSTEMS, INC.

11200 Industriplex Blvd., Baton Rouge, LA 70809, **Sales Office:** 2691 Richter Ave., Suite 107, Irvine, CA 92714 **(800) 225-2775 (714) 553-0111**

• This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation.
Macintosh is a registered Trademark of Apple Computer Inc. **Circle 312 on reader service card**

Rendezvous™

• 52-week **Year Planner** to customize your special events or holidays for any year

• 12-month **Year Calendar** for any year

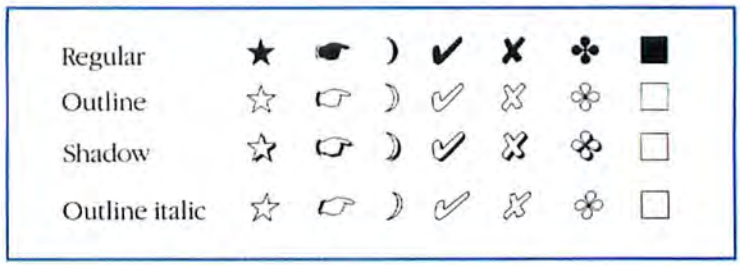
• 24-hour **Diary Page** for each day of any year

• An Automatic Reminder feature to remind you of your appointments while working within any Macintosh application

• Plus a lot more for $200

Order today
from your dealer or direct from:
PMC Telesystems
P. O. Box 5127
Vancouver BC V6B 4A9
604 255 9949

Circle 754 on reader service card



Dingbats on Parade
The Outline, Shadow, and Italic styles applied to the Zapf Dingbat font make useful variations of plain dingbats.

a 512K. I have a 128K Mac that I would like to upgrade to a Plus. Sometime after I've gotten the upgrade, I plan to increase memory.

Could you recommend a way to go, a direction, a supplier for the 128K to Mac Plus upgrade?

Robert M. Seiden
Plainview, New York

A The key to upgrading from a 128K or 512K to a Mac Plus is a new ROM chip, which you can get only from an Apple dealer as part of Apple's Macintosh Plus Disk Drive Kit. That kit also includes an 800K internal disk drive and new software–System file, Finder, ImageWriter file, and so on.

You may obtain a 1MB memory upgrade and a SCSI port adapter from many sources. For an official Mac Plus, have the Macintosh Plus Logic Board Kit installed by an Apple dealer. For the same functionality at lower cost, buy the memory upgrade and SCSI adapter from any of the companies that advertise in *Macworld*. Your Apple dealer may sell their products, too.

A Mac Plus works fine with an old-style keyboard. If you want the Mac Plus keyboard–which has an integral numeric pad, arrow keys, and only one Option key–go to your Apple dealer.

Short LaserWriter Pages

Tip: I'm using *MacWrite* to write documentation to be printed on 8½- by 5½-inch pages (IBM PC manual size). I followed the directions in January 1986 *Get Info* for changing paper sizes offered in the ImageWriter Page Setup dialog, and they worked fine. But I couldn't figure out how to make the same changes to the LaserWriter Page Setup dialog. Then I realized I could simply select landscape orientation and adjust the right and left margins for a 5½-inch column width. I can't believe I didn't figure this out sooner, but for some reason I tend to look for hard solutions before finding the simpler ones.

Butch Brooks
Rockville, Maryland

Mutant Dingbats

Tip: I use an open ballot-box symbol so much–expecially when working with forms–that I could not believe it was missing from LaserWriter fonts.

I was delighted to discover that plain Zapf Dingbat characters become hollow when you apply the Outline style. You press the *n* key (nope, no Shift, Option, or ⌘) to get a solid square dingbat. Make it Outline style, and you have an open ballot box. Shadow and Italic styles produce other useful effects (see "Dingbats on Parade").

Josephine R. Gibson
Charlottesville, Virginia

Plus-to-Volksmodem Cable

Tip: It is tough getting the proper cable connection from the Mac Plus to a non-Apple modem. For the proper way to connect the Volksmodem 12 to the Mac Plus, see "Hello, Volks."

Marvin R. Bensman
Germantown, Tennessee

Click Back

Tip: When opening or saving files within an application, you can move down through the folders one level at a time by clicking the disk name listed above the Eject button. Each click takes you back one folder until you finally arrive at the main disk directory (the root level).

Billiam Coronel
New York, New York

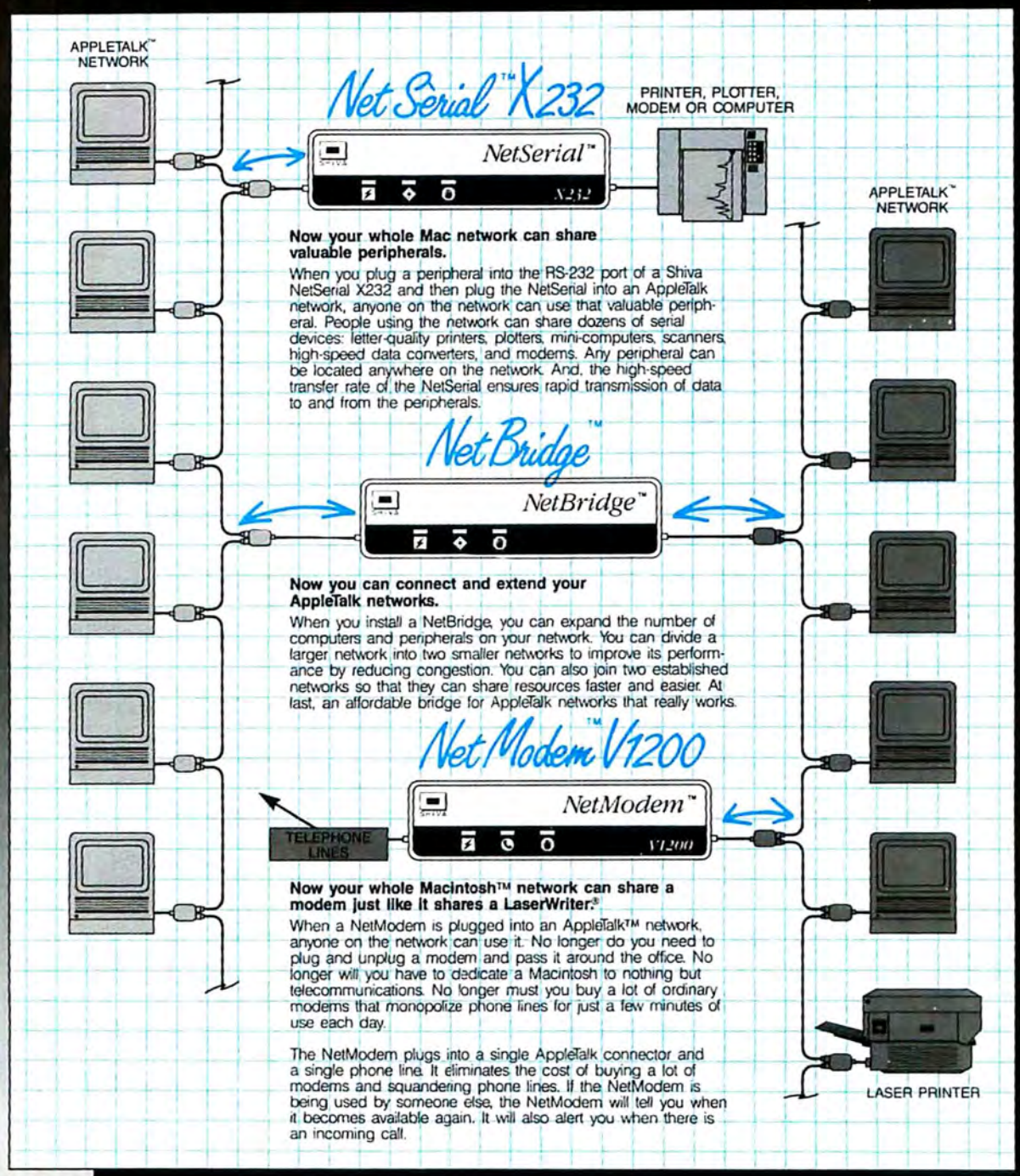
MacPaint Miniatures

Tip: I wanted to print miniatures of some new clip art, so I naturally turned to my newest graphics applications, *FullPaint* and *SuperPaint*. Unfortunately, neither has a Print Catalog command like *MacPaint* has. Don't throw away *MacPaint* if you

(continues)

Superconnectivity

Shiva presents three products to serve and connect AppleTalk™ networks!



a brings Superconnectivity to your AppleTalk environment.

ıore information and the name of your nearest dealer, call 1-800-458-3550. Dealers: ır a Dealer Information Kit and the name of your local sales representative.

™ AppleShare,™ LaserWriter,™ and Macintosh™ are trademarks of Apple Computer, Inc. NetModem,™ NetSerial,™ and ™ are trademarks of Shiva Corporation. InBox™ is a trademark of Think Technologies, Inc. MicroPhone™ is a trademark of entures Corporation. Red Ryder™ is a trademark of The Freesoft Co. Hayes™ is a trademark of Hayes Microcomputer Products, Inc.

SHIVA Corporation

SUITE 1200, 222 THIRD

Circle 787 on reader service card

MAC DayDreams™
1988 WALL CALENDAR

Only $10.95!

A Full Year of Color Mac Art, From MacPaint To Macintosh II!

The Perfect Gift For Mac Lovers!

- 12 Original Works of Mac Art from America's Finest Macintosh Artists
- Technology From 128K MacPaint to Amazing 3-D Graphics of the new Mac II
- All Monthly Grids (Text, Numbers, Rules, Clip Art) Assembled With The Latest Desktop Publishing Software.
- All Typeset Directly From Mac on Linotronic® at 2400 DPI
- Includes Mac Hints, Trivia, and Milestones, Plus Convenient Lines for Writing Notes or Appointments
- Full-Color Printed on Premium Paper

NOW AVAILABLE

CALL TOLL-FREE/COLLECT (VISA, M/C)
1-800-54-DREAM (U.S.) • 1-818-500-7857 (CA, AK, HI)

Send $10.95 (plus $1.50 shipping and handling) for each calendar to:
Publishing Ink., 521 State Street, Glendale, CA 91203

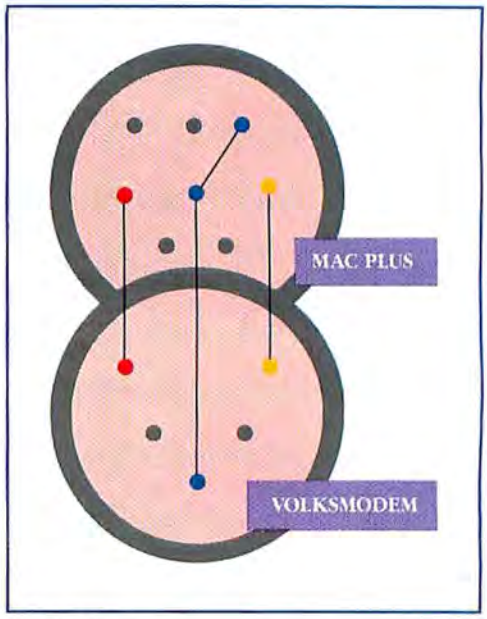
Also available: ***Digital DayDreams™****, with IBM, AMIGA, Atari, Apple II, Macintosh, and mainframe system artwork. Features full-color, 100% computer-generated art - also $10.95!*

CALENDARS WILL BE SHIPPED BEGINNING OCTOBER 1, 1987.

D E A L E R S:

YOU MUST ORDER NOW FOR HOLIDAY DELIVERY!

Circle 763 on reader service card



Hello, Volks

Build a cable that connects a Volksmodem 12 to a Mac Plus by wiring the pins according to the color code.

want to print miniatures of your *MacPaint* documents.

Ken Acrea
Des Moines, Iowa

MacPaint *prints miniatures of* FullPaint *documents.* SuperPaint *documents have a different file format, however, so* MacPaint*'s Print Catalog command doesn't print them. If you have a LaserWriter, you can get much better quality miniatures by using the application Widgets, which is part of* DiskTop *from CE Software (515/224-1995.) It prints* MacPaint *documents dot-for-dot on the LaserWriter. Because LaserWriter dots are one-fourth the size of screen or ImageWriter dots, the result is an image 25 percent its original size. Widgets prints 16 miniatures per page.* □

We pay $25 to $100 for tips published here. Send tips or questions to Quick Tips, Macworld, *501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCW440. All published submissions become the property of* Macworld.

SOFTWARE

USINESS & PRODUCTIVITY

gis Development
ug Clapp Word Tools ..... $CALL
ffinity
mpo $64.00
n Arbor
ll Paint $59.95
llwrite Professional ..... $CALL
atteries Included
ttery Pack $27.00
under $29.00
erkeley Systems
apping Out $64.00
lyth Software
nnis 3+ $279.00
ecutive Assistant ..... $CALL
orland
dekick 2.0 ..... $59.00
iflex ..... $CALL
avelling Sidekick $42.95
rbo Pascal $62.00
entral Point
opy II Mac $24.00
hang Labs
A.T. ..... $CALL
gs to Riches III 3 pak $287.00
ricket
icket Draw $159.95
icket Graph $129.95
atworks $79.95
ata Tailor
apeze $169.95
ataviz
ac Link+ w/cable $149.00
igital Etc.
rbo Maccountant $287.00
ubl-click
lculator construction set .. $59.00
et Paint vols 1 or 2 ..... $32.00
orld Class Fonts any Vol .. $32.00
orethought
lemaker+ $159.00
werpoint ..... $CALL
oundation Publishing
mic Strip Factory $62.00
etraset
ady Set Go 3.0 ..... $239.95
iving Videotext
ore $159.00
ainstay
P $89.00
anslator to C for VIP $67.00
icrosoft
cel $219.00
ultiplan $105.00
e $109.00
ord $229.00
sic $87.00
rtran ..... $CALL
art $72.00
indwrite Software
ndwrite ..... $CALL
onogram
llars & Sense $89.00
desta
uble Helix $289.00
CS
rsaterm $69.00
rsaterm Pro $194.00
rtori
lk Mailer $77.00
lk Mailer + ... $199.00
gal Billing $329.00
me Billing $389.00
licon Beach Software
icon Press $44.95
per Paint $59.95
per 3D $109.00
oftware Ventures
crophone $59.95
oringboard
rtificate Maker ..... $CALL
upermac Software
per Spool $48.95
per Laser Spool $97.00
skfit $59.95
her Supermac Products Available
ll for Price!!

Target Software
Maclightning $52.95
Memorandum $69.95
Mentor $64.00
Mentor Plus $119.00
Medical or Legal Dictionary . $64.95
Thesaurus $32.00

Scoop ..... $CALL

Think Technologies
InBox ..... $CALL

T/Maker
Click Art/Any Vol $31.95
Write Now $99.00

GAMES & EDUCATIONAL

Avalon Hill
MacPro Football $29.95
Broderbund
Ancient Art of War $31.95
The Toy Shop $39.95
Print Shop $49.95
Bullseye
Ferrari Grand Prix $44.00
Fokker Triplane $44.00
Davidson & Associates
Math Blaster $37.00
Speed Reader II $49.00
Electronic Arts
Autoduel $33.95
Chessmaster 2000 ..... $29.95
OGRE ..... $CALL
Patton vs Rommel $26.95
Pinball Constr. $26.95
Scrabble ..... $CALL
Sky Fox $26.95
Starfleet 1 ..... $CALL
Ultima III $39.95
Ultima III Cluebook ..... $ 9.95

Epyx
Sub Battle Simulator ..... $CALL
Microsoft
Flight Simulator $32.95
Mindscape
Balance of Power $30.00
Crossword Magic $32.95
Deja Vu $29.00
King of Chicago $37.95
SAT $45.00
Uninvited $36.95
P.C.A.I.
Mac Golf $39.95
Silicon Beach
Airborne $19.95
Dark Castle $29.95
Enchanted Sceptre $22.00
World Builder $47.95
Simon & Schuster
Typing Tutor III $42.95
Spectrum Holobyte
GATO $28.00
Orbiter $34.95

HARDWARE

Apple
Macintosh Computers ..... $CALL
Laserwriter ..... $CALL
Imagewriter ..... $CALL
Beck-Tech
Fanny Mac $79.95
Central Point
800k Quiet Drive $189.00
Chinon
800k /floopy Drive $184.00
Ehman Engineering
Call for Price on all products!
Softstyle
Macenhancer ..... $CALL

MODEMS
Hayes
Smartcom II/Mac $97.00
Sm'tmodem 1200 w/mac cable $CALL
Migent
300/1200 Baud,
100% Hayes Compatible ..... $CALL
Pocket Modem ..... $CALL

PRINTERS
EPSON
All models in stock
CALL FOR LOWEST PRICES !!!
PANASONIC
1080AP $187.00

ACCESSORIES

Blohard
MACFAN $99.95
Platinum Macfan $99.95
I/O Design
MAC+ Bag $69.95
Macintosh SE Bag $89.95
Imagewriter Bag $49.95
Imagewriter II Bag $54.95
Innovative Concepts
Flip-n-File Micro (holds 25) ... $7.95
Flip-n-File (holds 40) $15.95
Kensington
A-B Box $59.00
Control Center $59.00
Drive Cleaning Kit $21.95
Filter $29.00

Maccessories starter pak $53.00
Mouse cleaning kit & pocket $16.00
Mouse Pocket $8.95
Mouseway $9.95
Surge Supressor $32.00
Swivel $20.00
System Saver $62.00
Tilt/swivel $62.00
Turbo Mouse $77.00
N2
Mac Cables $call for price & config.
Summit
Imagewriter Ribbons $5.95
Thunderware
Thunderscan ..... $CALL

EDUCATIONAL & CORPORATE ACCOUNTS:
We offer a full line of services catering to your needs.
To reach our Educational & Sales Department
Call 1-800-533-1131
Inside PA
Call 814-234-2236

DISKS per box of 10

3 1/2"	# Boxes 1-4	5-9	10+
SONY			
SS/DD	12.45	11.95	11.45
DD/DD	16.95	16.45	15.95
MAXELL			
SS/DD	11.95	11.45	10.95
DD/DD	17.95	17.45	16.95
FUJI			
SS/DD	13.45	12.95	12.95
DD/DD	18.45	17.95	17.45
VERBATIM			
SS/DD	14.45	13.95	13.45
DD/DD	19.95	19.45	18.95

OPEN: 8:00 AM - 9:00 PM Mon- Fri
10:00 AM - 6:00 PM Sat- Sun EAST COAST TIME

DON'T SETTLE FOR LESS...

tcp SHIPS IT

FEDERAL EXPRESS®

Software orders over $50 & Accessories/Peripherals under 8 pounds will be shipped FEDERAL EXPRESS
(Yes even at these prices).You only pay TCP's standard shipping charge of $4.00 per order. Orders arriving before 11:00 AM our time will be shipped out same day If part of your order is backordered the remainder will be shipped UPS Ground for FREE.

MAC BOTTOM

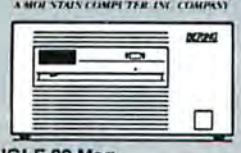
HD21 SCSI $839.00
HD20 Serial Version... $849.00
HD45 SCSI ..... $CALL
Modem Option..... $CALL
Available in Platinum or Beige

ProApp 20S $669.00
ProApp 30S .. $799.00
ProApp 40S
..... $CALL

Logic Array

MICROSOFT.
The High Performance Software™
EXCEL $219.00
WORD V3.0 ..... $229.00
WORKS $169.00

BERING
A MOUNTAIN COMPUTER INC. COMPANY



SINGLE 20 Meg
Removable Bernoulli -SCSI $1349.00
DOUBLE 20 Meg
Removable Bernoulli - SCSI $2079.00

cricket software
GRAPH $129.95
STATWORKS ... $79.95
DRAW $159.95

PANASONIC
1080 AP PRINTER
Macintosh Compatible $187.00
2 Year Warranty

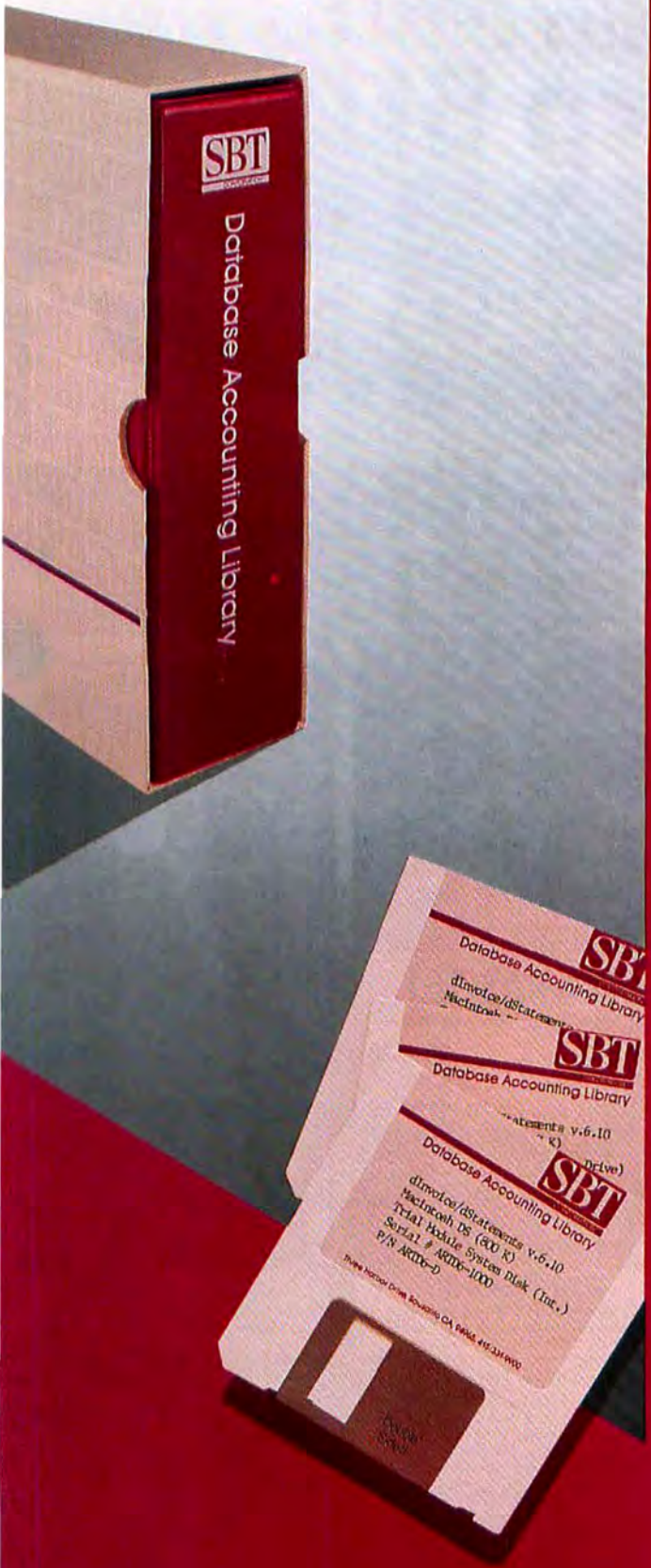
Other Brands of HD's In Stock
If a product you want is not advertised, please call - it might be in stock

- If through some oversight we don't have the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express shipping on software orders over $50.00
- We accept Mastercard, Visa, C.O.D., & Mail Orders. **Your credit card is not charged until your order is shipped.**
- Purchase orders are accepted from qualified corporations and institutions. Minimum order of $50.00 required.
- No sales tax on orders outside of PA

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal check to clear.
Shipping: $4.00 for software and accessories/ $10.00 for printers and color monitors/ $8.00 for disk drives and other monitors/ Add $3.00 per box shipped COD. Call for other shipping charges. Additional shippi required on APO, FPO, AK, HI, and foreign orders.
Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA. All products include factory warranty. **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

TOLL FREE 1-800-468-9044
INFORMATION AND PA ORDERS 814-234-2236

TUSSEY COMPUTER PRODUCTS
P.O. BOX 1006
STATE COLLEGE, PA 16804
Circle 483 on reader service



If you've ever outgrown your accounting software, it wasn't ours.

Because ours can't be outgrown.

That's right. The SBT Database Accounting Library is the first business software package that works just as well whether your business is small or big. Here's why.

One.

It's modular. You can start with the modules you need today. Then add more as your needs grow. And all the modules work together.

Two.

It runs with McMax and dBMAN database management software (high-performance dBASE III work-alikes for the Apple Macintosh).* So you get all the power and flexibility of the most advanced and best selling Database Accounting Software.

Three.

You can customize our software in just hours to fit your business. No matter what size or shape your business is. Because we give you the source code (the key to changing our software) absolutely free.

The SBT Database Accounting Library. Try to outgrow it. We dare you.

Call today for our demo disk and brochure (415) 331-9900. In Canada, call MSR, (416) 598-4982.

THE SBT DATABASE ACCOUNTING LIBRARY.

dProfessional	Time & Billing	$395
dOrder	Sales Order Processing	$295
dInvoice	Billing/Inventory Control	$295
dStatement	Accounts Receivable	$100
dPurchase	Purchase Order	$295
dPayable	Accounts Payable	$395
dPayroll	Payroll/Labor	$395
dLedger	General Ledger/Finance	$395
dAssets	Asset/Depreciation	$295
dProject	Project/Job Accounting	$395
dMaterials	Manufacturing Planning	$395
dMenu/Backup	Menu/Backup	$ 65

One Harbor Drive
Sausalito, CA 94965 (415) 331-9900
Telex 9102404708

SBT
CORPORATION

* dBASE III is a registered trademark of Ashton-Tate, Inc. McMax is a trademark of Nantucket, Inc. Apple and Macintosh are registered trademarks of Apple Computer, Inc. dBMAN is a registered trademark of VersaSoft.

Copyright 1987, SBT Corporation

Circle 630 on reader service card

Getting Started with Desk Accessories

How desk accessories work and how to deck out your desktop, plus a DA sampler

by Jim Heid

Every office has its office-supply hounds. You know the type. They flock to a freshly stocked supply cabinet like birds to a feeder. They engrave their names on their staplers and scissors to thwart pilferers. They adorn their desks with solar-powered calculators, electronic phone directories, and trinkets from image-sharpening mail-order catalogs. And if they use Macs, they're probably into desk accessories.

Probably everyone knows that desk accessories (also known as DAs) are those little programs you summon from the Apple menu while in another program. Many Mac newcomers don't know, however, that you aren't limited to the seven desk accessories included with the Mac. Hundreds of DAs are vying for your desk (and disk) space, running the gamut from games to outliners to scaled-down telecommunications programs. This month, chain yourself to the desk as we look at how DAs work and audition some of the best ones.

DAVID BISHOP

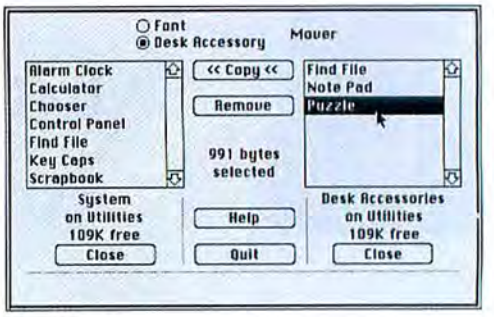
Unlocking the Desk

Desk accessories may appear in the Apple menu, but they live along with fonts in the System file, that central repository of code and resources that makes a Mac run (see "Getting Started with the Mac System, *Macworld,* November 1986). The System file contains slots for up to 15 desk accessories. When a program or the Finder starts, it looks for desk accessories in the System file and adds their names to the Apple menu. (Programs that offer a choice of fonts determine which are available at this time.)

The key to customizing your Apple menu is Apple's Font/DA Mover utility, also known as FDA Mover. (A *utility* is a program that lets you customize or simplify the way you use a computer.) The Font/DA Mover's workings are clearly explained in the *Macintosh Utilities User's Guide* that has accompanied new Macs this year. Before then, however, Font/DA Mover instructions were sketchy. For that reason—and because many used or borrowed Macs lose their manuals along the trail—I've summarized this utility's use in "A Moving Experience."

The fact that desk accessories are stored in the System file solves a mystery that can haunt floppy disk users. When you

(continues)



Font/DA Mover

When you start the Font/DA Mover, a list of desk accessories on the current start-up disk appears in the box on the left. Here, the contents of an open file named Desk Accessories are listed in the right list box. To copy or remove a desk accessory, select it, then click the Copy or Remove button. You can install a DA directly into an application by holding an Option key while clicking the Open button (which replaces the Close button when a System or DA file is closed).

quit an application, then start one on a different disk, you may notice that the contents of the Apple menu change, or that different fonts or sizes are available, or that the Scrapbook's contents change. That happens because you've *switch launched*–switched from the System file on one disk to that of another.

You can switch back to the original start-up disk in one of two ways. Start a program on the first disk or open its System Folder and double-click on the Finder icon while pressing the ⌘ and Option keys. You can avoid switch launching by using one System disk and keeping less-used programs on data disks (disks that lack System Folders).

Incidentally, there is another place that desk accessories and fonts can call home: an application program. You can install a font or a desk accessory directly into a program file, making it available only when that program is running. This trick is one way to overcome the 15-desk-accessory limit. Probably some of your desk accessories are useful only in certain programs. Installing them in the programs they complement frees up space in the System file for the accessories you use with every program. And if you copy the program to a different disk, the accessory goes with it.

(continues)

COPY II® for Apple Macintosh

NEW! Version 7*

BACK UP PROTECTED SOFTWARE.

Copy II has the built-in power and flexibility to handle most protection schemes—automatically!

GIVE YOUR MAC MORE MUSCLE.

Copy II includes MacTools. This comprehensive set of utilities can repair some damaged disks and Version 7's more powerful undelete can often recover the file name, type and creator and even works with hard disks.

Fully supports any Macintosh with 512K memory, H.F.S., M.F.S., 400K & 800K disks, 1 or 2 drives, hard disks and all available memory.

*Registered owners may update for $15 plus $3 s/h.

EVEN RUNS SOME PROTECTED SOFTWARE FROM YOUR HARD DISK.

Our Copy II Hard Disk feature lets you copy some of the most popular business software from a 400K to an 800K disk or direct to your hard disk! Call for current list.

CALL 503/244-5782

8-5 West Coast time, M-F, with your VISA in hand. Or send a check for $39.95 U.S. plus $3 s/h, $8 overseas.

$39.95

Central Point Software

INCORPORATED

9700 S.W. Capitol Hwy., #100

Portland, OR 97219

2-Time Winner of A+ Readers' Choice Awards!

Backup utilities also available for IBM, Apple II, Atari ST and Commodore 64/128.

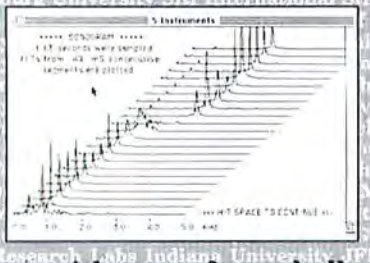
NOW! 800K drives for Macintosh: $225 (plus $10 s/h). Plugs directly into Mac 512e & Mac Plus!

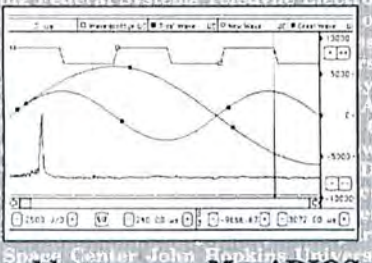
Circle 607 on reader service card

They Chose Data Acquisition on the Macintosh

Free Catalog!

Performance that Challenges the Minis . . .





. . . with ease-of-use challenged by no one. MacADIOS systems from GW Instruments include advanced hardware interfaces and extensive software options for all Macintosh models. Programming control from BASIC, C, Pascal or FORTRAN, plus powerful "no programming" application software. Unprecedented 833 KHz sampling rate on the Macintosh II!

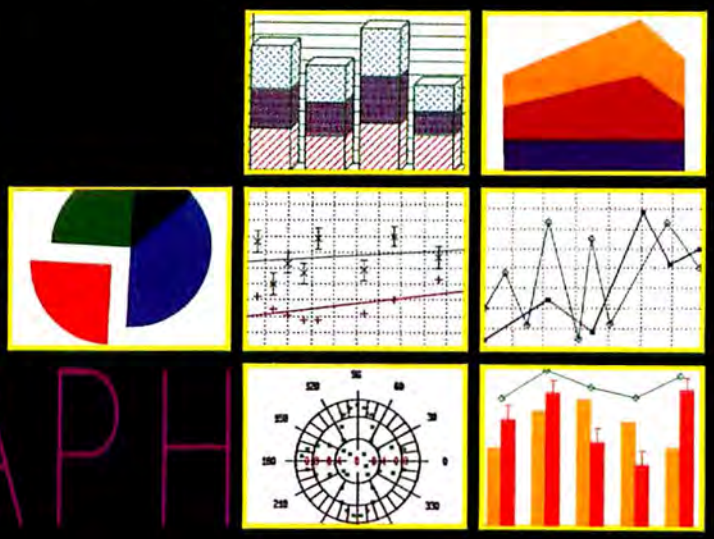
GW Instruments, Inc.

(617)625-4096 P.O. Box 2145 Cambridge, MA 02141

The Macintosh Data Acquisition Company

Circle 791 on reader service card

ACHIEVE THE ULTIMATE.



Your data is everything. It represents the culmination of all of your efforts. . . your accomplishments. So when it comes to turning your data into graphic presentations, you can't afford to settle. You need the power to achieve the ultimate. You need Cricket Graph.

cricket GRAPH

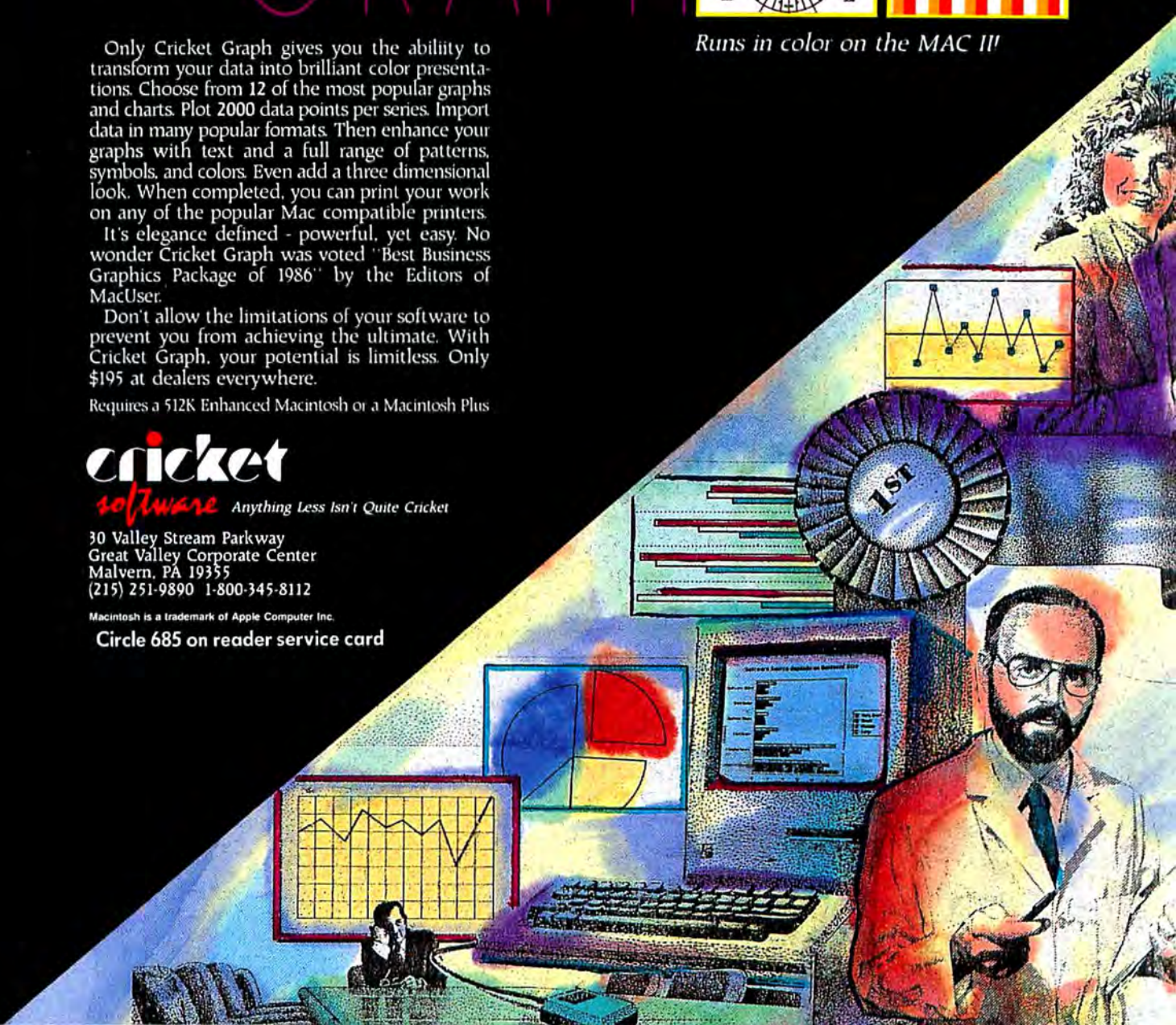
Runs in color on the MAC II!

Only Cricket Graph gives you the abiliity to transform your data into brilliant color presentations. Choose from 12 of the most popular graphs and charts. Plot 2000 data points per series. Import data in many popular formats. Then enhance your graphs with text and a full range of patterns, symbols, and colors. Even add a three dimensional look. When completed, you can print your work on any of the popular Mac compatible printers.

It's elegance defined - powerful, yet easy. No wonder Cricket Graph was voted "Best Business Graphics Package of 1986" by the Editors of MacUser.

Don't allow the limitations of your software to prevent you from achieving the ultimate. With Cricket Graph, your potential is limitless. Only $195 at dealers everywhere.

Requires a 512K Enhanced Macintosh or a Macintosh Plus



cricket software *Anything Less Isn't Quite Cricket*

30 Valley Stream Parkway
Great Valley Corporate Center
Malvern, PA 19355
(215) 251-9890 1-800-345-8112

Macintosh is a trademark of Apple Computer Inc.

Circle 685 on reader service card

FREE SONY VHS* TAPE!!!

with every 50 *SONY* boxed or 100 *SONY* bulk diskettes purchased from this ad.
*Sorry, BETA tape not available.

SONY

Boxed in tens

3½" SS . . **1.02** each, 100+
3½" DS . . **1.49** each, 100+

SONY MAC • PAC

Packaged in fifties

	50+	100+	400+
3½" SS	1.05	.99	.91
3½" DS	1.27	1.22	1.15

SONY LABELS 4¢ each, minimum 50

Boxed in tens

3½" SS . . . . . **.96** each, 100+
3½" DS . . . **1.15** each, 100+

GENUINE TEAK
3½" Disk Storage **15.95**

MAC • MODEM 2400 BPS EXTERNAL
WITH COMMUNICATION SOFTWARE
• Fully Hayes compatible
• RS232 Mac cable **$209**

COPY II MAC
from Central Point Software **$24**

MAC BOTTOM

HARD DISK DRIVE
HD21 . . . . . **$839**
HD45 . . **$1239**

TONER CARTRIDGES
For Hewlett Packard, Canon and Apple Laser Printers **$94**
For Hewlett Packard LaserJet Series II **$99**

APPLE IMAGEWRITER RIBBONS
SOLD IN SIXES
Black 2.45
Color 3.05
(Color 6-packs include one each: red, green, yellow, blue, purple & brown)

NEW!!
4 color ribbons for Imagewriter II
11.99

CALL TOLL FREE
* *7 to 7 Central Time* * *10 to 3 Saturdays* *

1 800 USA-FLEX
(1-800-872-3539)
Technical Service 1 (312) 351-7172

If you prefer sending in your order, please call first for shipping/handling charges. All prices and specifications subject to change without notice.
(c) USA • FLEX

TERMS: Minimum order $100. Shipping/handling additional. Visa, MasterCard and Prepaid orders accepted. Corporations rated 3A2 or better & government accounts are accepted on a net 30 basis. C.O.D. orders add an additional $5.00 special handling charge. All checks must be imprinted with buyer's name and address. We ship to the 50 states, APO, FPO, AK, and HI orders add an additional 5% to the total order amount to cover PAL and insurance. No sales tax outside of IL. All returns must have prior authorization from our Customer Service Dept. (1-312-351-9700). Unauthorized returns/refused shipments are subject to 20% restocking charge.

USA★FLEX
135 N. Brandon Dr., Glendale Heights, IL 60139

Circle 134 on reader service card

A Moving Experience

To start the Font/DA Mover, double-click its icon. A list of fonts installed on the current start-up disk will appear in the left-hand list box. To see a list of desk accessories instead, press and hold an Option key as the Font/DA Mover loads, or click on the DA radio button when Font/DA Mover opens.

Removing a DA

1. Select the desk accessory (the Font/DA Mover tells you how much space it uses).
2. Click Remove.

Copying a DA

Copying to a new desk accessory file:

1. Click the Open button under the right-hand list box.
2. Click the New button that appears in the file list box.
3. Type a name for the new desk accessory file and click Create.
4. Select the desk accessory to be copied, then click the Copy button.

Copying to an existing desk accessory file:

1. Open the desk accessory file by clicking the Open button, then double-clicking the file's name. The names of the desk accessories in that file appear in the list box.
2. Select the desk accessory to be copied and click OK. That desk accessory is added to the others.

Installing a DA

Installing in a System file:

1. Open the desk accessory file by clicking the Open button, then double-clicking the file's name.
2. Make sure the destination System file is open. If it isn't, use the other Open button to open it.
3. Select the desk accessory to be installed, then click Copy.

Installing in an application:

1. Press and hold an Option key while clicking the Open button.
2. Locate the application where you want the desk accessory, and double-click its name.
3. Select the desk accessory to be copied and click Copy.

You can remove, copy, or install more than one desk accessory at once by Shift-clicking on each.

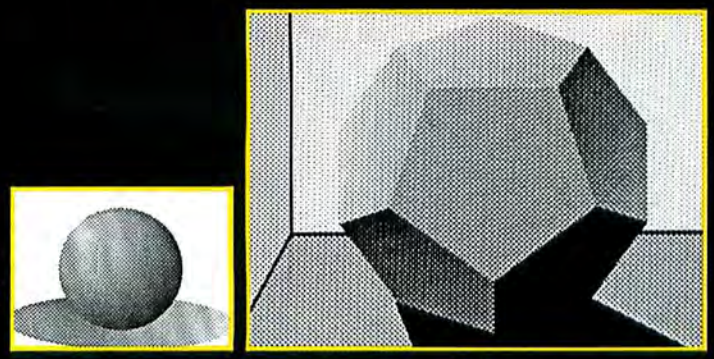
Breaking the Limit

Understanding why you're limited to 15 desk accessories requires some background. The System file contains slots for 48 *drivers*–programs that let the Mac work with devices such as floppy or hard disk drives, modems, printers, or AppleTalk networks. A desk accessory is actually a special kind of driver–special in that it doesn't let the Mac work with a device, but lets you perform a task while in another application. Why did Apple design desk accessories to work like drivers? Think about it. A driver must be able to work in any program. The Mac's designers realized that by cleverly structuring small programs as drivers, the Mac could run them while running another program.

In the System file's *device table,* slots 0 through 11 are reserved for hardware devices. Slots 12 through 26 are set aside for desk accessories. Slots 27 through 31 are reserved for desk accessories installed directly in application files. Slots 32 through 39 hold drivers for SCSI devices like hard disks. And slots 40 through 47 are squirreled away for future use.

(continues)

ACHIEVE THE ULTIMATE.



You've probably felt the frustration. All of that graphic power just waiting to be tapped, without software to unleash the potential. Frustrate no longer – Cricket Draw is here.

cricket DRAW

Runs in color on the Mac II!

Cricket Draw is an object-oriented drawing program that brings a whole new dimension to the WYSIWYG environment.

WYSIWYG is great but the end result is limited by the Mac's display resolution (approximately 5,000 dots per square inch). Cricket Draw, through the magic of PostScript,™ lets you take full advantage of the LaserWriter's superior resolution of 90,000 dots per square inch. The final product is sensational artwork that will bring a new level of professionalism to your work. With Cricket Draw **WYGIBTWYS** (What You Get Is Better Than What You See).

Unrestricted Creativity. Cricket Draw liberates your creativity by providing an unprecedented range of tools, like tilting and free rotation of any object. You can shade with a gray scale (0-100%), create shadows, fountains (graded tints), starbursts, grates, and smoothed curves. And that's just the beginning.

Precisely set type then add any of a number of special effects. Place type on any arbitrary path, rotate, tilt, shade, shadow – the possibilities are limitless.

Achieve Your Ultimate. Settle for nothing less than your ultimate. It's within your grasp with Cricket Draw.

Requires Macintosh Plus or New ROMS

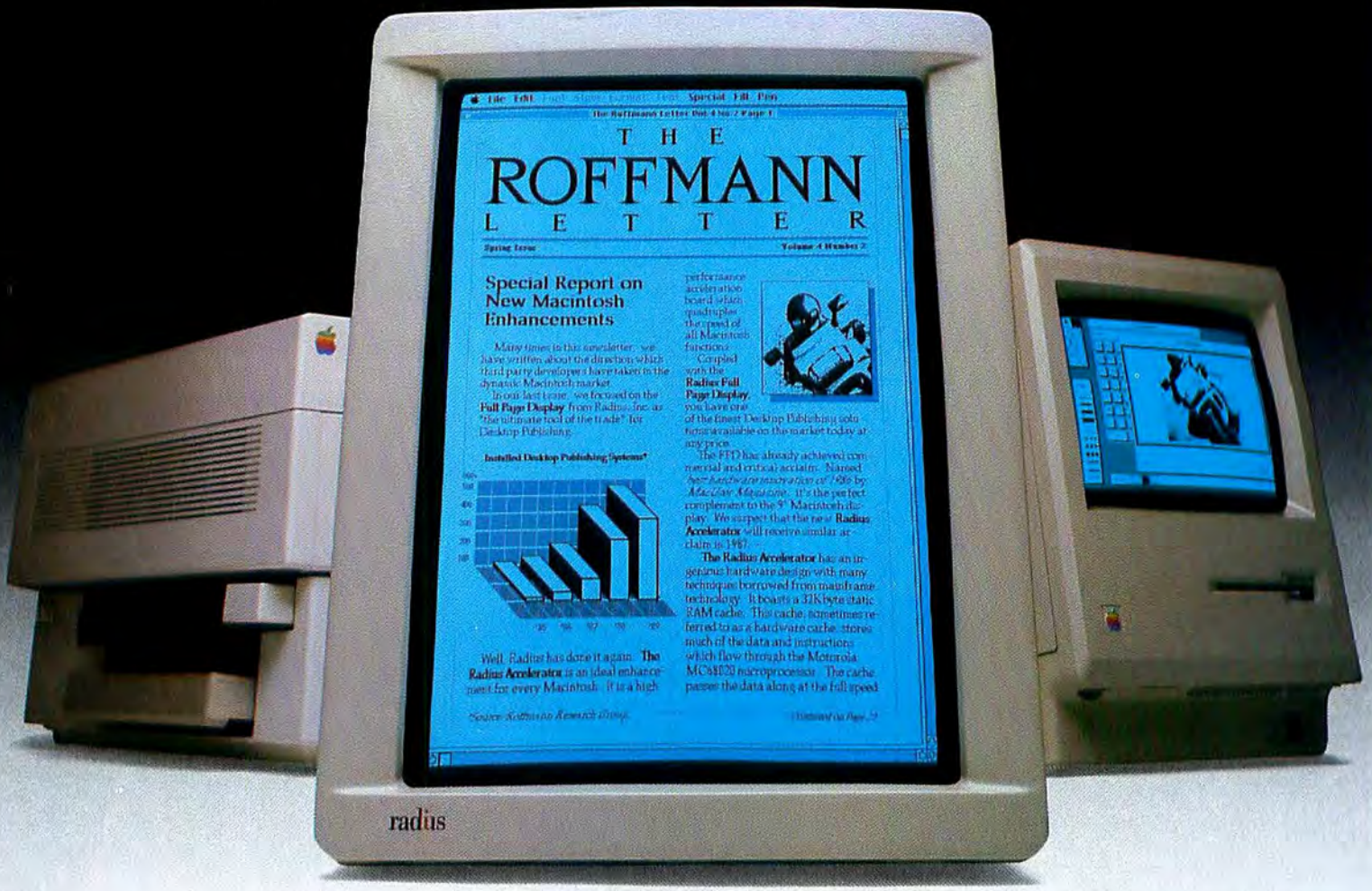
cricket software *Anything Less Isn't Quite Cricket*

30 Valley Stream Parkway
Great Valley Corporate Center
Malvern, PA 19355
(215) 251-9890 1-800-345-8112

Macintosh is a trademark of Apple Computer Inc.
LaserWriter is a trademark of Apple Computer Inc.
PostScript is a trademark of ADOBE Systems, Inc.

Circle 684 on reader service card

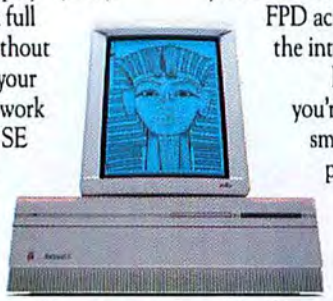
The Ultimate Tool Of the Trade.



If you want to do your own Desktop Publishing you need a Macintosh™ computer and a LaserWriter® printer.

They are, after all, the standard tools of the trade. But if you're truly serious about Desktop Publishing, you need the ultimate tool of the trade: the Radius Full Page Display™ (FPD).

With an FPD you can see a full 8½"x 11" page at one time. Without scrolling through or reducing your document. Which means you work a lot faster. And now, on your SE or Macintosh II, you can pan across two pages at a time.



The FPD's 640 x 864 pixel screen provides a flicker-free, stable, virtually paper-like page and a rich high-detail picture. Although its screen is 8½"x 11," its footprint is only 11"x 14," which means the FPD gives you a bigger screen, not a smaller desk.

Easily installed on a Macintosh Plus, SE or Macintosh II, the Radius Full Page Display is compatible with all standard Macintosh software. Which means your software investment is safe. In fact, it's actually more valuable.

The FPD is not a replacement for the screen in your Macintosh. It's an enhancement. Because the FPD actually works in combination with the internal screen in your Macintosh.

But, no matter what application you're working in, you'll work faster, smarter and more productively. And print a lot less because you can see full pages as you design them.

With PageMaker, you can use the FPD for page layouts and the Macintosh screen for your tools.

In Microsoft® Excel, you can place a spreadsheet on your FPD and a linked graph on your Macintosh screen.

The Radius Full Page Display has achieved critical acclaim from both enthusiasts and the trade press.

If you review the reviews of the experts, editors and evangelists of the Desktop Publishing industry, almost to a person, the Radius Full Page Display is regarded as one of the major hardware advancements in Desktop Publishing.

The FPD was designed by key members of the original Macintosh team. It preserves the design integrity of your Macintosh.

For serious Desktop Publishing, it is the ultimate tool of the trade.

Circle 577 on reader service card

radius

For the name of the Radius dealer nearest you call 1-408-434-1010.

© 1987 Radius, Inc. Radius and Radius Full Page Display are trademarks of Radius, Inc. Macintosh is a trademark and LaserWriter is a registered trademark of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corporation. Microsoft is a registered trademark of Microsoft Corporation.

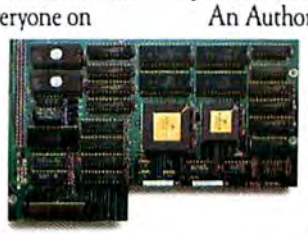
Quadruple The Speed Of Your Macintosh.

The Radius Accelerator™ quadruples the processing speed of every Macintosh application.

If you're doing graphic design or Desktop Publishing, the Accelerator allows you to create and combine pictures and text at unprecedented speeds. We are talking blindingly fast.

For time-intensive processing tasks like spreadsheets, scientific computations or sorting through databases, the Accelerator will redefine your concept of personal productivity.

If you're using a Macintosh™ as a file server, the Accelerator will earn smiles from everyone on your AppleTalk® network.



The Accelerator is powered by the same 32-bit microprocessor that commands the Macintosh II.

In addition, it has a high-speed hardware cache that places frequently used information where it can be retrieved at the full speed of the MC68020.

Although the MC68020 is a commonly used microprocessor, Radius makes it work in an uncommon fashion. Our innovative, proprietary technology translates into a smaller board with fewer power requirements. And that means significantly reduced costs.

Which is one more reason why the Accelerator is such an exceptional value.

For those of you who think numbers speak louder than words, the Accelerator is available with an optional MC68881 coprocessor that blazes through floating point computations at up to 100 times the speed of the Macintosh Plus.

An Authorized Radius Dealer can install an Accelerator board in your Macintosh Plus or SE computer in a matter of minutes.

But wait. Did we really say wait? The Accelerator has another unique feature. The MagicBus.™

The MagicBus allows you to expand your Macintosh with another internal expansion board. So you can add future products from Radius or other developers.

Of course, you could use the MagicBus immediately—to install the ultimate Desktop Publishing peripheral. The Radius Full Page Display™ (FPD).

Like the Accelerator, the Full Page Display was designed by several key members of the original Macintosh team.

Today these people are at Radius creating enhancements for the Macintosh that are setting new standards for the industry.

If you really want to get the most out of your Macintosh, see a Radius dealer today.

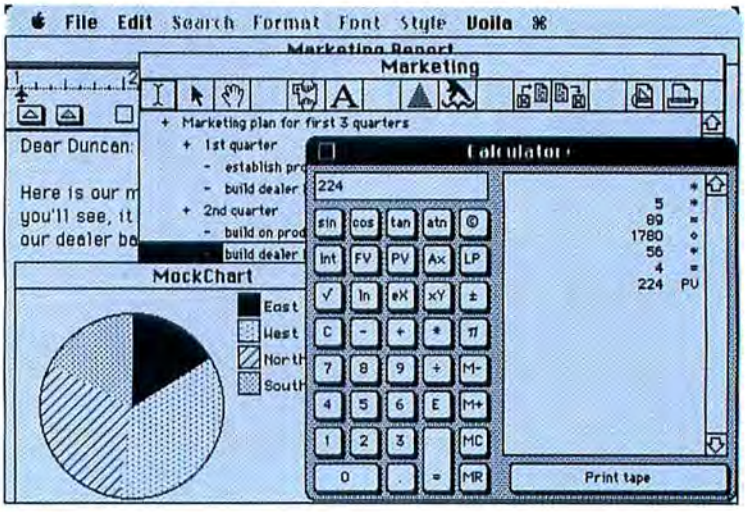
And save yourself a bundle of time.

Circle 577 on reader service card

radius

For the name of the Radius dealer nearest you call 1-408-434-1010.

© 1987 Radius, Inc. Radius, Radius Accelerator, Radius Full Page Display and MagicBus are trademarks of Radius, Inc. Macintosh is a trademark and AppleTalk is a registered trademark of Apple Computer, Inc.



Decked-Out Desktop
A full house of desk accessories: the Calculator+ from SideKick *at work with the* Voila *outliner and CE Software's* MockChart*–all while* MacWrite *remains open. The ⌘-key symbol on the menu bar represents* Tempo, *which records and plays back mouse movements and keystrokes.*

Some techniques exist for cramming more than 15 desk accessories into a System file; all involve using reserved slots. One method requires that you perform surgery on the Font/DA Mover with Apple's *ResEdit* resource-editing utility. Another uses *ResEdit* to laboriously renumber desk accessories installed in application files (see *Quick Tips, Macworld,* February 1987). An easier option is to use *DA Installer+* from Dreams of the Phoenix's *Quick and Dirty Utilities, Volume One* disk (Dreams of the Phoenix, 904/396-6952). *DA Installer+* expropriates unused reserved slots to allow up to 36 desk accessories.

Assessing Accessories

The best place to shop for slot fillers isn't a computer store or a mail-order house, but a user group or an online information service. While most large software publishers have concentrated on full-blown applications, Mac programming hobbyists and small software firms have churned out more desk accessories than Dick Clark has TV shows (see "Decked-Out Desktop"). Many are distributed as *shareware*–try them, and then pay from $5 to $50 if you decide to keep them. Of the hundreds available, most fall into one of the following categories.

■ *Disk managers* These surrogate Finders let you view the contents of disks, copy and delete files, change Get Info text, and locate files buried in folders. Disk managers are handy for floppy disk users and essential for hard disk users (see "Mac Desktop Tools," *Macworld,* January 1987). My favorites are Maitreya Design's shareware *DiskInfo* and PBI Software's commercially distributed *HFS Locator.* (PBI Software, 415/349-8765, 800/843-5722). *DiskInfo* is available through user groups and on CompuServe and GEnie; *HFS Locator* has more features (it can create folders and copy files), but costs more.

■ *Mini applications* No program does everything, and desk accessories can fill the gaps. CE Software's *MockWrite* is a pint-size word processor that lacks rulers and fonts, but is perfect for jotting notes and composing or reading electronic mail. *MockTerminal* is a scaled-down communications program that uploads and downloads files and dials numbers; *MockChart* creates line, column, bar, or pie charts from data you type or paste from the Clipboard. All three are part of CE's *MockPackage,* a $35 shareware product that should be a budding desk accessory collector's first acquisition (CE Software, 515/224-1995).

Nearly every application category is represented in the mini-application league. Deneba Systems' *Voila* (305/594-6965) and Symmetry Corporation's *Acta* (602/844-2199) are outliners that compare favorably with *ThinkTank* (see *Reviews, Macworld,* May 1987). MacroMind's *CheapPaint* (312/871-0987) is a miniature *MacPaint,* and OWL International's *Scribbler* (206/451-2286) is a junior *MacDraw.* Maitreya Design's *miniWriter* text editor is a *Mock-*

(continues)

You could buy a Macintosh for more, but why?

Buy a qualifying Lisa system and we'll buy the software... FREE up to $425 worth!!

Macintosh Compatibility
More than 95% of available Macintosh software runs on the Lisa. Call today for our free Lisa Fact Book and see how the Lisa can handle the most popular applications for much less than you would spend on a newer Mac and hard drive. We'll even buy that software...FREE.* It comes standard with a larger 12" screen, detached keyboard with numeric keypad and available in several affordable configurations. Even **HFS is now available** for the Lisa. Call today. You could be mousing around tomorrow on a Lisa for less!

Ask about our Free Software Deal!

RAM	DRIVE	NEW	USED
1Mb	5 Mb ProFile		$995
1Mb	10 Mb Internal	*$1795	*$1495
1Mb	20 Mb Internal	*$1995	*$1795

*Includes HFS and Software Coupon offer. Please call for details.

Used machines are reconditioned - 90 day Warranty, 30 day satisfaction guarantee. If you're not satisfied within 30 days, we will refund the purchase price of the computer. Your cost is shipping only.

Maccessory "Best Buys"

800K Mac External Drive	$195
Avatex 1200 Baud Modem w/cable	$129
Panasonic Printer 1080AP (Imagewriter compatible)	$299
Mouse Pds	$5
Padded Mac Nylon Carry Case	$99
MacWrite 2.20/MacPaint 1.3	$49

ORDERLINE 801-752-7631 Questions-Service
800-821-3221
For a complete listing of products CALL FOR OUR LATEST CATALOG
VISA/MC AMEX

Sun Remarketing
We Specialize in the Support of Remarketed Apple Products
P.O. Box 4059, Logan, Utah 84321

Apple, the Apple logo, HFS, Lisa and Macintosh are registered trademarks of Apple Computer, Inc.

Circle 618 on reader service card

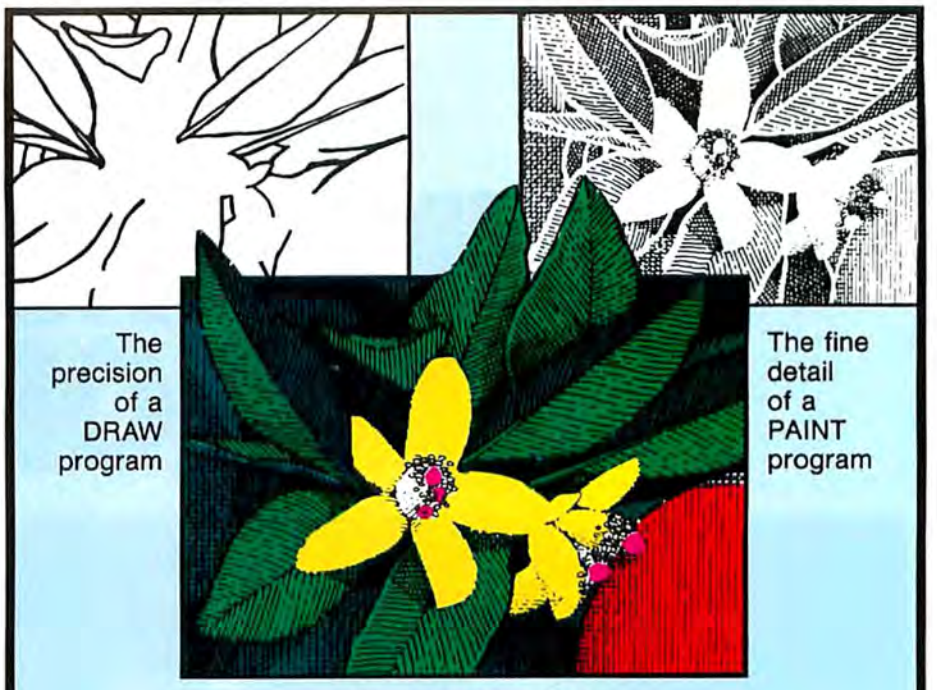
Write competitor that adds font formatting. Borland International's *SideKick* collection includes desk accessories for graphing, text editing, spreadsheet analysis, outlining, communications, and more (Borland International, 408/438-8400).

■ *Application enhancers* Desk accessories in this category aren't scaled-down versions of bigger programs; they are mini programs that perform a single task that complements an application. *Thunder* from Batteries Included (now available through Electronic Arts, 415/571-7171) and *MacLightning* from Deneba Systems are spelling checkers for writers with cloudy memories (see *Reviews, Macworld,* June 1987). MacroMind's *Art Grabber+* lets you open a *MacPaint* document and copy part or all of it to the Clipboard–handy for desktop publishing or graphic database-management applications. *The Clipper* from Solutions International (802/229-9146) performs a similar job, but also resizes pictures; the same firm's *SmartScrap* is a Scrapbook replacement that lets you work with multiple Scrapbook files and view numerous Scrapbook pictures at once. Also available are word counters for writers, file-compressors for telecommunicators, and cheat-sheet desk accessories that display help screens for *Adobe Illustrator, Microsoft Word* 3.0 and Silicon Beach's *SuperPaint.*

■ *Gadgets* In this class are desk accessories that replace real-world accessories–appointment calendars, souped-up financial and scientific calculators, name-and-address filers, telephone dialers. Imagine Software's *Smart Alarms* (415/769-4033) is a memory jogger that lets you enter up to 1600 reminders, which appear in pop-up dialog boxes at specified times (see *Reviews, Macworld,* December 1986). Borland International's *SideKick* and Batteries Included's *Battery Pak* also include excellent desktop doodads.

■ *Games and sillies* Would you like your Mac to speak inane phrases in Bullwinkle's voice every so often? Try *Talking Moose.* Want your screen image to be devoured by critters until you restart? Get *Crabs.* Care to break for a game of Breakout? Try *Bricks* or *Knock Out.* Tired of the

(continues)



The precision of a DRAW program

The fine detail of a PAINT program

Now combined in

SuperPaint

Graphics for the Macintosh will never be the same again. Before it was paint or draw. One or the other. Now, nothing less than both will do. With SuperPaint, you can edit dot by dot in the PAINT layer and you can create and manipulate objects in the DRAW layer.

Until recently, paint programs only printed at 72 dpi. Now SuperPaint's unique LaserBits™ feature allows you to magnify and work on dots in the paint layer at an amazing 300 dpi resolution! These high resolution images can be pasted directly into your word processor or page layout program.

SuperPaint. When all you need is a masterpiece!

(compared to other paint programs) "SuperPaint is the clear winner and... MacPaint's heir apparent."
Adrian Mello, MacWorld, Jan '87

"SuperPaint is the hottest graphics package currently available."
Bob LeVitus, MACazine, Jan '87

"Is SuperPaint really super? Absolutely."
Sharon Aker, MacUser, Feb '87

Suggested Retail Price: $149.95

System Requirements:
Macintosh 512K, Plus, XL (1 mb)

*Macintosh is a trademark licensed to Apple Computer, Inc.
LaserBits is a trademark of Silicon Beach Software, Inc.

SILICON BEACH SOFTWARE™

Silicon Beach Software, Inc.
P.O. Box 261430
San Diego, CA 92126
(619) 695-6956

Circle 266 on reader service card

THE THUNDERSCAN FACE-OFF.

WHICH SCANNED IMAGE COST NEARLY TEN TIMES MORE TO PRODUCE?

It's tough, isn't it. They both look great. But the image on the left was digitized by a scanner that costs over $2,000. The image on the right by ThunderScan.® The scanner that replaces ImageWriter's* ribbon cartridge. Just $249 complete.

Now, we'll admit, the more expensive scanners are faster than ThunderScan. But what we lack in speed, we make up for in software power. And that can actually save you time in the long run. Because with ThunderScan there's no rescanning an image to get it right.

ThunderScan saves true gray shades. So once an image is scanned, you can change it any way you want. As many times as you want. Control contrast and brightness. Create special effects. Take your image at face value or enhance it to your art's desire.

Use LaserWriter to create line screens and frames.

ThunderScan also gives you true halftones. So you can tap the full resolution of your printer. (We tapped the Linotronic® 300 for the above images, but you can use your ImageWriter™ or LaserWriter™).

Now you can plug high-resolution halftones into your PageMaker,® Quark XPress™ or ReadySetGo!™ documents. Or use your scanned images with painting and drawing software like Illustrator™ and LaserPaint.™

ThunderScan's special effects include straight line screens, rotations and frames. Plus, you get a lasso for working with irregular shaped areas. And with our new Power Port,™ ThunderScan is Macintosh™ Plus and SE compatible, right out of the box. No wonder ThunderScan was recently voted "Best Digitizer/Scanner" in *Macworld's* first annual World Class Awards.

So if you want a sophisticated, high-resolution scanner and like the idea of saving money, the choice is as plain as the nose on your...well, you get the picture. Now get yourself a ThunderScan.

Thunderware 21 Orinda Way, Orinda, CA 94563 (415) 254-6581

ThunderScan® FOR MACINTOSH™

*ImageWriter, Wide Carriage ImageWriter and ImageWriter II. Macintosh, ImageWriter and LaserWriter are trademarks of Apple Computer, Inc. PageMaker is a registered trademark of Aldus Corporation. XPress is a trademark of Quark, Inc. ReadySetGo! is a trademark of Letraset USA, Inc. Linotronic is a registered trademark of Allied Linotype Company. Illustrator is a trademark of Adobe Systems, Inc. LaserPaint is a trademark of LaserWare, Inc. © 1987 Thunderware, Inc.

Circle 167 on reader service card

Mac's Alarm Clock? Get *Mickey Mouse* or *Big Ben*. They're all available through user groups or online services, and they're a fun way to waste space in a System file (see "April Fooleries," *Macworld,* April 1987).

■ *Utilities* At the other end of the usefulness scale are utility desk accessories like *Fade to Black,* which blanks your screen after a specified period of inactivity, or IMI Software's *SafeLaunch* (IMI Software, 121 14th St., Seal Beach, CA 90740), which lets you bypass the Finder and quickly transfer from one application to another. *Camera* lets you take screen shots with menus pulled down. Affinity Microsystem's remarkable *Tempo* (800/367-6771) automates computing sessions by recording and playing back mouse movements and keystrokes (see "Cutting Keystrokes," *Macworld,* May 1986). *Other...* and *Double Apple* provide another way to break the 15-accessory barrier by letting you run desk accessories that aren't installed in the System file.

Getting More Desk on a Disk

Speaking of workarounds, 400K floppy disk users often have to take detours to bypass their systems' limited disk space. Desk accessories can help. By carefully crafting a System file, you can cram more fonts or applications on a disk and create a more flexible working environment. Here's one DA solution. Using a different start-up disk, remove a disk's Finder, then use the View menu's Set Startup command to make an application run automatically next time you start up with that disk. Then install a file-management desk accessory to make up for the missing Finder. But be forewarned: if you quit the start-up application, the Mac will crash as it tries to run a Finder that isn't there. With this set-up use a transfer desk accessory like *SafeLaunch* to move from one application to another.

While you're using the Font/DA Mover, purge any fonts and desk accessories you won't use. (If you'll be printing to an ImageWriter in hiqh-quality mode, don't remove any font sizes that are twice the sizes you usually use; the Mac reduces those large sizes by half to print text in the high-quality setting.) You can evict all of Apple's factory-installed desk accessories if you like, but you may want to spare the Chooser to avoid printing problems.

(continues)

Circle 266 on reader service card

MacSS™

Macintosh STATISTICAL SYSTEM

COMPLETE STATISTICAL PACKAGE WITH DATA MANAGEMENT AND GRAPHICS

- Unlimited size of data files
- Double precision calculations, mainframe speed
- Complete statistical data-base management with spreadsheet
- Comprehensive selection of Descriptive, Basic, and Nonparametric statistics
- Crosstabulation/Frequency Tables
- General Multiple Regression with Forecasting (up to 50 predictors)
- General ANOVA/ANCOVA (up to 10 within/between factors)
- General MANOVA (up to 100 dependent variables)
- Discriminant Function Analysis
- Contrast Analysis
- Graphics and Exploratory data analysis
- Flexible import/export of data and output
- True Macintosh user interface (not a mainframe adaptation)
- HFS compatible, not copy protected

Available from your dealer or from StatSoft ($245 plus $5 shipping/handling)

VISA MasterCard

StatSoft *2832 East 10th Street, Suite 4, Tulsa, OK 74104, (918) 583-4149*

Circle 225 on reader service card

HFS compatible including hard disks!

Solve Mac problems like an expert!

"1st Aid Kit™ falls into that special category of 'must-have' products" (*MACazine*, April '87). It lets you handle every Mac problem from difficulties copying files, printing, and using AppleTalk networks, to recovering lost data from deleted or damaged files and unreadable disks.

Acclaimed by novice and expert alike, the 1st Aid Kit is much more than powerful software. At its core is a clearly written reference manual that:

- lists every imaginable error condition
- helps you quickly track down solutions to any problem
- takes you step-by-step through each recovery effort
- shows you how to avoid problems

"The definitive product for troubleshooting on the Macintosh™" (*Macworld*, April '87). It "stand[s] head and shoulders above any other product like it . . . I can't recommend 1st Aid Kit strongly enough" (*MACazine*, April '87).

1st Aid Kit $99.95

HFS Version: MacPlus, Mac SE, Mac II
MFS Version: 128KMac, 512K Mac, MacXL

Available direct order 24 hrs.

1-800-THE-FIXR
In MA 617-847-4190

VISA & MC accepted, $5 s/h UPS ground, in MA add 5% tax

Not copy protected

Dealer inquiries welcome

1st Aid Software, Inc.
42 Radnor Road, Boston, MA 02135

Macintosh is a trademark of Apple Computer, Inc.
1st Aid is a trademark of 1st Aid Software, Inc.

Finally, assemble disks with desk accessories that complement standalone applications. *Art Grabber+* and *CheapPaint* combined with *MacDraw* form a capable bit-map and object-oriented drawing setup. For reading, writing, and sending electronic mail, use *MockWrite* with a communications program or *MockTerminal* with a word processor. For creating reports, combine *SideKick's* graphing and spreadsheet desk accessories with a word processor.

Accessory Alternatives

In your quest for desk accessories, you're likely to encounter their cousins: *function keys* (or *F-keys*) and *Init* files. F-keys are mini programs that run when you press Shift, ⌘, and a number. The Mac has always come with four F-keys: 1 and 2 eject the internal and external disks, respectively; 3 takes a screen shot; and 4 prints the screen or active window on an ImageWriter. Many other F-keys are available through the same user-group and online channels as desk accessories–and many perform jobs similar to DAs (see "Mac System Tools," *Macworld*, July 1987).

Init files require some explanation. Many applications require the use of *Init resources* in the System file. Init resources perform some vital start-up tasks, such as loading the program code for a spooler, network server, or hard disk into memory. Beginning with the Mac Plus, Apple devised a method that allows Init resources to execute without residing in the System file. When the Mac starts up, it looks for Init files in the System Folder and executes any that it finds. This approach simplifies life for product developers who use Init resources. Intead of writing (and debugging) an installation program that grafts Init resources to a System file, developers simply supply Init files and instruct customers to copy those files into the System Folder.

Mac programmers grabbed that ball and ran with it, and today you can choose from a raft of Init files, most of which perform desk-accessory-like tasks. One called *JClock* displays the time of day in the menu bar. *Startup Desk* turns a *MacPaint* file into the startup-screen background. *Auto-*

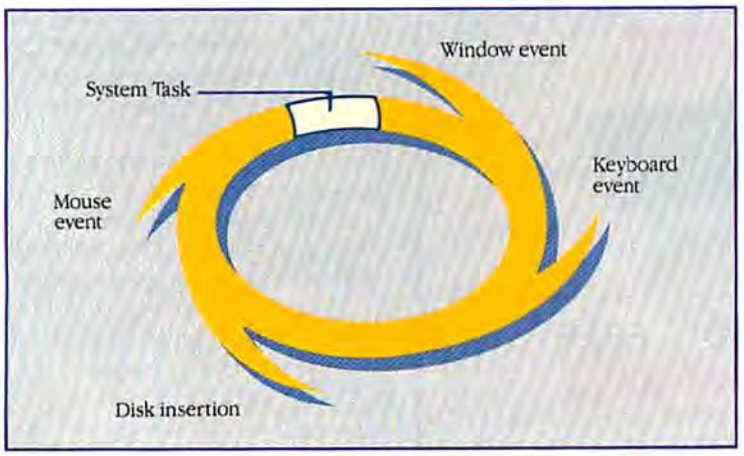
(continues)

Eventful Background

Imagine spending all your working hours running around in circles waiting for something to happen. (I, for one, find that very easy to imagine.) That's exactly what every Macintosh program does, and it's what allows many desk accessories to operate. Here's a little background.

Programs running on other computers often dictate what you can do and when you can do it. In many IBM PC word processors, for example, you can't get to the print command while editing a file. The Mac does away with restricted modes by allowing you to perform most actions at any time. Instead of restricting what you can do and when, a Mac program puts up its menus, in effect saying "do with me what you will," and then cycles in an *event loop.* Pressing the mouse button or a key on the keyboard generates an *event* to which the program must respond (see "The Main Event"). Other events include disk insertions and window events, which tell the Mac to activate a previously inactive window, or to update (redraw) a window that was obscured.

As it cycles for events, a program makes periodic stops to a system routine called SystemTask. Each time a program visits SystemTask, desk accessories that perform *periodic actions* are given a small slice of time to do their work. The Alarm Clock uses the time to advance its digits. Print spooling desk accessories use the time to send a burst of data to the printer (see "Speaking of Spoolers," *Macworld,* June 1987). All this happens so quickly that the Mac appears to be doing two things at once. In reality, it's dropping one job to work on another and then returning to the first.



The Main Event

All Mac programs have a main event loop. Pressing the mouse button or a key on the keyboard generates an event to which the program must respond. Part of the event loop takes a program to a system routine called SystemTask, which allows desk accessories like the Alarm Clock to perform periodic actions.

YOU FOUND IT!
A Reliable Source for Your Computer Supplies.
At Budget—Friendly Prices!

ORDERING IS FAST AND EASY... AND TOLL FREE!
NEW
We're as close as the phone.
Call for... **FREE CATALOG!**
Innovative products to maximize the efficiency of your computer operation.
GUARANTEED: ★ Quality ★ Compatibility ★ Your Personal Satisfaction

3M Highland diskettes
Manufactured to meet your needs
Economical Diskette backed by 3M's reputation for quality and reliability
49¢ Each
5¼" DSDD
Sold 10/Box
Minimum 50 Disks.
SPECIAL PRICING ON THE FULL LINE OF 3M MAGNETIC MEDIA

NEW
3M Formatted Data Cartridges
Save nearly an hour or more of formatting time with 3M's new family of formatted data cartridges.
• alphamat™ • deltamat™
• keppamat™ • gammamat™
Call for Price & Compatibility

MEDIA & METHODS AWARDS 1987 EXCELLENCE IN EDUCATION

Min. Order $25.00. Add 10% for less than 50 disks. S & H: Continental USA $4.00, 1st 100 or fewer disks; $3.00, each succeeding 100 or fewer. Foreign Orders, APO/FPO, please call. MI Residents add 4% tax. Prices subject to change. Hours: 8:30 A.M.—7:00 P.M. ET.

Precision Data Products™
P.O. Box 8367, Grand Rapids, MI 49518
Cust. Service & Info.: (616) 452-3457 • FAX: (616) 452-4914
Toll Free Order Lines: MI 1-800-632-2468
Toll Free Order Lines: Outside MI 1-800-258-0028

Circle 631 on reader service card

LIONHEART

STATISTICAL & MANAGEMENT SOFTWARE FOR BUSINESS, TECHNOLOGY, & SCIENCE

PROFESSIONAL SERIES:

Experimental Statistics	$145
Business Statistics	145
Forecasting and Time-Series	145
Sales and Market Forecasting	145
Marketing Statistics	145
Quality Control and Industrial Experiments	145
Exploratory Data Analysis	85
Project Planning (PERT & CPM)	145
Decision Analysis Techniques	145
Optimization	145
Econometrics	145
Biometrics	145

TECHNICAL SERIES:

Multivariate Analysis	125
Cluster Analysis	125
ANOVA	95
Regression	95
Inference	95
Linear Programming	95
Matrix Routines	95
Decision Trees & Tables	95
ARIMA Methods	95
Inventories & Queues	95

MS-DOS, MACINTOSH, AMIGA, ATARI ST (also ProDOS, C-128, CP/M)

VISA, MC, AMEX, Check

LIONHEART PRESS, INC.
P.O. BOX 379, ALBURG, VT 05440
TEL: (514) 933-4918

Circle 238 on reader service card

Re-ink ANY FABRIC RIBBON automatically for LESS THAN 5 CENTS with

MAC INKER™

Over 11,000 cartridges and spools supported!

MAC INKER

IMAGEWRITER I AND II	**$42.00**
UNIVERSAL (cartridge or spool)	**$68.50**
MULTICOLOR IMAGEWRITER	**$80.00**
MULTICOLOR ADAPTER ONLY	**$40.00**

Shipping (first unit) $3.00

■ Lubricated DM INK EXTENDS PRINT-HEAD LIFE! Black, blue, brown, red, green, yellow, purple, orange – 2 oz. bottle $3.00; pint $18.50. Gold, silver, indelible and OCR inks available. Heat transfer MacInkers and ink available plus a complete range of accessories for special applications.

■ Top quality, GUARANTEED, double density ribbon cartridges and reloads available.

■ DEDICATED MAC INKERS AVAILABLE FOR EXTRA LARGE OR SPECIAL CARTRIDGES.

MERCURY MODEM

100% Hayes™ compatible!

$149.00

Shipping $4.00

■ 24 month warranty. ■ Status lights. ■ Speaker. ■ 300/1200 baud. ■ Call progress detection.

Quick Link communications software:

MS DOS and Macintosh $29.95 – with modem $15.00 – Cable $15.00.

*Hayes is a trademark of Hayes Microproducts.

Connect up to 4 peripherals! with

DATA SWITCHES

2 Port **$46.00**

4 Port **$59.00**

Shipping $4.00

Parallel, serial, 2 or 4 way, crossed, etc.

CABLES

We carry cables for all common computers and peripherals. Rapid turn-around on custom Competively priced.

SPECIAL OFFER:

For orders of $100.00 or more. Say you saw it in MACWORLD and get a free keychain, beeper and flashlight combined! A $15.00 value!

ORDER TOLL-FREE

1-800-547-3303

In Oregon (503) 626-2291-(24 hour line)

We are and always will be your

Computer Friends®

14250 N.W. Science Park Drive
Portland, OR 97229, Telex 4949559

Dealer Inquiries Welcome.

Circle 271 on reader service card

black is a screen saver. Software Supply's *Suitcase* lets you access fonts and desk accessories that aren't in the System file (Software Supply, 408/749-9311).

And the wacky-Mac contingent is represented by *Sound Init*, which plays a digitized sound file upon start-up. You can create sounds with Impulse's *Impulse Audio Digitizer*, or use one of the many prerecorded sounds echoing through CompuServe and user-group libraries. My favorite is the Three Stooges' Curly Howard squawking, "I'm tryin' to think, but nuttin's happening!"

Accessories to a Crime

Many free or shareware desk accessories are released before being tested extensively and may contain bugs. And some accessories don't cooperate with others. Combining desk accessories, Init files, and F-keys indiscriminately can be as risky as break-dancing on a crate of nitroglycerin. Learn from my mistakes: try before you rely.

Far worse than being inconvenienced by a buggy desk accessory is being victimized by a sadistic one. It hasn't become a problem in the Macintosh world, but horror stories of Trojan horse programs are legendary among users of some computers. Yes, programmers exist whose idea of a good time is writing software that, when run, destroys data or wipes out a disk. (Let's hope none of them work for big software firms.) If you're unfamiliar with an accessory's developer, try the DA on an unimportant disk first. And if you ever encounter a Trojan horse, spread the word so others can avoid it.

Well, my *Smart Alarms* just told me that my deadline has arrived. It's time to bring up *MockTerminal* and beam this column out to San Francisco. First, I'd better let *MacLightning* proofread it; then I'll use *Word Count* to make sure it isn't too long.

These desk accessories have a way of getting into your System. □

The VT600's resolution of six hundred dots per inch insures smooth curves and sharp detail both at large sizes and in small text–as shown in this block of eight-point copy.

See it in our fine print . . .

At 300 dpi, hairline strokes and delicate serifs–the hallmarks of certain typestyles–are either sacrificed or distorted. At small sizes, 300-dpi characters such as these begin to fill in. At large sizes, character edges can appear decidedly ragged.

. . . and in the quality of our smooth headlines and crisp illustrations. Until now, you've had to choose between the cost savings and convenience of plain-paper output and the high quality obtained from phototypesetting.

The VT600 eliminates the trade-offs. With an imaging resolution of 600 x 600 dots per inch, a VT600 produces camera-ready typeset text and graphics on plain paper, right in your office. Because VT600 images contain four times the information of 300 dpi output, all the subtleties of graphics and text are reproduced with exceptional fidelity. The VT600—a breakthrough for electronic publishing.

PostScript compatibilty—the VT600 plain-paper typesetter is plug-compatible with your existing front-end PostScript applications.

Up to 150 typestyles on disk—for increased system performance, flexibility and efficiency.

Up to 10 prints per minute can be generated by the VT600—as much as six times faster than other laser printers for certain applications.

Low cost per print—one-third the cost of phototypesetting.

The convenience of plain-paper imaging—immediate results without chemical processing.

Designed for the office—attractive packaging, silent operation, very small footprint.

For complete information call 800 631-8134; in New Jersey call 201 887-8000, ext 999.

The VT600 . . . advancing the state of the art of laser printers while preserving high aesthetic standards for type and graphics.

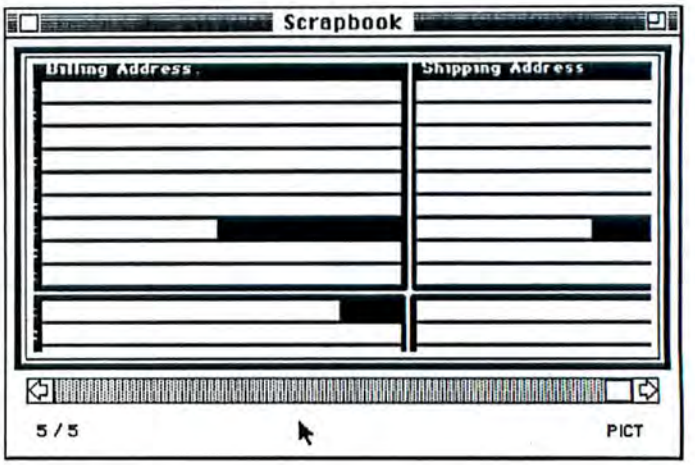
© 1987 AM International, Inc.
Varityper is a registered trademark, VT600 is a trademark of AM International, Inc. Line Art created with Adobe Illustrator. PostScript and Adobe Illustrator are trademarks of Adobe Systems Inc.

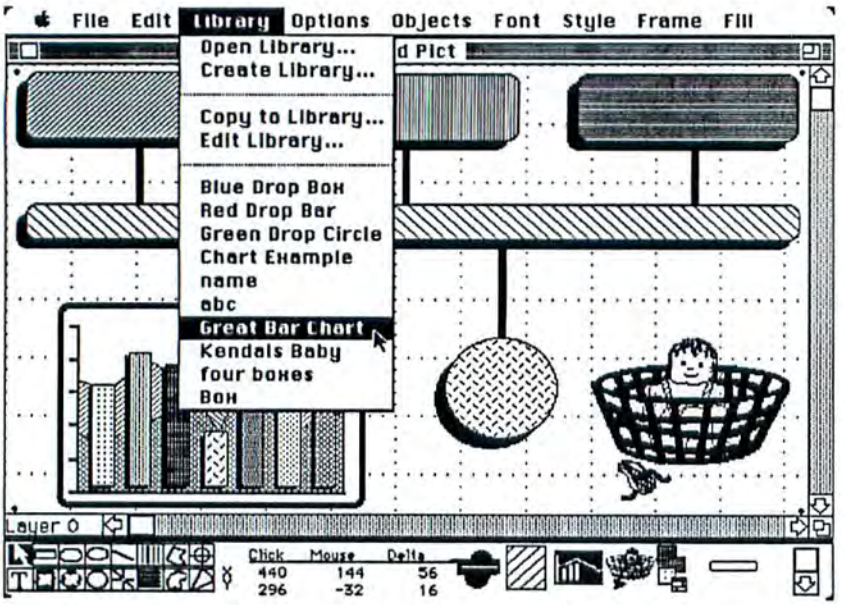
A division of AM International

Circle 48 on reader service card

varityper

You can keep using the old scrapbook...





or use our on screen libraries and save time.

Aba Software, Inc. is proud to present

"Draw it again Sam..."™

the first non-technical drawing program to offer libraries, levels, color and modes.

Suggested retail price $150.⁹⁹

For more information call or write to:

Aba Software, Inc.
P. O. Box 850
Two Davis Avenue
Frazer, Pa. 19355 - 0915
(215) 644-3580

SOFTWARE

Circle 212 on reader service card

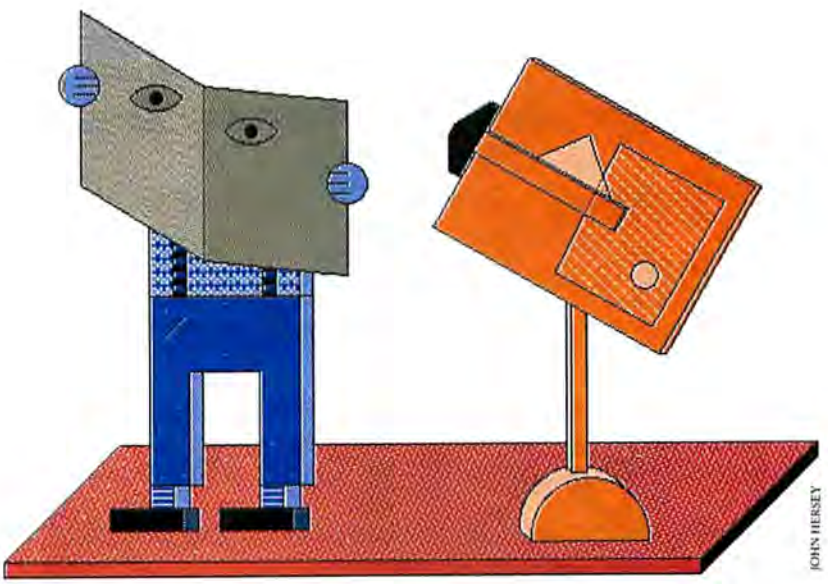
Insights on PageMaker 2.0

Tips and tricks for making short work of desktop publishing tasks

by Jim Morton

Before Aldus released *PageMaker* 2.0 last April, the hopes of desktop publishers fanned rumors aplenty of what the new version would contain. Happily, the program did not disappoint most *PageMaker* aficionados. Additions like kerning and hyphenation join an already powerful set of features to maintain *PageMaker*'s status as the most popular page-layout software for the Mac.

As with any program, learning to use the new version efficiently is a matter of getting acquainted with techniques you might miss in the voluminous documentation. This article contains tips that every new *PageMaker* owner should know, as well as many advanced tricks.



JOHN HERSEY

Electronic White-Out

Once you have placed lines, text, or graphics on the master pages, you can't remove those elements from a single page later in the document. For example, you can't accommodate a graphic on a certain page by shortening a hairline that runs between columns. But you *can* cover it up. Using the box tool, create a rectangle to cover items you want to remove. On the Lines menu choose None. On the Shades menu choose White.

PageMaker can also reverse text and lines, making them show up as white on black for interesting effects (see "The Opposite Effect").

Fast Save, Slow Place

When saving *Microsoft Word* 3.0 files for later use in a *PageMaker* document, avoid the Fast Save feature. This method tags the changes onto the existing file, thereby eliminating a few seconds of waiting but creating a considerably larger, more complex file. Before placing text saved in this fashion, *PageMaker* must go through and straighten things up, which can take several minutes if the *Word* document is large and contains many small changes.

Fast Save is the default in *Word,* so it's easy to forget to deselect it. If you've already Fast Saved a document, choose Save As, deselect Fast Save, and save the file again before moving it into *PageMaker.*

Chain of Command

One feature of the new version addresses a problem that drove every *PageMaker* 1.2 user up the wall. With the old program, when you created a form or any other design with layers of text and graphics, the last thing you moved ascended to the top layer. To work with anything underneath, you'd have to first send the top layer to the back. On a complicated page, this constant selecting and shifting quickly became monotonous.

With the new version, you can select any layer on a page by clicking the mouse while holding down the ⌘ key. The program goes through the object levels while you click until you reach the layer you want.

Creating Headlines

One of *PageMaker* 1.2's strongest features was its ability to manipulate PICT text to create interesting headlines. Text in the form of PICT files can be reduced, enlarged, elongated, or compressed simply by

(continues)

maxell®
Packaged 10 Per Box
2 Boxes 5 Boxes 10 Boxes
3½" Single Side 10.80 10.50 9.95
3½" Double Side 15.95 15.60 14.95
3½" High Density "Call"
"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
Minimum Order $25.00 · Visa, MasterCard accepted · C.O.D orders add $3.00 · Surface Shipping: on 3.5 or 5.25" add $3.00 per 100 disks. 8" add $4.00 per 100 disks. UPS delivery only. U.S. mail for APO, FPO, AK, HI or PR add an additional 5% for PAL. Prices subject to change without notice!

SONY®
Packaged 10 Per Box
2 BOX 5 BOX 10 BOX
3½" Single Side 10.95 10.70 10.30
3½" Double Side 15.95 15.70 15.30
3½" High Density "Call"
SONY, without labels OR box
Packaged in Fifties
MAC-PAC-50's 50 100 400+
3½" Single Side . 1.06 ea. 1.00 ea. .92 ea.
3½" Double Side. 1.34 ea. 1.26 ea. 1.20 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
Minimum Order $25.00 · Visa, MasterCard accepted · C.O.D orders add $3.00 · Surface Shipping: on 3.5 or 5.25" add $3.00 per 100 disks. 8" add $4.00 per 100 disks. UPS delivery only. U.S. mail for APO, FPO, AK, HI or PR add an additional 5% for PAL. Prices subject to change without notice!

Circle 562 on reader service card

PAGE POWER!

HEADLINE

The Opposite Effect

PageMaker's *ability to reverse lines and type makes possible a variety of special effects. Guidelines helped position the pinstripes before they were reversed out of the bold black type. The reverse-shadow type resulted from experimentation with type placed off-center atop bold type and then reversed.*

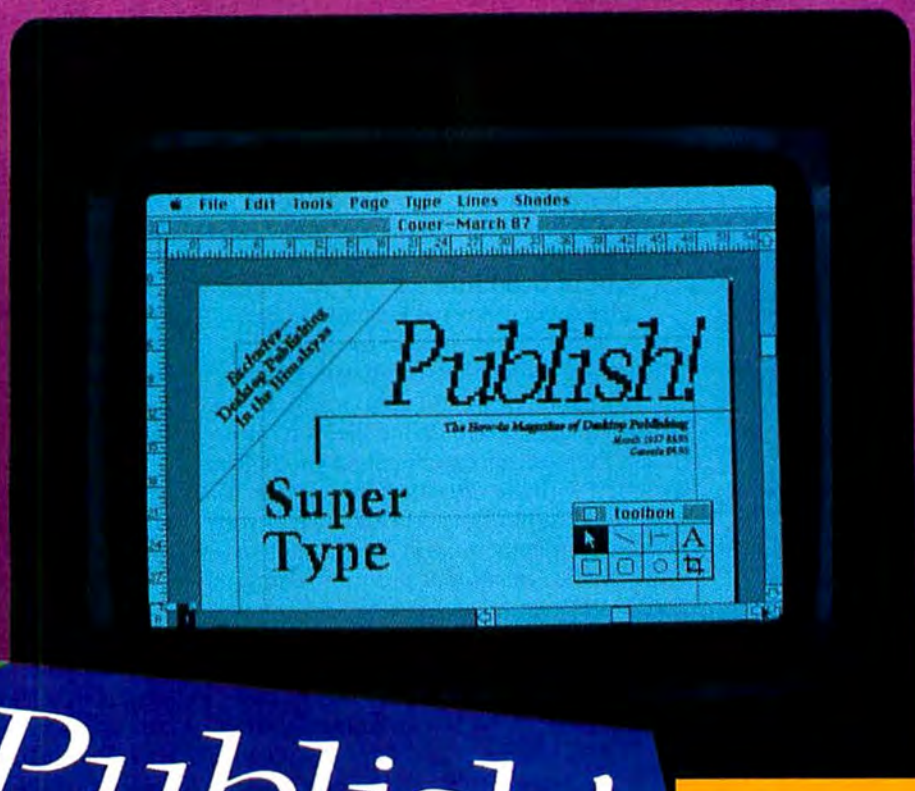
dragging it with the pointer tool. Happily, this feature is still available in the new program. To use it, many people work with *PageMaker* and *MacDraw* in *Switcher* (you'll need at least a Mac Plus for this). Select a headline in *PageMaker* and cut it out. Switch to *MacDraw* and paste the headline onto the page. Make sure that Always Convert Clipboard is checked on the *Switcher* Configuration menu or this procedure won't work. Next, select the headline and cut it again. Move back to the *PageMaker* document and paste the headline, which comes in as a PICT graphic instead of text. Using the pointer tool, pull on any handle to stretch or squeeze the text. Don't worry about what the text looks like on the screen. As long as you're using a LaserWriter or another PostScript device, the output will look fine in print.

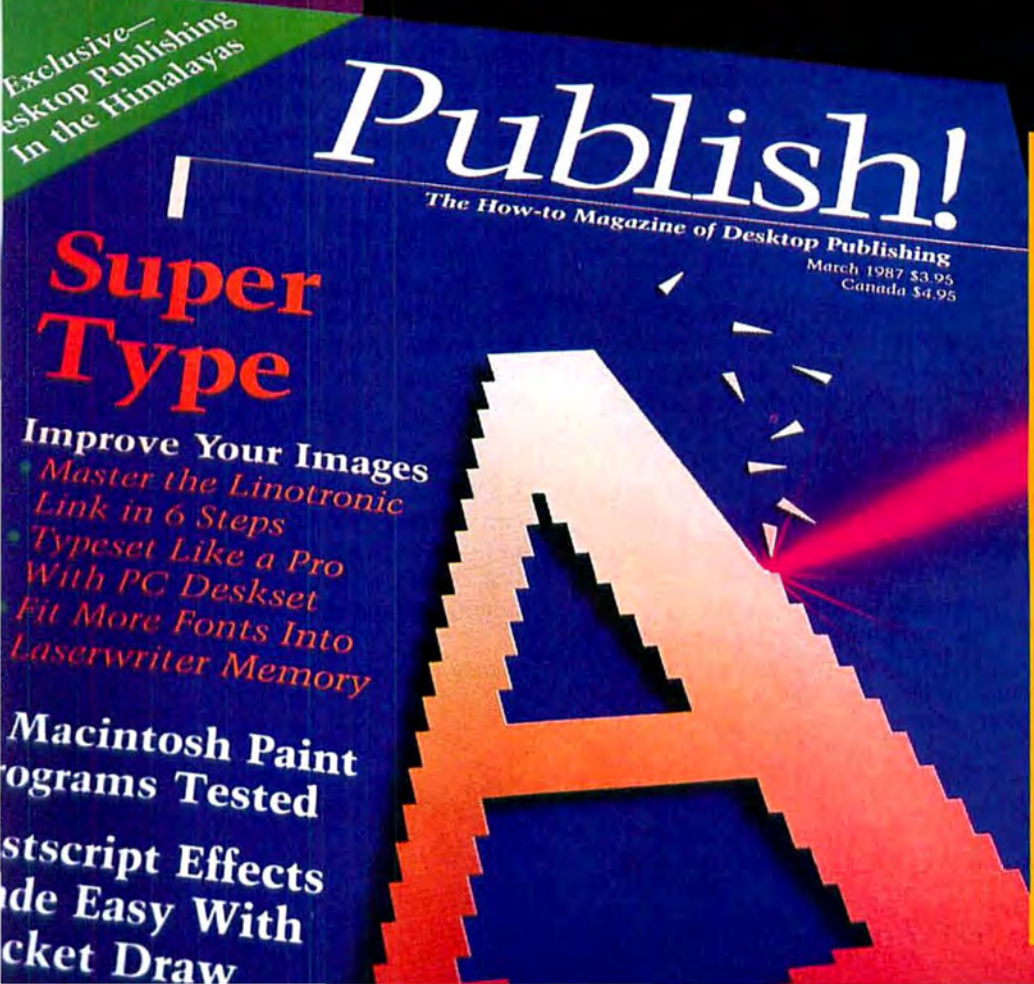
If you don't have a drawing program that saves PICT files, you can create them in *Microsoft Word* 3.0. Select the text you want in PICT format, then press ⌘-Shift-D, followed by a backspace, followed by ⌘-V. This replaces the text with a PICT graphic of the text. When you place the *Word* document in *PageMaker,* these graphics can be stretched and compressed like any PICT drawing. Make sure the headline is formatted correctly in *Word* before you convert to PICT.

If you are not using *Word* and you don't have any graphics programs that allow you to save PICT documents, you can still use this headline-stretching feature by loading *PageMaker* into *Switcher* with the sample version of *MacDraw* that came with your computer. This teaseware program

(continues)

WHAT YOU SEE IS WHAT YOU GET





Subscribe Now and Save 40%

Become a Charter Publish! Subscriber and Here's What You'll Get—

***Reviews**—The largest selection of software and hardware product reviews available in any desktop publishing magazine.*

***Product News**—Information on the latest technology for all your desktop publishing applications. Hundreds of new product listings.*

***Solutions**—Step-by-step instructions that find answers to all your publishing needs.*

***Applications**—Tips on the fundamentals of graphic design and publishing basics.*

***Design Features**—Well known designers provide creative ideas and concepts for page makeovers.*

All this and more is yours in Publish! every month when you subscribe today at the Special Low Charter Subscription Rate.

"I would buy this book."
— Danny Goldman, contributing editor, MacWorld

The only book of its kind. Rates more than 1,000 free (and almost free) programs for the Mac, tells where to get them, and is illustrated with nearly 600 representative screenshots.

A dilithium Press Book. 8½" x 11". Over 400 pages. Paperback, $19.95; **now at your bookstore** or use coupon to order.

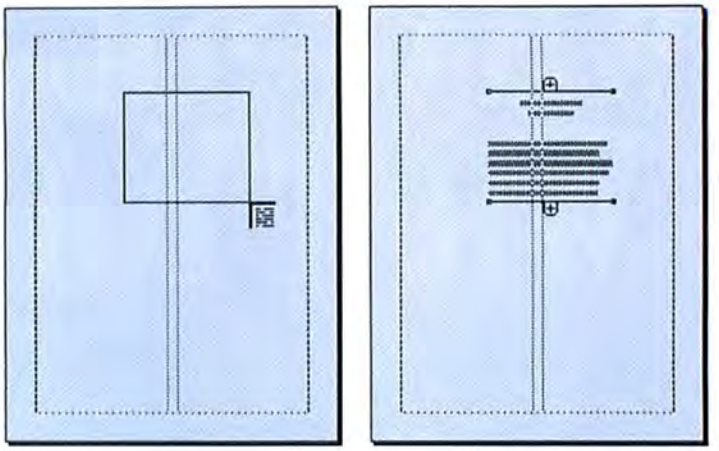
CROWN PUBLISHERS, INC., Dept. 767
34 Engelhard Ave., Avenel, N.J. 07001
Please send me FREE (AND ALMOST FREE) SOFTWARE FOR THE MACINTOSH. I enclose $19.95 plus $1.50 postage and handling. N.Y. and N.J. residents add sales tax. *10-day money-back guarantee.*
☐ Enclosed is my check/money order. Or charge my
☐ VISA ☐ MasterCard ☐ AmEx
_____ Exp. Date _____
Signature _____
Name _____
Address _____
City _____ State _____ Zip _____
CROWN PUBLISHERS Inc.

AFTER 35 YEARS AS HIS EMPLOYER, TELL HIM ABOUT DIRECT DEPOSIT AS A FRIEND.

Direct Deposit lets retiring employees send their Social Security straight to their checking or savings account. As an employer, send for free materials to Direct Deposit (D3), Annex 1, PB-1100, Washington, DC 20226.

DIRECT DEPOSIT

United States Treasury



Placing Text
You can flow text into any box, regardless of the column specifications, by positioning the text icon and dragging the box corner to the desired size. The text flows to fit.

doesn't allow you to print or save any of your drawings, but it does let you transfer things via the Clipboard to *PageMaker.*

About Guidance

Instead of the usual Help menu file, Aldus chose to offer help in the form of a special Guideline file created with OWL International's powerful idea organizer, *Guide.* To use the Guideline file, you must install the desk accessory called Guidance, included with the *PageMaker* program. If you would rather not add Guidance to your System's Apple menu, you can install it directly in the *PageMaker* program. Using Font/DA Mover, select Desk Accessories and make sure that both windows are empty. Hold down the Option key while you click to open *PageMaker* on one side of the mover. Open Guidance on the other side. Select Guidance and copy it to *PageMaker.* Now every time you open *PageMaker,* Guidance will be there to help. For safety's sake, install it on a backup copy, not on the original.

Text Control

Clicking once on the text tool in a column gives you a text box the same size and position as the column. To create a text box of a different size, drag the tool until the box is the desired size. The same technique works when placing text. Position the text placement icon, drag a box to the desired size, and text fills the box (see "Placing Text").

Graphic Control

You can position and size graphics the same way with the placing tool. However, using this feature with a graphic may distort bit-mapped drawings, which are made up of a fixed number of dots. Nonproportional resizing of these graphics invariably leads to ugly and unwanted patterns.

For best results, hold down the ⌘ key while resizing bit-mapped pictures. The graphic then resizes in steps at the proportional reductions best for the printer you have chosen. If you are using a Mac connected to an ImageWriter and plan to take your disk to a laser-printing or Linotronic service, remember to set the Chooser to the proper printer before you resize anything this way.

The Microsoft Connection

For those who use *Microsoft Word* as their primary word processing program, *PageMaker* is easier than ever to use. Almost all the Microsoft keyboard commands are supported, except ⌘-W and *Word*'s special formatting, such as dotted underlines. Some keyboard shortcuts, such as ⌘-Shift-B for Bold, are listed on the *PageMaker* Type menu. Here are some shortcuts not listed.

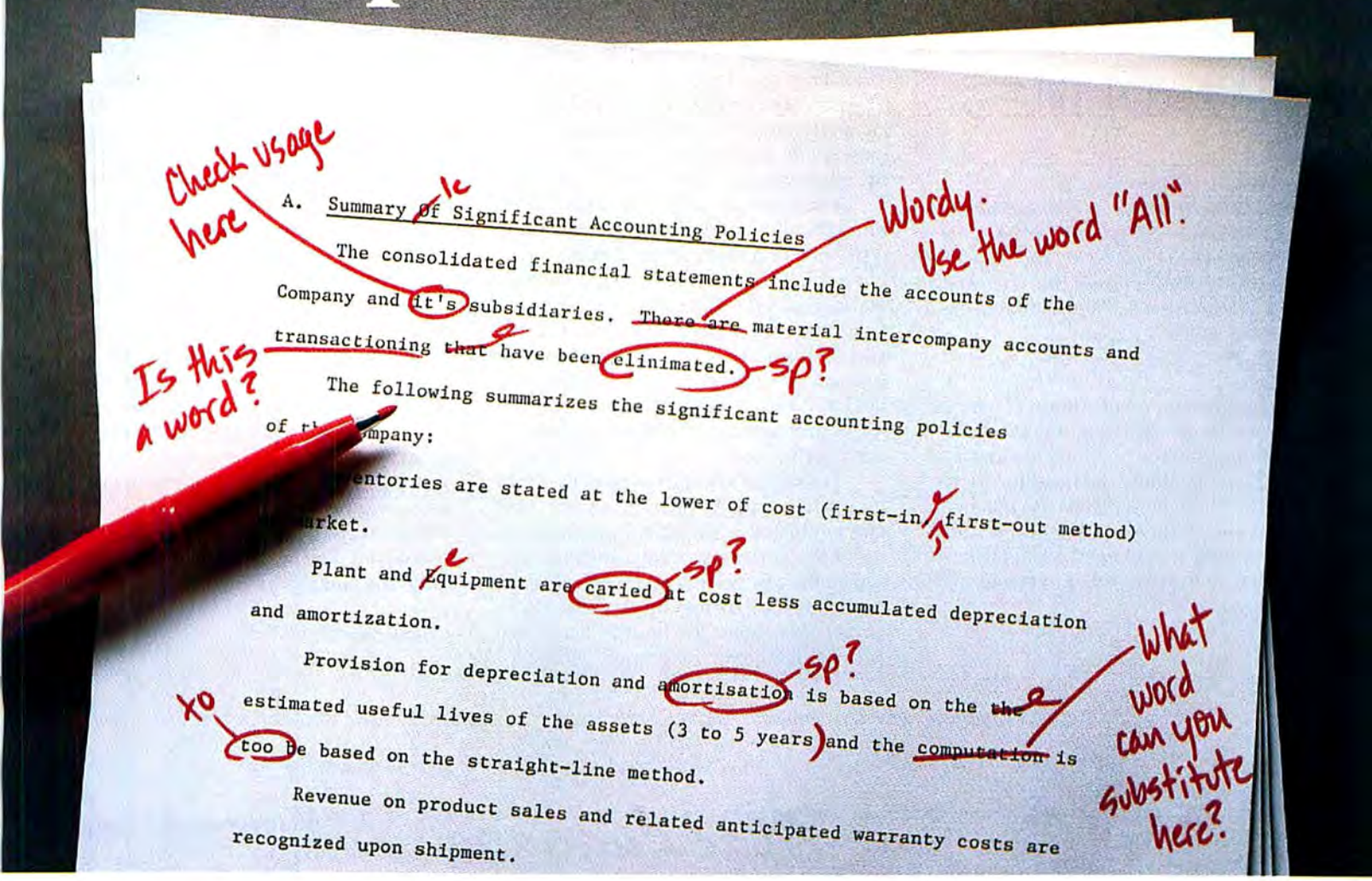
⌘-Shift-D for Outline
⌘-Shift-W for Shadow
⌘-Shift-H for Small Caps
⌘-Shift-K for All Caps
⌘-Shift-minus for Subscripts
⌘-Shift-plus for Superscripts

Using WriteNow

PageMaker 2.0 reads files created with T/Maker's *WriteNow* word processing program. The new *PageMaker* translates most of the formatting in a *WriteNow* document, but there are problems. Files con-

(continues)

Stop the red menace.



Introducing MacProof 3.0

You toil for hours getting an important business proposal just right. Only to have your boss send it back to you with more red marks on it than white space. That's not a pretty sight.

With MacProof™ 3.0, you may never see red again. MacProof is a Desk Accessory software package for the Macintosh®, that points out possible errors in style, usage and the mechanics of writing. A few clicks of the mouse makes a correction. MacProof can even make you a better writer over time by indicating possible mistakes, suggesting solutions—and letting you decide what action to take.

All the proof you need.

MacProof incorporates features that can make writing a breeze instead of a burden. An 80,000 word dictionary checks your spelling. Writing mechanics such as punctuation, capitalization and double words are reviewed.

MacProof checks for problems of usage such as racist or sexist words, words that are often confused (e.g. its and it's) and imprecise or wordy writing. It even searches for problems in style such as an overuse of "be" verbs or non-standard words that make your writing less active and precise.

Extra credit.

MacProof adjusts itself to suit your writing style and problem areas. You decide which aspects of usage, style or mechanics you want checked and MacProof will check only those areas. You can even add your own usage category for MacProof to analyze. And since MacProof works as a Desk Accessory, you can check for errors, review solutions and make corrections without ever leaving your document.

MacProof can give you word, sentence and paragraph counts in a document. Other features allow you to analyze the structure and flow of a document. And MacProof works with most word processing software for the Macintosh, including MacWrite™, Microsoft Word™ 3.0, PageMaker™, WriteNow™ and MindWrite™.

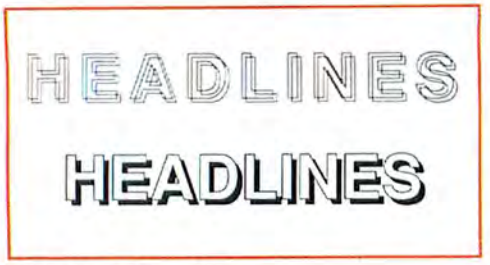
Get out of the red.

Discover how easy it is to become a great communicator and protect yourself against the red threat with MacProof 3.0. For your copy of MacProof, see your local Macintosh software dealer. Or write:

a.l.p. Systems
295 Chipeta Way
Salt Lake City, Utah 84108
1-800-354-5656
1-801-584-3000

Automated Language Processing Systems

Circle 590 on reader service card



A Shadowy Question

PageMaker *doesn't produce Outline-Shadow text the way it looks on the screen. To avoid seeing double as in the example on top, select Laser Prep instead of Aldus Prep or use a PostScript drawing program—such as* Adobe Illustrator *used here—to create Outline-Shadow effects.*

taining both text and headlines come out looking strange. *PageMaker* takes the text leading and the headline leading and tries to average them: the headline looks cramped while the type has too much space between the lines. For best results, create body text in *WriteNow*, and wait until you are in *PageMaker* to create headlines.

Double Standard

When Aldus introduced its laser printer driver, Aldus Prep, it was to fix problems—such as the inability to draw hairlines—in Apple's original Laser Prep. Aldus Prep was the key that unlocked the true potential of the Macintosh as a page-layout design station. But Apple improved its prep file, and soon the difference between the two printer drivers dwindled.

The Aldus driver is still better at handling thin lines and more sophisticated type specifications, such as reverse type, but Apple's version has its own advantages. For instance, if you create an Outline-Shadow headline, Aldus Prep reads it as two outlines whereas Laser Prep interprets it correctly. Converting such headlines to the PICT format does not solve the Aldus problem either. Aldus hopes to correct this soon.

For now, it's best to use Apple's Laser Prep when printing documents that contain Outline-Shadow headlines. Or if you use *Adobe Illustrator*, you can create the same effect by placing text that has been outlined on top of text that has not; *PageMaker* then prints the Encapsulated PostScript (EPS) file in the proper Outline-Shadow style (see "A Shadowy Question"). Because *Adobe Illustrator* assigns outlining as a paint specification, you can control the outline thickness precisely. *Illustrator* also enables you to create text and shadows in shades of gray, and many other typographic effects.

Private Tutor

The documentation that comes with *PageMaker* is exhaustive. There is very little about the program that wasn't included somewhere in the User Manual, the Reference Manual, the Summary of New Features, the Installation Guide, or the Quick Reference Guide. If you are intimidated by it all, or don't feel like slogging through so much text, Personal Training Systems of San Jose, California, has introduced a series of thorough self-study training courses called *PageTutor*, for beginner to advanced. Each course contains an audio cassette tape and a disk and retails for $49.95, considerably cheaper than a private consultant. The style of the tutorials is similar to the Guided Tour that comes with the

(continues)

Circle 530 on reader service card

It's ironic. These days, modems bring the world to you at the speed of light. But for all their awesome speed and power, these high-performance machines just sit there on your desk like a low-tech toaster.

But now, we're introducing the Migent Pocket Modem. It's 100% Hayes-compatible, so it works with virtually any PC: IBM, Apple, or whatever. It runs at both 300 and 1200 bps. It has a full set of Hayes AT commands. A 28-character non-volatile memory. Remote ring and tone sensing. Busy and dial tone monitoring. And even dual phone jacks.

But that's where all similarities end. The whole modem is smaller than a 3" x 5" card and works on a 9 volt battery or AC power. So you can put it in your shirt pocket or briefcase, and take it home, on the road, or anywhere else you need your PC.

The Migent Pocket Modem. If you'd like to know more, send in this coupon or call **800-633-3444,** Dept. 601, and ask for Alexis. We'll send you full information and the name of your nearest dealer. But in the meantime, you may be wondering why this modem isn't beige like the rest. Because we think it's about time a high-powered information machine looked like one.

☐ Please send me more information about the Migent Pocket Modem. And send me the name of the dealer in my area.

NAME

ADDRESS

CITY STATE ZIP

PHONE

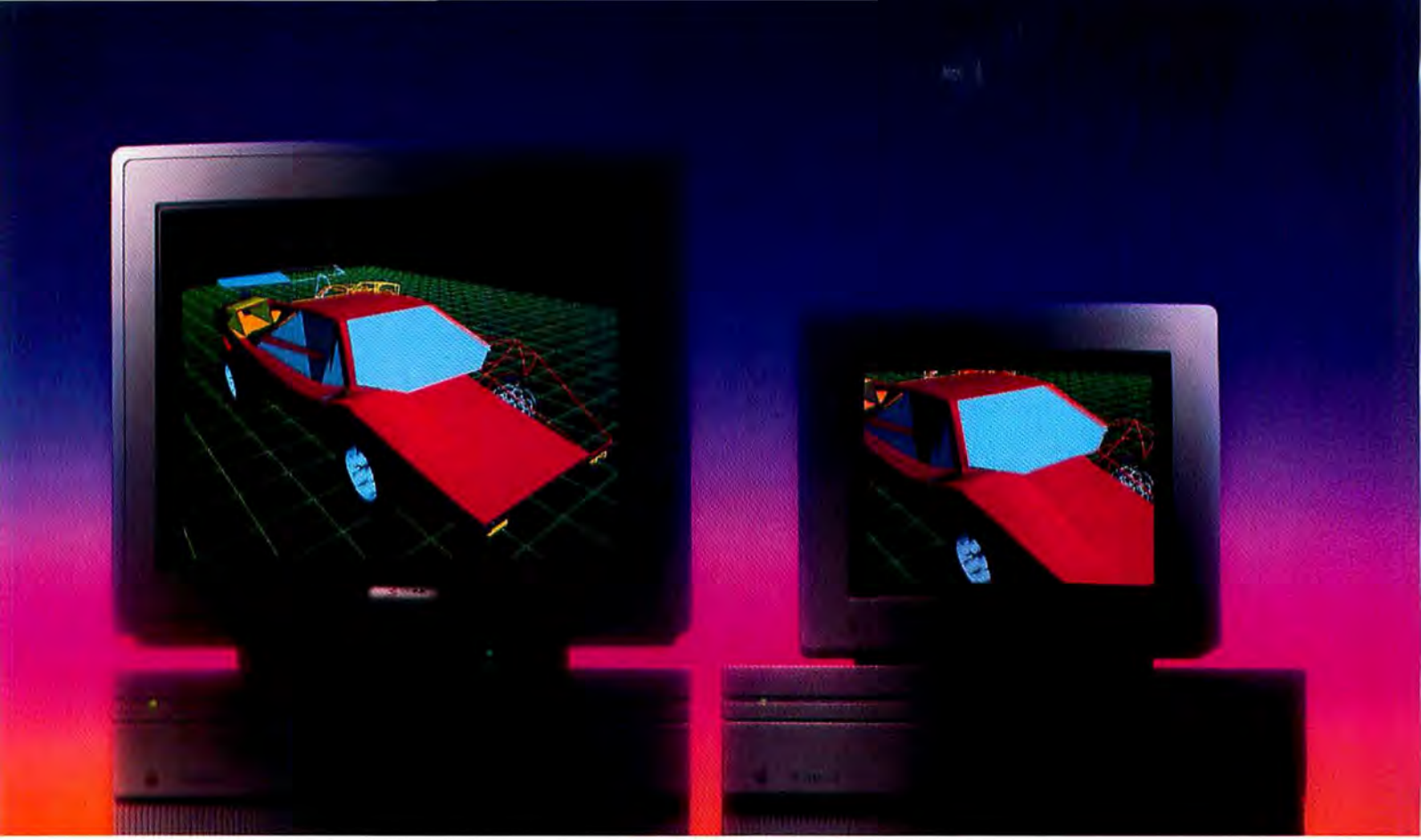
MIGENT™

Send to: Migent, Inc., 865 Tahoe Blvd., Call Box 8, Dept. 601, Incline Village, Nevada 89450-8062, Attn: Alexis

Registered trademarks: Apple, Apple Computer; Hayes, Hayes Microcomputer Products; IBM, International Business Machines. Trademark: Pocket Modem, Migent.

THE MIGENT POCKET MODEM.™
A STATE-OF-THE-ART INFORMATION MACHINE THAT LOOKS LIKE ONE.

Circle 694 on reader service card



Quick. Pick the workstation.

It's the Macintosh™ II with the big, high-resolution, high-performance 19″ display.

Available only from SuperMac Technology.

Graphics *power* that turns a great *computer* into a great *workstation*. The result: The ultimate system for running Mac software. Because it is, simply, the ultimate Mac.

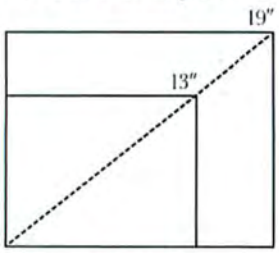
How to create the Macintosh workstation:

Just install one of our workstation video boards in any Mac II slot.

Then connect your monitor. Turn on the power, and you're *running*. No special software. No jumpers.

For color, our *Spectrum*™ system brings you 1024 x 768 resolution with up to 256 glorious colors at once, from a palette of over 16 million. Or 8-bit gray scale, if you wish.

For monochrome, you get even greater resolution of up to 1365 x 1024 pixels with our low-cost *Graphix*™ system. That means that Macintosh can display a two-page spread with room to spare. *And* you can still read the fine print!



Spectrum offers double the visual area of Apple's color display. So you see much, much more of your work.

Because SuperMac video boards are programmable, you can even start small and upgrade later. Choose from Apple's 640 x 480 monitor, or choose an 800 x 600 multisync-type monitor for 50% more resolution. Or for the ultimate workstation, choose SuperMac's 1024 x 768 19″ workstation monitor.

See SuperMac video before you commit to *any* video for your Macintosh II.

Only SuperMac video gives you highest resolution.

Only SuperMac video gives you your choice of monitors, up to 19 inches.

Only SuperMac video runs all the standard Macintosh software *and* A/UX, Apple's implementation of the UNIX operating system.

(And for specialized broadcast applications, we've even included genlockable NTSC output.)

See SuperMac video at your nearest SuperMac video dealer. And see the difference between a great computer and a great *workstation*.

SUPERMAC TECHNOLOGY

295 N. Bernardo, Mountain View, CA 94043, (415) 964-8884

Trademarks: Macintosh: Apple Computer Inc. Image by Markus Houy using *Dimensions*.

In this size:	Press this:	To reach:
less than 100%	⌘ Option	100%
less than 100%	⌘ Option Shift	200%
100%	⌘ Option	size of window
100%	⌘ Option Shift	200%
200%	⌘ Option	100%
200%	⌘ Option Shift	100%

Command Keys for Power

The first thing that everyone new to PageMaker *should learn is how to jump from one size view to another with ⌘-key shortcuts. (Original size equals 100%.) Though initially a bit confusing, these keyboard combinations help you to assemble publications more efficiently.*

Macintosh Plus. The courses contain many useful tips, including the next suggestion about borders from "Tips & Techniques," published here courtesy of Personal Training Systems.

Border Control

PageMaker comes with the borders most popular with graphic artists—mainly single and double lines of various widths. You can create your own borders with the program's square-corner tool and the Shades menu. First, draw a box to match the outside dimensions of your border. From the Shades menu, choose a shade or pattern for the border. Draw a smaller box that defines the inside dimensions of the border and select white as its fill pattern. Use the method already explained under the section "Text Control" to position the text within the border.

Standard Pages

If your layouts require a standard page, such as an order form or a symbol chart, you can save time by printing that page to disk as an EPS file. Then whenever a document calls for that page, simply open it and place it as you would any graphic. An EPS file can be stretched and compressed just like other graphics.

It's in the Book

The documentation that came with the old program was certainly adequate, but many of the best features were either overlooked or barely mentioned. Fortunately, this is not the case with the new version. Besides covering the essentials of how to use the program, the User Manual also contains a chapter on preparing work for publication. It may seem like simple advice, but take every chance you get to browse through the *PageMaker* manuals. You'll learn something new every time. □

See *Where to Buy* for product details.

Friendly.

Best friend.

It's Professor MacTeach™ with Excellerate™ the fast, effective way to master Excel®... without reading a manual!

Excellerate will have you using Excel *in about an hour.* Your skills develop quickly because you use the real software as friendly instructors guide you through each topic. You can choose to learn just the basics or to master Excel's most powerful features by selecting among the Excellerate courses. Each contains an audio cassette, practice disk, and summary card.

Call Professor MacTeach today at (408) 559-8635, or send in the attached coupon, and discover how easily you can become an Excel expert... for less than $50.

Personal Training Systems . . .
Self-Paced Training For Mac™ Software

You may call collect. Excel is a registered trademark of Microsoft Corp. Professor MacTeach and Excellerate are trademarks of Personal Training Systems.

Yes, send me more information on Excellerate.

Name

Company

Address

City State Zipcode

Daytime Telephone Number of Macs in Your Office

PERSONAL TRAINING SYSTEMS, P.O. Box 54240, San Jose, CA 95154, 408-559-8635

Circle 560 on reader service card

We worked 453,000 hours so you can scan any image in 20 seconds.

Datacopy Scanners let you get the most out of desktop publishing.

Thirteen years of experience went into making Datacopy scanners the best available. But all our work wouldn't mean a thing unless it meant something very important to you: Better and easier Desktop Publishing.

Datacopy scanners are powerful tools for Desktop Publishing. Both our Model 730 and JetReader™ scanners easily perform the most complex of scanning operations. And at the same time bring 300 dot-per-inch quality graphics to any newsletter, report, or presentation. The Model 730—the world's most popular flatbed scanner—even scans bound documents.

And while we spent countless hours perfecting scanners, we spent many more developing powerful software. Like Mac*Image*™—software that lets you cut, edit, reduce or enlarge any picture or image. Eliminating scissors, glue and hours from Desktop Publishing.

So whatever your Desktop Publishing task may be, whether it's on the Macintosh™ or PC, remember, Datacopy worked long hours so you won't have to.

For information call 800-821-2898.

DATACOPY

THE EYE OF THE COMPUTER™

JetReader, Mac*Image* and The Eye of the Computer are all trademarks of the Datacopy Corporation. Macintosh is a trademark of Apple Computer, Inc.

Circle 377 on reader service card

Mac Programming Tools

Putting Turbo Pascal to Work

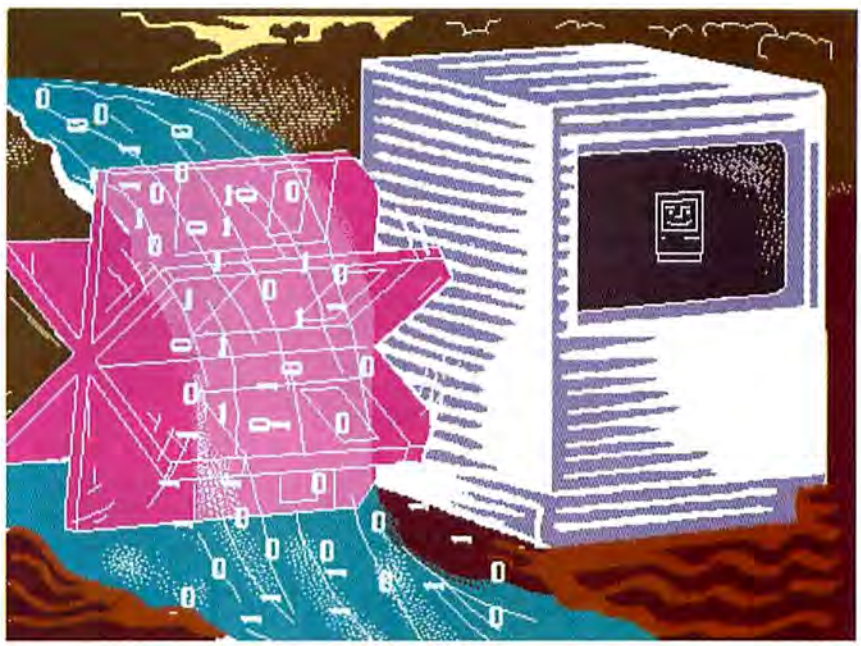
by Charles Seiter

The Pascal language as designed by Niklaus Wirth is an unfinished masterpiece. It's a masterpiece because it represents one of the clearest systems for expressing programming concepts ever developed. And it's unfinished because its origins as a teaching language in universities meant that the grubby necessities of commercial programming, notably machine-level I/O and reusable program chunks, were more or less neglected.

Wirth subsequently produced the language Modula to extend and supplement Pascal, but the personal computer marketplace had already picked up Pascal and run away with it. Borland's *Turbo Pascal* for the IBM PC became a programming standard by sheer force of numbers (approximately 500,000 copies sold), and *Turbo*'s extensions and countless add-on packages supplied most of the machine access and programming conveniences anyone required. These nice touches unfortunately make *Turbo Pascal* programs less portable than programs in pure-Wirth Pascal, but in the vast IBM Blue world, that's not much of a problem.

Borland's *Turbo Pascal* for the Macintosh provides direct access to the Mac operating system and in so doing allows you to write programs that will be forever Mac-specific. But it's possible to write portable *Turbo* programs as well.

In this collection of tips we assume that you have some familiarity with standard Pascal and have bought *Turbo Pascal* to get down to writing semiserious applications. Borland's question-and-answer service on CompuServe is an important and helpful resource (type GO BORPRO at the initial prompt). It puts you in touch with Borland technical authorities like Joe Schroeder, whom we hereby thank for great help with many of these tips.



SCOTT BALDWIN

One important file to consult in the BORPRO area is Term.Pas, but it's too long to reprint here. Term.Pas is an exceptionally clean skeleton program that illustrates the use of menus, desk accessories, and serial I/O.

Out of the Blue

There are more high-quality public domain programs for the IBM PC in *Turbo Pascal* than in any other language. Scientific and financial applications are available from a variety of sources, notably the bulletin board on CompuServe managed by Borland (just type GO BORLAND at the prompt to start poking around) and disk sets from PC SIG (see ads in *PC World*). The good news is that you can rummage through this cornucopia of code and find routines for everything from Fourier transforms to home loan calculations; simply download these programs as text files from the BBS or transfer them as disk files through *MacLink* or another conversion utility.

The bad news comes in two parts. First, the graphics don't port to the Mac. But that's no great loss—Mac *Turbo* provides better routines anyway, including an easy-to-use 3-D package. Second, various quirks in PC *Turbo* conventions require a little posttransfer housekeeping.

The nonstandard conventions mainly have to do with const declarations. PC *Turbo* allows you to declare as constants characters, arrays, and other types of values besides numbers; Mac *Turbo* does not. So look in the const section of a program you port to the Mac and replace constant

(continues)

A Demonstration

This slightly edited chunk of MyDemo.R (included in Turbo Pascal*'s set of examples) shows how to insert information to appear in the About dialog box under the Apple menu.*

declarations with simple statements in the body of the program. You can do the same thing more efficiently by putting character constants and other nonnumber constants in an STR resource, but that method requires a working familiarity with the contents of *Inside Macintosh*.

Obviously the people at Borland know better than anyone how to port and modify their own PC programs. So look for several Toolboxes to appear later this fall. These will include a Numerical Methods Toolbox, with highly optimized units for solving standard engineering problems; a Database Toolbox, with sorting, searching, and data-structuring units; and a tutorial covering Pascal basics and application writing. If you can't wait to get started on a database application, an ISAM/Sort package is available now from M. Noel (206/365-0897).

Tumbling Dice

Mac *Turbo Pascal* users are sometimes startled to find that the random number generator in QuickDraw always produces the same random numbers. It does that because the usual compiler directive {$U+} for textbook programs automatically invokes the PasConsole unit, which in turn sets a standard value for RandSeed. Thus the generator always starts with the same seed.

You can fix this with the Randomize procedure, which sets the seed according to the number of times the System clock has ticked since you turned on your Mac. You call this procedure just once, at the beginning of the program that uses the randoms.

```
procedure Randomize;
var
SavePort: GrafPtr;
begin
GetPort(SavePort);
InitGraf(@thePort);
RandSeed := TickCount;
SetPort(SavePort);
end;
```

(continues)

Not since ham and cheese has integrating been so easy.

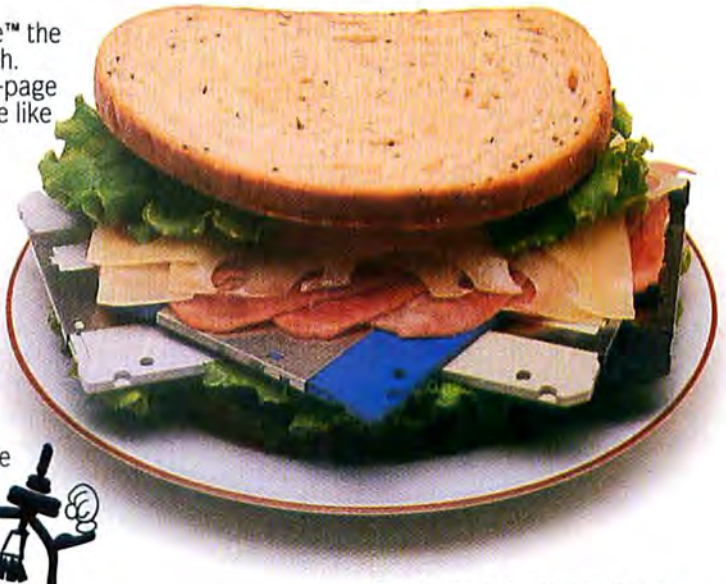
Busy desktop publishers are calling SuperGlue™ the easiest solution since the total meal in a sandwich. Now they can take full QuickDraw quality, multi-page Macintosh™ spreadsheets, charts, graphs and the like out of the program that created them. With the new desk accessory, you can access and copy from all these graphics while still in your word processor or page layout program.

If you use scrapbooks, your graphics can be placed automatically in scrapbook files or resized so you can paste them where you please.

You can even extract text or numerical data, change it to ASCII, and place it in another program.

If this whets your appetite, order SuperGlue™ today. It's guaranteed to perform as advertised or your money back.

SuperGlue™ retails for $89.95 and is available from your dealer or Solutions International.



29 Main St., P.O. Box 989
Montpelier, VT 05602
802-229-9146

SuperGlue is a trademark of Solutions, Inc.
Macintosh is a trademark of Apple Computer Inc.
SuperGlue runs on any Macintosh larger than 512K.

Circle 405 on reader service card

CEPS®/Fall
Corporate
Electronic
Publishing
Systems™

The Show and Conference
October 26-28, 1987
World Trade Center
Commonwealth Pier
Boston, MA

Featuring Desktop, Workstation and Dedicated Publishing

DON'T GET LEFT BEHIND

Just because you've come to CEPS before, don't think that the world of corporate electronic publishing has stood still. It hasn't.

Now it's more important than ever before to get a first-hand view of the newest products and innovations that are rapidly changing the state of the art.

And only CEPS/Fall can keep you ahead of the industry's latest developments and how they can affect your business operations.

Learn about the electronic publishing technology from the inside, from the leading experts and vendors in the field. Discover how to set up systems that are right for you. Dramatically cut costs, eliminate unnecessary typesetting charges and maximize the efforts of your entire staff and resources.

Whether you're in business, government or education, CEPS/Fall is *the* single event that showcases the continuing evolution of corporate electronic publishing.

Don't get left behind...make your plans to attend today.

CEPS/Fall...because publishing is *everybody's* second business.

Clip this ad...save $15 on your CEPS/Fall admission.

Bring this ad with you to CEPS/Fall...you'll pay only $5.00 to attend!

Instructions: Complete a registration form (available in the lobby), then proceed to a cashier with this ad. XG

Show Hours:
Monday, October 26 10:00 a.m.-6:00 p.m.
Tuesday, October 27 10:00 a.m.-6:00 p.m.
Wednesday, October 28 10:00 a.m.-4:00 p.m.
Registration opens at 7:30 a.m.

CEPS is organized and cosponsored by
Cahners Exposition Group, 999 Summer St., Stamford, CT 06905 (203) 964-0000
and InterConsult, Inc., 48 Brattle St., Cambridge, MA 20138 (617) 547-0332.

GN8-2

Circle 770 on reader service card

Thrifty, Brave, Resourceful...

While *Turbo Pascal* lets you set up windows and menus with procedures in standard Pascal format (NewWindow, NewMenu, and so on), it's more efficient to put this programming work into a resource file. This method may not be standard Pascal, but it's certainly standard Mac. Resource files, which have the extension .R, are compiled by the special program RMaker (included as a *Turbo Pascal* utility) into another file with the extension .RSRC. The compiler directive {$R Whatever.RSRC}. ties the resource to your program.

With *Turbo Pascal,* Borland includes a skeleton program called MyDemo (made up of the files MyDemo.Pas and MyDemo.R), which can be tinkered with to provide facilities for a great variety of applications. All you have to do is inspect MyDemo.R as a text file and you can see how to relabel its sections to correspond to the sections of your own program.

"A Demonstration" shows the first few lines of MyDemo.R rewritten to emphasize the user-modifiable parts, and "On-Screen Results" shows the screen that appears in the corresponding About dialog box under the Apple menu when the program is run.

On-Screen Results

This is how the About dialog box looks, given the text in "A Demonstration." You can change it to any set of titles you prefer by editing the .R file and recompiling with RMaker.

Note that the original MyDemo menu headings, Graphics and Disk Operations, have also been simplified to Menu A and Menu B for increased skeletonization.

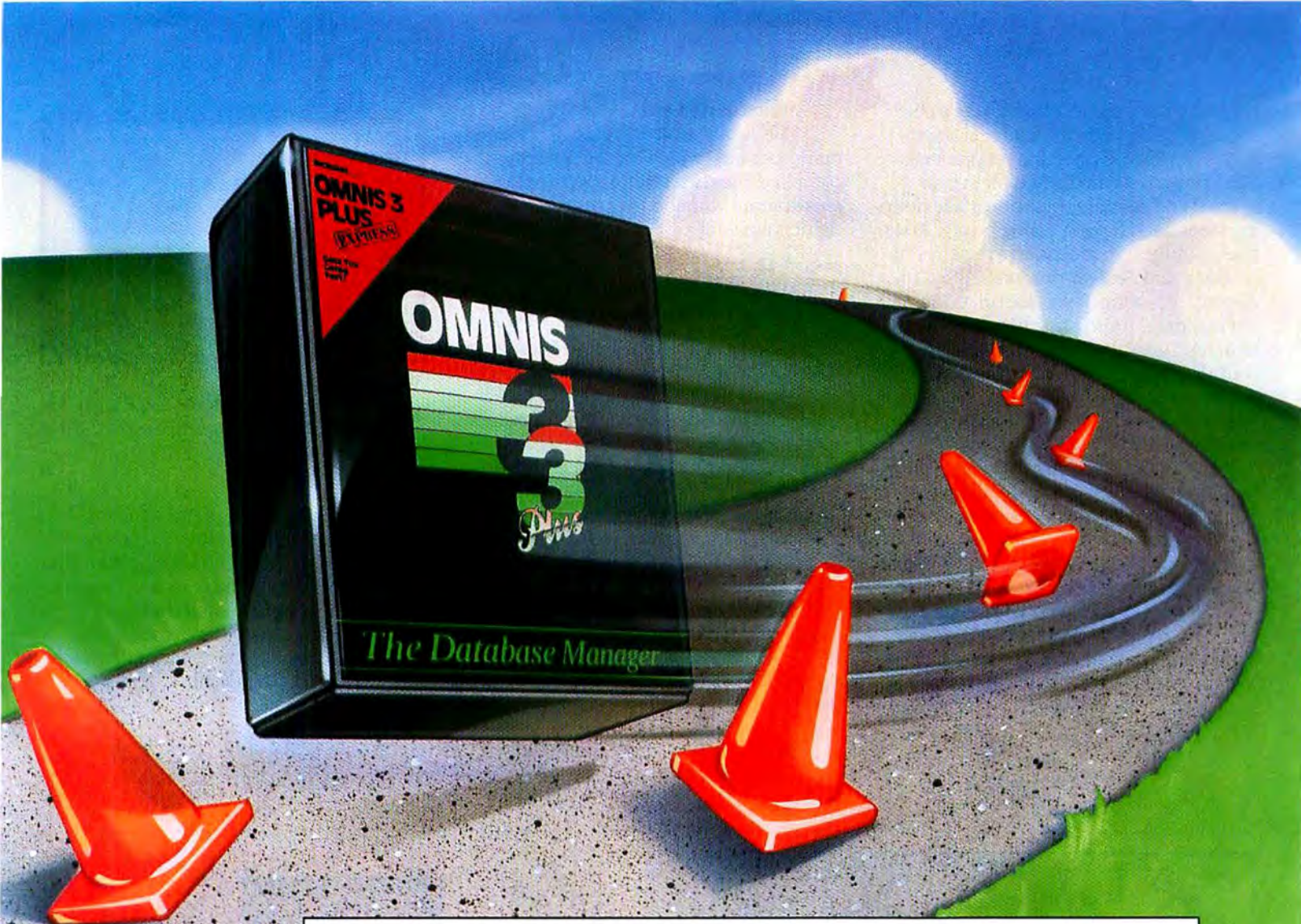
When you begin inspecting MyDemo.R, take note of the long chunks of hex code, used to define icons and special forms of the cursor. While you might want to rewrite the menus section of the sample

(continues)

```
Unit Echo(13);
   interface
   uses PasPrinter;
var
  Echo : text;
procedure OpenEchoFile(FileNm : String); {to printer}
procedure CloseEchoFile; {called to close disk file}

implementation
{ Put file internal format declarations from p.330 of manual here }

var
  ScreenDevice,
  EchoDevice : text;
procedure OutputCh(ch : char);

begin
  Write(ScreenDevice, ch);
  Write(EchoDevice, ch);
end; { OutputCh }

function EchoOut(var F : FileRec) : integer; {sends chars to output}

var
  P : integer;
begin
  EchoOut := 0;
  with F do
    if FOutFlag then { picks output device }
    begin
      for P := 0 to FBufPos - 1 do { clear out the buffer }
        OutputCh(fbuffer^[P]);
      FBufPos := 0;
    end;
end; { EchoOut }

procedure OpenEchoFile(FileNm: String);
begin
  Rewrite(EchoDevice, FileNm);
end;

procedure CloseEchoFile;
begin
  Close(EchoDevice);
end;

procedure SetUpEchoDevice;
begin
  Rewrite(ScreenDevice, 'Console:');
  {$I-}
  Rewrite(EchoDevice, 'Printer:');
  {$I+}
  Device('Echo:', @EchoOut);
  Rewrite(Echo, 'Echo:');
end;
begin
  SetUpEchoDevice;
end.
```

Echo Unit

The unit in this listing lets you send output to the printer as well as the screen. The text shows an example of how to use the unit.



It Really Moves.

Introducing Omnis Express.™ Now Everyone Can Handle the Power of Omnis 3 Plus.™

Omnis 3 Plus has a new "front end." One that puts its "flat out" performance advantage in the hands of just about every Macintosh™ user. We call it Omnis *Express.* And it's part of every Omnis 3 Plus database package.

Omnis *Express* provides easy access to the speed and power of Omnis 3 Plus. With Omnis *Express,* you can quickly create relational database solutions — complete with screen layouts, menus and report-generation capabilities without the tedious development time typical of other programmable Macintosh databases.

Which means someone with virtually no programming experience can develop full-functioned-yet-easy-to-use applications in hours instead of weeks. The applications you create today can be customized to meet your needs tomorrow. And because Omnis 3 Plus is multi-user, it can easily grow as more users are added — with the same level of performance.

For information on how Omnis 3 Plus/*Express* can help you, see your local Apple dealer. Or call Blyth today at 1-800-843-8615 (in Calif., call 1-800-223-8050). And ask for the location of the Omnis Development and Support Center nearest you.

Because with Omnis *Express* you'll soon find yourself moving up in the business world.

OMNIS 3 PLUS™ EXPRESS

Blyth Software, Inc., 2929 Campus Drive, Suite 425, San Mateo, CA 94403

Omnis is a registered trademark of Blyth Software, Ltd. Macintosh is a registered trademark of Apple Computer.

Circle 38 on reader service card

program, you probably won't have a clue about defining bit maps for special symbols. For this, you need the program *ResEdit,* which is particularly effective for graphic and semigraphic chores like defining icons and creating dialog boxes. To define resources, you respond to a series of prompts, and *ResEdit* produces .RSRC files directly. A caution: if you are tinkering with the resources for the first time, do it with *new* resources that you are creating for your own programs rather than modifying existing resources. Misapplied, *ResEdit* can produce awesomely weird effects in your System Folder.

At this point you may wonder how large, complex applications like Bravo Technology's *MacCalc* or Data Tailor's *Trapeze* ever get written. Clearly, programming hundreds of dialog boxes and menus within menus with *ResEdit* would require massive staff or lots of patience. The pros turn to *MacExpress,* a set of utilities that speeds interface design. The only snag is that it costs $195, perhaps a bit much as an add-on for a $99 language.

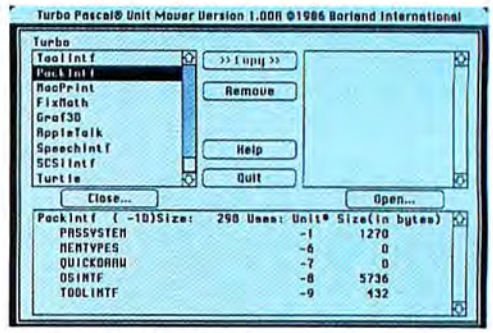
Measuring Units

The "units" of *Turbo Pascal* are simply miniprograms, which can be separately compiled and then strung together in a single program with the *uses* instruction, as in the following:

```
program EZ;
{$U MYUNIT, YOURUNIT, HISUNIT}
uses MyUnit, YourUnit, HisUnit;
```

This concept is borrowed from Modula, in which it is the cornerstone of the language and speeds development of large applications. For small applications the unit implementation of *Turbo Pascal* often produces shockingly large piles of compiled code from tiny demo programs. One startled programmer at the Borland forum on CompuServe noted that 550 bytes of source code in a TurtleGraphics demo compiled to 13.3K of object code.

In large applications, because practically all the features of *Turbo Pascal* are used, such a sizable amount of compiled code does not seem excessive. But in little 20-line demo programs, the standard *Turbo* environment may include units (PasInOut, PasConsole) that you don't actually need. The UnitMover utility in *Turbo* lets you check the size of the standard units and lists the units they in turn require (see "Weeding Out Units"). With a little experimentation, you can learn to pare down to the minimum unit overhead in each of your programs. Specifically, you may want to use the compiler directive {$U-} as your usual default.



Weeding Out Units

UnitMover, included as a Turbo Pascal *utility, lets you check the size of the units that will be used in the compiled program.*

(continues)

Shipping Now!

ComServe

The Modem Sharing Solution for AppleTalk

Clone Your Modem

For less than the cost of another modem, you can offer telecommunications services to everyone on your AppleTalk® network. With ComServe™, you no longer need a modem at each Macintosh™—with all the accompanying wiring complexities and line charges.

- Gain network-wide access to modems, mainframes, and minis.
- Eliminate dedicated hardware. ComServe transparently runs in the background of a Mac. And, it's AppleShare™ compatible.
- Save, at $195 per server. Share expensive, high-speed modems.

Call now or ask your dealer for ComServe. From Infosphere, the only full-family AppleTalk software vendor.

INFOSPHERE®

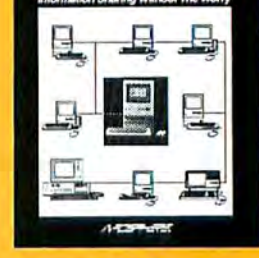
4730 SW Macadam Ave—Portland OR 97201

1-800-445-7085

Ask About Rebate Offer!

MacServe

Information Sharing Without The Worry



MACWORLD WORLD CLASS AWARD 1987

Still the Best for Small Nets

Still only $250 per hard disk server for as many user nodes as you like—still the only file sharing solution that offers "Bulletproof" Automatic Crash Recovery so users never lose data. MacServe™ is the most practical choice for small AppleTalk® networks. And that's why MacServe is still the leader with over 30,000 installations.

- Forget dedicated Macs. MacServe runs in the background.
- Grow a network transparently. Add Macs, PCs, hard disks, servers, printers, modems and E-Mail, as you need them.

Call now or ask your dealer for MacServe. From Infosphere, the only full-family AppleTalk software vendor.

INFOSPHERE®

4730 SW Macadam Ave—Portland OR 97201

1-800-445-7085

Circle 249 on reader service card

Raw Power

Fastest 80MB Available for Macintosh II

A complete family of internal and external hard disk sub-systems for Macintosh Plus, SE & II.

Call today for the name and number of your nearest CMS dealer.

CMS Enhancements, Inc.
1372 Valencia Avenue, Tustin, CA 92680 (714) 259-9555
Telex (023) 371-8711 FAX (714) 549-4004

Macintosh is a registered trademark of Apple Computer Corporation.
CMS is a registered trademark of CMS Enhancements, Inc.

Circle 657 on reader service card

The listing "Echo Unit" shows a handy utility unit. You may often want program output to appear on your printer as well as on the screen—this unit gives you that choice. Note two programming features in this unit: first, you can call the usual Pascal Write instruction from within a device driver; second, you can tag a device name with a pointer to a procedure that handles that device's I/O. For example, the command Rewrite(Echo, 'Echo:') sets up an Echo "file" that can be used as the first argument in the Write procedure. Here's a small example showing how the unit Echo is used:

```
program EchoTest;
uses PasPrinter, Echo;
var
   i : integer;
begin
   Open4EchoFile('Echoed output');
   for i : = 1 to 10 do
      WriteIn(Echo, 'Send to screen ', i:2);
   ReadIn;
   CloseEchoFile;
end.
```

whoops1

```
program whoops1;

var i:integer;

begin
   begin
      for i:= 1 to 10 do; (this ; is not a bug, but is an error)
      writeln(i);
   end;
  readln;
end.
```

Semicolon Alert
Watch for semicolon mistakes. Here, the circled semicolon produces an 11 instead of the whole series of numbers from 1 to 10.

Structural Programming

When you begin to inspect the sample programs Borland has included as guides to Macintosh programming style, you'll find that they all have the same fundamental structure.

```
BEGIN
   InitThings;
   SetUpThings;
   MainEventLoop;
   CloseThings;
END.
```

Some of the programs are formidably long, and even if you are familiar with Pascal from a programming course, the Macintosh conventions may make the programs unfamiliar terrain. To see what's really happening, call up each program in the editor, go to each program section (MainEventLoop, for example) in turn, and have the editor's Search routine look for a case statement. Nearly all the program control in a *Turbo Pascal* application is handled by "case... of..." constructions that correspond to choices from the program's menu bar. Typically, the case statement then fans out to procedure selections, and at the procedure level most of the programming looks like ordinary textbook Pascal.

Auto Pilot

Just as a precaution, make sure you have checked the Auto Save feature under Options in the Compile menu. It is not at

(continues)

New from NewDirections Software:

How many times have you had to quit your program just to start up another to type a letter, address an envelope, or print an invoice or form?

New! Now supports automatic data exporting for databases!

FastForms! construction kit

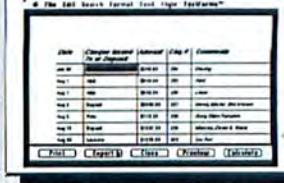
Introducing the solution.

If you are like most other Macintosh users, your answer to this question is probably "Too Often!". FastForms Construction Kit consists of two programs: a powerful drawing application that lets you create forms, letterheads, newsletters and about a zillion other documents, **and** a convenient desk accessory that provides you with instant access to any of your FastForms creations. The drawing program features nifty tools such as grey screens, foreground and background drawing planes for visible and invisible objects, text editing, interactive fields, hairlines, and some unique object alignment and distribution tricks. Once your document has been created, the desk accessory can retrieve it from FastForms own built in hierarchical file system from within any other program. From the desk accessory, tab to move from field to field entering in data. Then print, file and get back to work. Type a letter complete with letterhead graphics and print with the LaserWriter, add a loaf of bread to your shopping list, create an on-line help file, write and print a cheque (FastForms can even balance your bank account!) or fill out an invoice that totals all items, plus adds tax - all without interrupting your regular work! You could even scan your forms and trace over them with the drawing program, then fill them out with the desk accessory and print. What could you use FastForms construction kit for?
Explore the possibilities and get your FastForms Kit today!

Program

Design your own professional forms with the drawing program. Specify interactive fields for entering information. Create letterheads, invoices, labels and much much more!

Desk Accessory



Use the desk accessory for instant access to your forms. Enter data into fields then print to the LaserWriter or ImageWriter, all without quitting the program you were working with!

FREE TEMPLATE DISK!

Order FastForms Construction kit and you receive a free template disk complete with ready to use templates from the desk accessory!

Call to order - $149

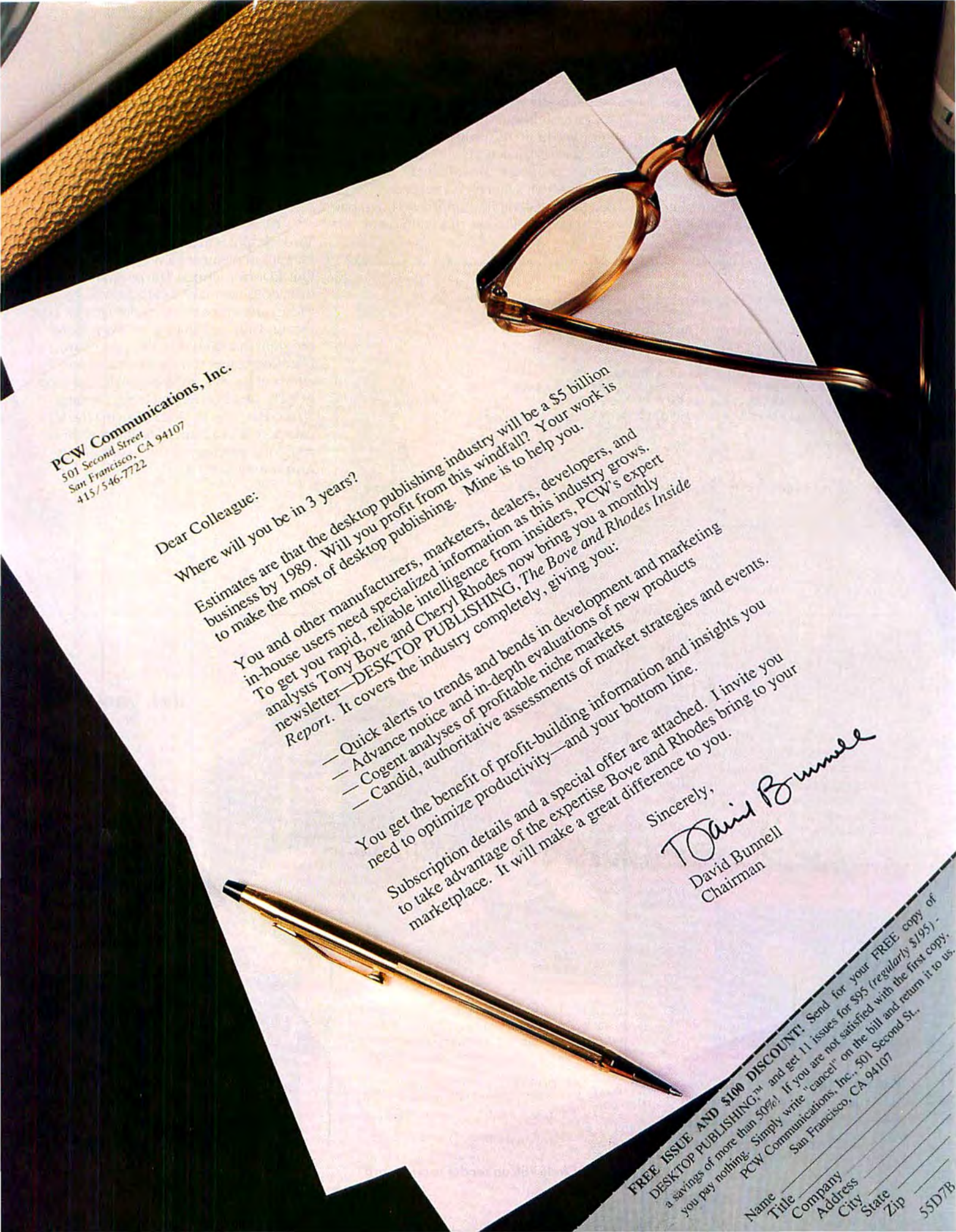
1-800-661-9410

Visa, M.C, AmEx or ask your dealer

NewDirections

by NewDirections Software #206, 2915 - 19th Street N.E. Calgary, Alberta Canada T2E 7A2 (403) 250-1969
All trademarks acknowledged

Circle 777 on reader service card



PCW Communications, Inc.
501 Second Street
San Francisco, CA 94107
415/546-7722

Dear Colleague:

Where will you be in 3 years?

Estimates are that the desktop publishing industry will be a $5 billion business by 1989. Will you profit from this windfall? Your work is to make the most of desktop publishing. Mine is to help you.

You and other manufacturers, marketers, dealers, developers, and in-house users need specialized information as this industry grows. To get you rapid, reliable intelligence from insiders, PCW's expert analysts Tony Bove and Cheryl Rhodes now bring you a monthly newsletter—DESKTOP PUBLISHING, *The Bove and Rhodes Inside Report*. It covers the industry completely, giving you:

—Quick alerts to trends and bends in development and marketing
—Advance notice and in-depth evaluations of new products
—Cogent analyses of profitable niche markets
—Candid, authoritative assessments of market strategies and events.

You get the benefit of profit-building information and insights you need to optimize productivity—and your bottom line.

Subscription details and a special offer are attached. I invite you to take advantage of the expertise Bove and Rhodes bring to your marketplace. It will make a great difference to you.

Sincerely,

David Bunnell
Chairman

FREE ISSUE AND $100 DISCOUNT! Send for your FREE copy of DESKTOP PUBLISHING™ and get 11 issues for $95 (*regularly* $195)—a savings of more than 50%! If you are not satisfied with the first copy, you pay nothing. Simply write "cancel" on the bill and return it to us. PCW Communications, Inc., 501 Second St., San Francisco, CA 94107

Name _____
Title _____
Company _____
Address _____
City _____
State _____
Zip _____

55D7B

all difficult, in the alternating excitement and tedium of program modification, to end up with a source code file that doesn't actually correspond to the compiled application.

Not Wrong, but Not Right

The example shown in "Semicolon Alert" illustrates a subtle problem, which, to be fair, is not *Turbo*'s fault. Some Pascal compilers–those optimized for teaching programming–question the semicolon after the "do" in the program fragment. Since that construction is not actually wrong according to Pascal syntax, *Turbo* won't give that semicolon a second thought. The compiler reports no bugs, but an extra semicolon like this is almost always a programming mistake. In an annoyingly semicolon-rich language like Pascal, this is something you have to watch for on your own. Fortunately, *Turbo* compiles fast enough to encourage extensive testing for nonbugs of this kind.

Graphic and Explicit

Turbo Pascal for the Mac includes TurtleGraphics in addition to a straightforward implementation of the usual Mac QuickDraw routines. The program, however, does not make it clear how to get those nifty graphic effects onto paper. The listing "Graphic Printing" shows a short program that does this. The procedure HardCopy saves you the trouble of puzzling out the Mac Toolbox call for printing graphics. Part of the philosophy behind *Turbo Pascal* is the idea of giving the Mac user access to advanced facilities without requiring purchase of the *Inside Macintosh* volumes. □

```
program PrintTest;
uses MemTypes, QuickDraw, OSIntF, ToolIntF, MacPrint;

procedure HardCopy(TopWin : boolean);
begin
  PrDrvrOpen;
  if TopWin then { Print the top folder. }
    PrCtlCall(iPrEvtCtl, LPrEvtTop, 0, LScreenBits)
  else { Print the whole screen. }
    PrCtlCall(iPrEvtCtl, LPrEvtAll, 0, LScreenBits);
  PrDrvrClose;
end; { HardCopy }

begin
  HardCopy(true);{ Print Turbo window..call at end of graphics routine }
end.
```

Graphic Printing
This listing allows you to print Turbo Pascal's *turtle graphics, taking advantage of the procedure HardCopy.*

BRING YOUR MOUSE UP TO SPEED

FAST PAD™

Fast Pad's finely textured, low friction surface gives you incredibly quick, pixel by pixel control without annoying skips. Boosts the performance of any mouse, including ones with new teflon bottom. Wipes clean and maintains its finish for years.
Apple® Platinum, Blue and Dark Grey.
Apple is a registered trademark of Apple Computer Inc.

MicroStore™ Crafted with Pride in U.S.A.
P.O. Box 33 LeSueur, MN 56058 U.S.A.
Custom colors & logo imprints available.
Prices do not include shipping. ©1987

BOOKSHELF TO BRIEFCASE SAFE, CONVENIENT, EASY-TO-FIND DISK STORAGE

disk·book™
Free-standing design and individual pockets let you view all titles at a glance. Unique top seal keeps disks in—dust out. 10, 16 and 32 disk models. (16 has pockets for manuals, pads and pens.)

Traveller™
Slim, compact traveling companions fit easily in coat pocket or purse. Folding design securely holds and protects disks. 4, 8 and 12 disk models.

Disk books and Travellers are crafted of stain and static resistant Cordura nylon fabrics, with reinforced edging for durability. Snag-free pockets—secure velcro closure—four popular colors.

FOR FAST DELIVERY
CALL NAT. TOLL FREE: 1-800-962-8885
In MN (612) 665-3284 Telex 325853
Master Card, Visa, American Express Accepted

Circle 786 on reader service card

The Microtech Super Stars

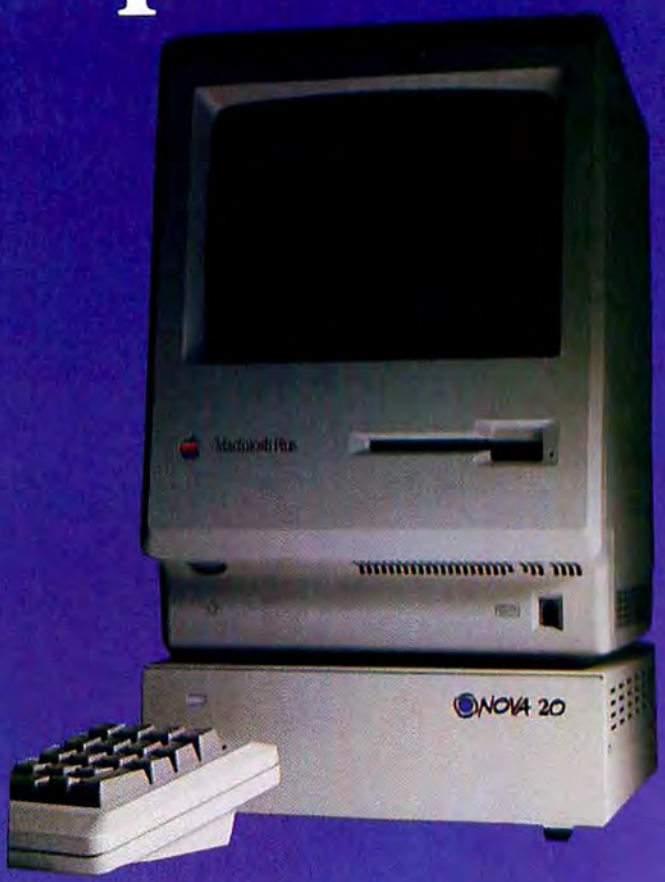
NOVA 20/30/50

High Performance Power ..... ***for less***
Superior Speed ..... ***for less***
Quality and Reliability ..... ***for less***

Macintosh Plus and Macintosh SE Compatible
512K Compatible with the Microtech SCSI Port (call for pricing)

NOVA 20	**$599**
NOVA 30	**$729**
NOVA 50	**$999**

All Nova SCSI hard disk drives come preformatted and ready for use. Now available in the original Mac color or new platinum color.



MICRO MAC 30/45

Introducing the Micro MAC 30 and 45 now as Internal Hard Disks for the Macintosh SE

You can't beat Micro MAC's Quiet, High Speed, State of the Art Technology, now even more subtle than ever hidden internally inside your Macintosh SE. The unique "Micro Lock" head locking feature, a step beyond auto-park, allows you to maintain your Mac SEs portability without risk. Installation is quick and easy.

MICRO MAC 30 ..... **$689**
MICRO MAC 45 ..... **$899**
Additional savings with 800K trade-in

MICRO MAC 800

The First 800K Floppy Disk Drive Introduced for the Macintosh Computer
Quiet, Versatile, Dependable

128K, 512K, and Macintosh Plus Compatible

MICROTECH MEMORY EXPANSION KITS

One Megabyte SIM Modules
In DIPS and Surface Mount Technology

For the Macintosh Plus and Macintosh SE Computer

2.5MB KIT **$599**
4.0MB KIT **$1159**

Prices subject to change

800-325-1895 **In Conn.:** 203-488-8993
Dealers call: 800-626-4276

MICROTECH
PERIPHERALS, INC.

29 Business Park Drive/Branford, CT USA 06405

MICROTECH EXTRAS

ONE YEAR WARRANTY *on all drives*
TECHNICAL SUPPORT *call TOLL FREE*
FREE SHIPPING *UPS ground in Continental U.S. at no inflated cost*

Micro MAC, Micro Lock, and Nova are trademarks of Microtech International, Inc.
Macintosh is a trademark of Apple Computer, Inc.

Circle 470 on reader service card

DaynaFile. The Search For IBM PC File Compatibility Is Over.

It's no secret. Most IBM® compatibility products for the Macintosh™ are as cryptic as the Sphinx. Or cost a king's ransom.

Until now, that is.

Now, there's a breakthrough from Dayna Communications, the company that pioneered Macintosh to IBM connectivity. DaynaFile.™ The affordable desktop solution to MS-DOS file compatibility.

Finally, you can access thousands of IBM data files created by programs such as Lotus 1-2-3,™ dBase III,™ WordPerfect™ and AutoCAD™—with the ease of Macintosh. Just point and click.

DaynaFile is an external disk drive that lets your Macintosh read from and write to DOS disks.

A SCSI port connects it to the entire family of Macintosh computers from the Plus to the SE and Macintosh II, without taking any of the coveted card slots.

As a single or dual drive unit, DaynaFile accepts 5¼" disks from the IBM PC/XT™ and AT,™ as well as the 3½" disks from the PC convertibles and the PS/2™ series.

That's compatibility.

So call us today. And call off the search. (801) 531-0203

Dayna

Power Tools For The Mind

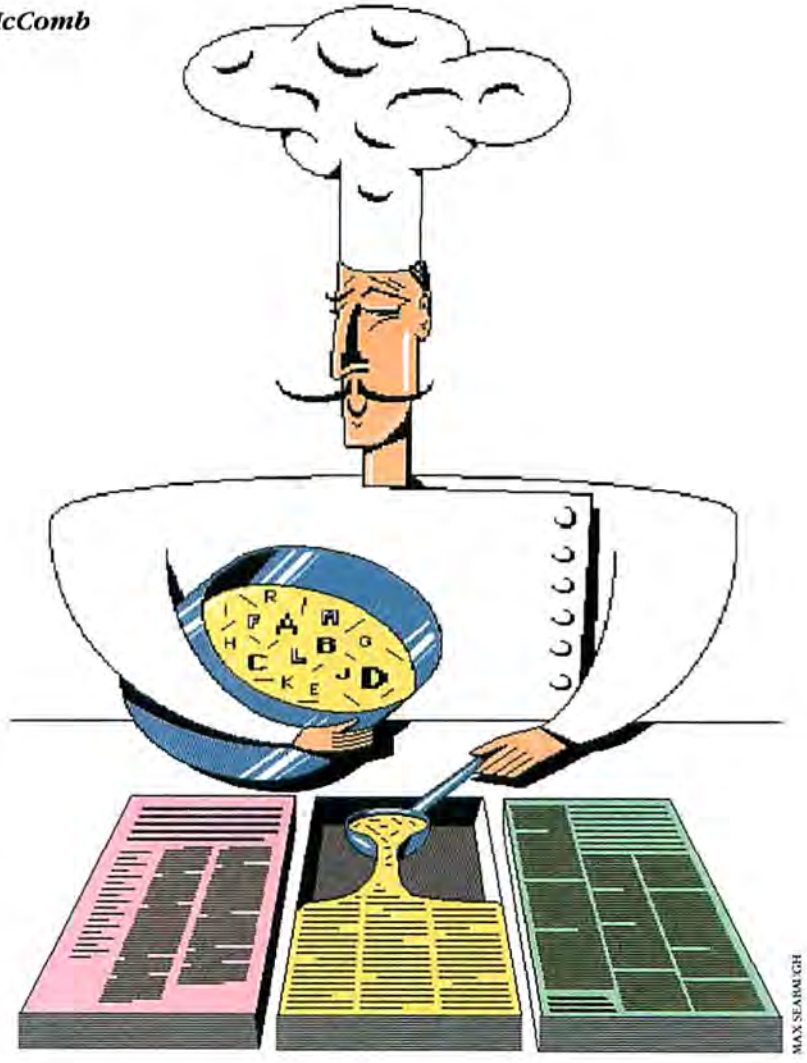
Dayna is a registered trademark of Dayna Communications, Inc. Macintosh is a trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corp. Lotus 1-2-3 is a trademark of Lotus Development Corp. dBase III is a trademark of Ashton Tate. WordPerfect is a trademark of WordPerfect, Inc. PC, XT, AT and PS/2 are trademarks of International Business Machines. AutoCAD is a trademark of Autodesk, Inc.

Circle 232 on reader service card

Mac Word Processing Tools

Take advantage of the new Microsoft Word style sheets to power your document formatting

by Gordon McComb



Microsoft Word has always boasted impressive formatting powers capable of supplying the fine control over text elements that makes a page look polished. Applying the fine-tuning, though, was sometimes tedious with the first-generation *Word*. Each time you used a new format, you had to step through a series of menus and dialog boxes, clicking, typing–and waiting.

Some crafty *Word* users caught on to the magic of paragraph symbols. Once you'd formatted one paragraph, you could duplicate that format by copying its ending paragraph symbol into position after each block that should share that style. You could bypass the dialog boxes this way, but since the ¶ symbol doesn't carry such character-formatting information as type style, reformatting still required time-consuming paragraph-by-paragraph attention.

In *Word* 3.0, Microsoft streamlines the procedure with *style sheets*. With them you define the *style* of a text element–the font, size, style, indents, and spacing–and then save it in the style sheet and apply it wherever it's needed by typing a single command.

But you don't need to use style sheets to prepare documents with *Word* 3.0. When creating a document with a series of unique formats–a display poster, for example–the best method is still to format each block through the dialog boxes. However, if you use standard formats over and over, either within one document or throughout several, or if the formats of a document may change later, style sheets will save you hours of formatting time.

Defining Your Style

Each document has its own style sheet, which catalogs styles in that document. You build the style sheet to suit the text. For a report, you'll probably need styles for a few levels of headlines, for standard text, and maybe for tables, lists, and a cover page. For a screenplay, you'll want styles for character names, dialogue, and action text.

When you begin a new document, *Word* attaches its *default style sheet*. Unless you change *Word*'s preset selections, that style sheet lists just one style, called Normal and defined as 12-point New York, plain, flush left. The default style sheet also includes many automatic styles that control the format of the table of contents, index, footnote references, footnote number, headers, page numbers, line numbers, and more.

(continues)

TEMPEST Desk Top Personal Computer TPI 863-T

*The TPI 863-T is PPL listed under "Candes Systems, Inc."

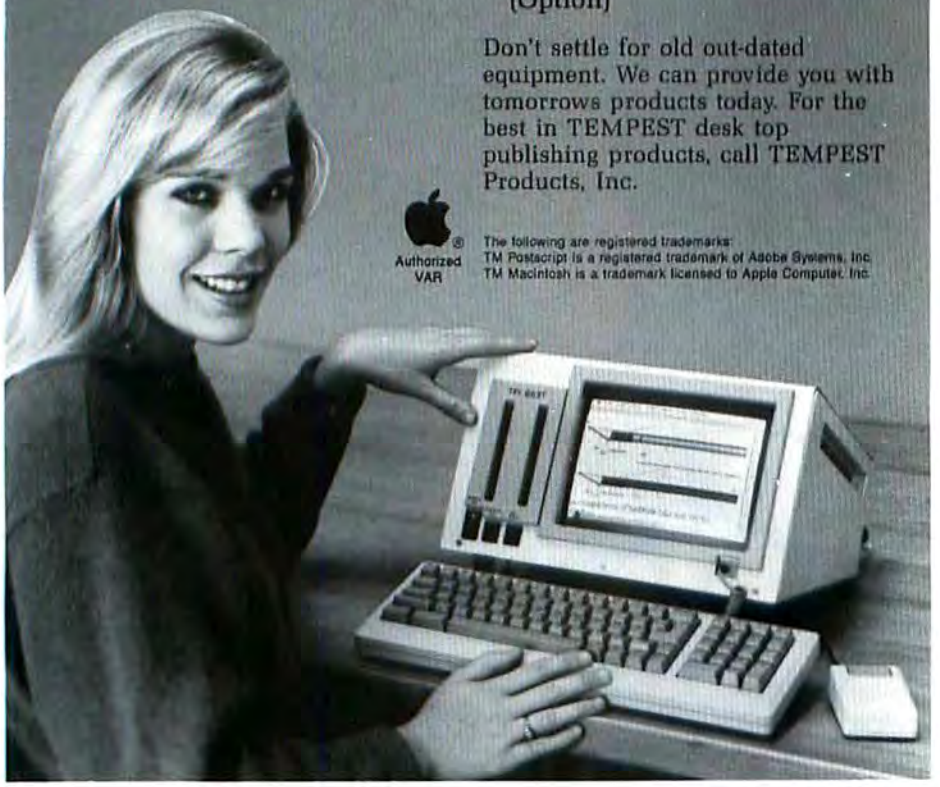
***TEMPEST Certified Macintosh™ Plus**

- Macintosh™ Plus Personal Computer
- IMB Memory
- Two Internal 800K Disk Drives
- Keyboard Numeric Pad
- Mouse
- SCSI Interface
- Communication Interface
- Printer Interface
- Postscript Laser (Option)
- Bernoulli Dual 20 MB (Option)

Don't settle for old out-dated equipment. We can provide you with tomorrows products today. For the best in TEMPEST desk top publishing products, call TEMPEST Products, Inc.

Authorized VAR

The following are registered trademarks:
TM Postscript is a registered trademark of Adobe Systems, Inc.
TM Macintosh is a trademark licensed to Apple Computer, Inc.



TEMPEST Products Incorporated

(703) 471-6960 105-B Carpenter Drive Sterling, VA 22170

Circle 70 on reader service card

GET OUT OF THE DARK.

Open your eyes and see just how many subjects are covered in the new edition of the Consumer Information Catalog. It's free just for the asking and so are nearly half of the 200 federal publications described inside. Booklets on subjects like financial and career planning; eating right, exercising, and staying healthy; housing and child care; federal benefit programs. Just about everything you would need to know. Write today.

Consumer Information Center
Department TD, Pueblo, Colorado 81009

U.S. General Services Administration

You can define styles all at once, before you type the document, or later, after you find out what shape the text takes and what elements it contains. You can create new styles from scratch or modify existing ones.

To create a new style or change one that's already defined, choose Define Styles from *Word's* Format menu. (To use the style sheets, you must turn on Full Menus, an option on the Edit menu that gives you access to *Word's* advanced features.) The dialog box that appears lists existing formats, plus a highlighted entry called New-Style. To include the automatic styles for footnotes and so on, press Shift while choosing Define Styles.

To choose the paragraph and character formats for a new style, simply use the Character and Paragraph commands in the Format menu, filling out the dialog boxes as desired, and type a name for your style in the Style box. Once you've chosen the attributes for that style, you can test the results by selecting Apply. The new format reshapes any selected text, but the dialog box remains open. When you are satisfied with the format, click Define, or if you also want to close the dialog box, click OK. The style has now been recorded.

To modify an existing style, follow the same basic procedure. After you choose Define Styles, however, select the style you want to change from the scrollable list, then use the menus as usual. Alternatively, you can make the format changes in the

(continues)

Window on the Style Sheet
Word's *Define Styles dialog box lets you specify styles for a document. A scrollable list shows the available styles. The style selected here, described in terms of its parent style, is based on Normal but is indented left and right and always starts a new page.*

Double Helix® Voted "Best Database of the Year"

1987 *MACWORLD* Readers Poll

Double Helix® II Has Arrived!*

*Experience the revolutionary speed, power, and flexibility of the new Double Helix II. Try it *risk free* for 35 days. Call us at 800/323-5423, in Illinois: 312/498-5615.
(We can also recommend the Odesta Preferred Dealer nearest you.)

Note: Odesta Corporation spent seven years developing the technology of Double Helix II. Odesta has received numerous awards for user support and is known for innovation. Double Helix II gives the power to build business applications without programming and without the restrictions found in other data-based systems. It may be expanded to information networks with the Helix MultiUser Kit and to any of DEC's VAX computers with Helix VMX.

Odesta Corporation, 4084 Commercial Avenue, Northbrook, IL 60062 (312) 498-5615. Odesta Helix, Double Helix, Double Helix II, Helix MultiUser Kit, and Helix VMX are registered trademarks of Odesta Corporation. DEC and VAX are trademarks of Digital Equipment Corporation.

Circle 13 on reader service card

You don't have to move mountains to make a difference on this earth.

By leaving even the smallest legacy to the American Cancer Society in your will, you can leave a loving and lasting impression on life.

And giving life is the greatest way of leaving your mark on it.

AMERICAN CANCER SOCIETY®

For more information, call your local ACS Unit or write to the American Cancer Society, 4 West 35th Street, New York, NY 10001.

Speed Formatting

Some *Word* shortcuts will speed up formatting even more. Here's a handful of ways to format documents in a flash.

- To apply a style from the keyboard, you need only type enough letters of the style name to differentiate it from others. If Normal is the only style beginning with *N* in your style sheet, you can just type ⌘-Shift-S, N, and then Return to apply it. If you have another style begining with *N*, say, Name, type ⌘-Shift-S, No, and Return for Normal. *Na* would select Name. If you don't type enough characters to identify a style, *Word* beeps when you press Return.
- If you have several styles beginning with the same letters (for example, Headline Level 1, Headline Level 2, and so on), assign abbreviated names to each style. After you type the style name in the Define Styles dialog box, add a comma and type the short form. For example, you could nickname headline styles h1, h2, and so on.
- If the last keyboard command you gave was ⌘-Shift-S (to assign a style), you can skip those keystrokes the next time you want to apply a style. Just click the page number at the bottom left of the text window. The Style prompt appears, and you can simply type the style name and Return to apply it.
- To apply the same style repeatedly, you can shorten the process even more. In many Macintosh applications, typing ⌘-A means "Select All." In *Word*, ⌘-A means "do it again." First use ⌘-Shift-S to apply the style you want to use. When you want to apply the same style elsewhere, just type ⌘-A instead of the style name.

document, then open the Define Styles box, select the style to change, and click Define or OK. The changes will be applied to any paragraph in the document that has the same style.

A Normal Family

Each style you create is based on another style—that of the paragraph the insertion point is in when you choose Define Styles. Style traits are passed from generation to generation: the parent transmits all its style attributes to the offspring. The Based On box in the bottom-right corner of the Define Styles dialog box shows the parent style. The specification for the new style starts with the definition of the parent style and adds any new attributes you assign. When defining a style, you can always return to the unenhanced Normal style by clicking the X reset icon on the format ruler.

The parent style remains unchanged as you define new styles based on it, but if you modify the parent style, any formats inherited directly from that style change in the children, too. For example, starting from Normal (your standard paragraph format), you make some modifications for a headline style, adding bold and extra leading above and below. Then you create a style for a numbered paragraph, also based on Normal, adding indents. In most of the permutations, though, you will probably keep the same font. Then if you change the font in Normal, the font for all of the children changes, too. Changing the parent font doesn't affect the different formats that you specified for the children—such as indents for the numbered paragraphs.

To save steps and keep the lines of inheritance clear for easy modification later, always start by modifying Normal to reflect the basic text style of your document. For example, if the Palatino font will predominate instead of New York (Normal's default), change Normal's font so you don't

(continues)

Even the most sophisticated desktop publishing system is incomplete without VeloBind.

Don't let your desktop publishing stop at the printer.

Complete it with VeloBind, the only binding solution that transforms the promise of desktop publishing into reality. VeloBind provides the crucial, finishing touch to desktop publishing by turning any printed material into impressive, authoritative documents. Desktop *publishing* with infinitely better chances of being noticed, read, and accepted.

Only VeloBind allows you to "publish" your desktop publishing in a library-quality hard cover. In under a minute. Or choose from a wide variety of soft cover materials and colors. Even without a cover, desktop publishing bound with VeloBind looks more professional.

All on your desktop.

VeloBind binding systems are compact, fast and easy to operate. Binding that complements your desktop publishing and creates a positive reflection on you. So do yourself — and your desktop publishing — justice. Visit your local computer or stationery store today or call us for more information. Or stop by your local copy shop and use their VeloBind system to complete your desktop publishing.

Because, after all, your desktop publishing is just a stack of paper until it's bound. With VeloBind.

VeloBind®

650 Almanor Avenue
Sunnyvale, California 94086
(800) 672-1822 (inside California)
(800) 538-1798 (outside California)

Apple and the Apple logo are registered trademarks of Apple Computer, Inc. Macintosh is a trademark of Apple Computer, Inc. VeloBind is a registered trademark of VeloBind, Inc.

Circle 27 on reader service card

VERSION II IS HERE, AND IT'S A WINNER!

PROFESSOR Craps™ II

IMAGINE WALKING UP to the table and saying, "I'll take full odds on the ten, two grand on the hardways, the limit on all the numbers," and then tossing the dice! You can do it with Professor Craps!

- One or two-player action
- Full table layout
- Single, double or greater odds
- Unique "STUDENT" mode
- Onscreen help/instructions
- Set your own stake
- Pass/Don't & Come/Don't bets
- Place/Press/Buy/Lay/Hardways
- Odds bets On/Off
- "DEMO" mode (lists all prior rolls)

$39.95 Incl. shipping/handling. CA residents add tax. Outside USA add $10/copy.

(800) 322-3637 Visa/MC orders
(714) 261-6644 for more info
Or send check/money order to:
Scorpio Systems International
PO Box 8835, Newport Beach, CA 92660

Please specify system: IBM/Compatibles: color card/monitor/256K/clock. Mac 512K, Mac Plus, Mac SE & ATARI ST: mono/color monitor.

Trademark/Owner: IBM/IBM; ATARI ST/ATARI Corp.; Macintosh/Apple Computer Inc.; Professor Craps/SSI Inc.

Circle 418 on reader service card

BUILD A BETTER COMMUNITY WITH YOUR BARE HANDS.

When you give to United Way, your money works for you at home. It goes into community services for the elderly, local youth programs and foster care.

It also helps you run blood banks and facilities for the physically handicapped.

In fact, your donation helps provide literally hundreds of services that make life a lot better for people in your town.

So when your United Way volunteer comes around, be generous.

A better community is in your hands.

United Way
THANKS TO YOU IT WORKS FOR ALL OF US.

© United Way 1984

Ad Council

have to select Palatino for each new styl you create thereafter. That makes it easier to change the entire document's font later.

The font and styles defined for Normal provide the foundation for the automatic styles that *Word* applies to standard elements like footnotes and page numbers; modifying Normal alters them as well. If you don't modify Normal, those elements will continue to print in 12-point New York unless you change each of them specifically.

You can specify a new parent style by typing it into the Based On box, or you can dissociate a style from its lineage by deleting the style in the Based On box. Use this option with care, however, and only before you've begun to define the style. Definitions that are based on a certain style have unpredictable results when their base assumptions change.

Prêt-à-Porter

Once you've defined a style sheet that meets your needs, you can use a number of different strategies to apply it to other documents.

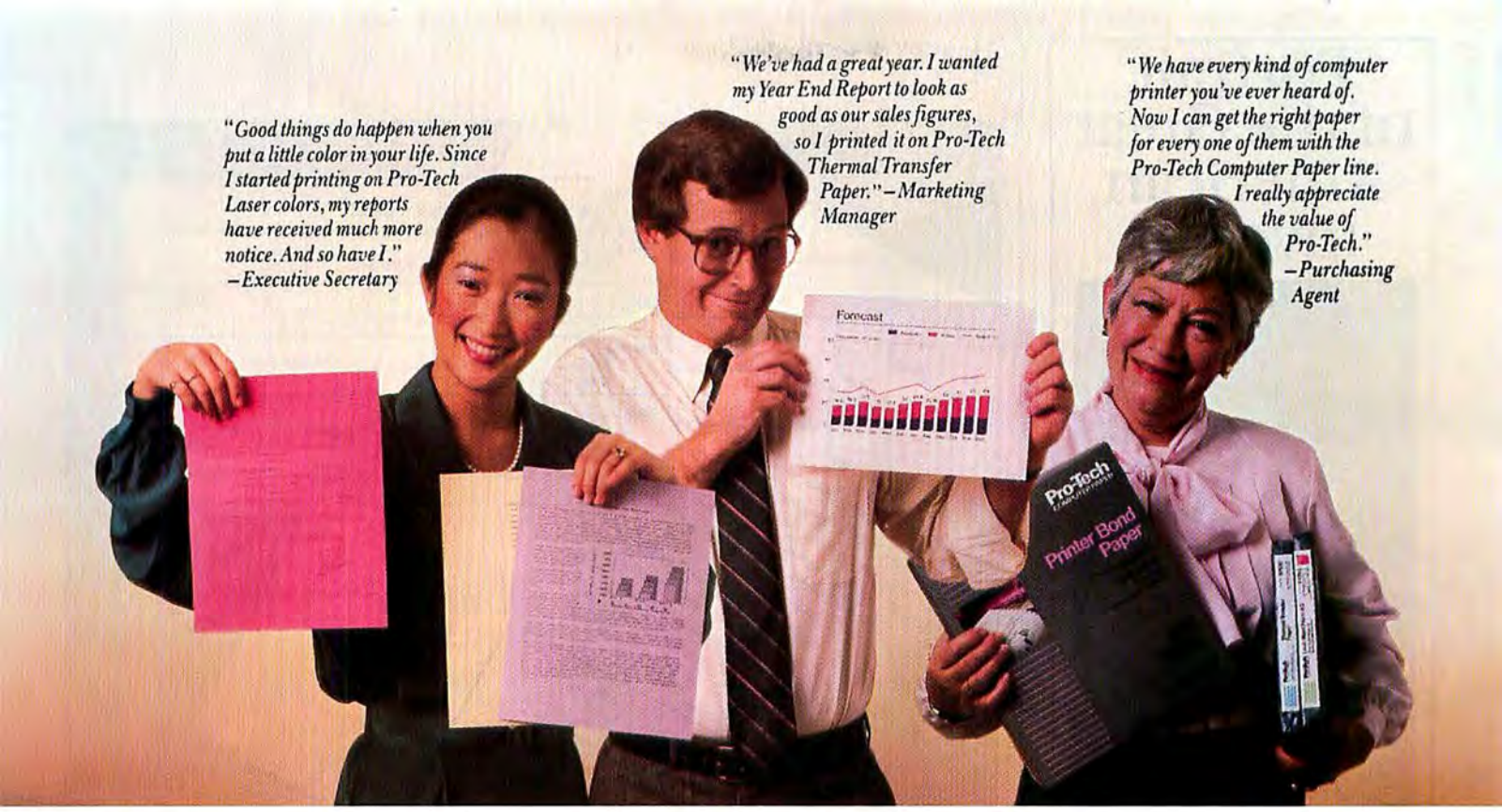
If you create a style that will be used in all your documents, you can use the Set Default button in the Define Styles dialog box to insert that style into the default style sheet. If you always use LaserWriter fonts instead of Normal's default 12-point New York, for example, you can use Set Default to make the proper font automatically available in each new document.

If you use a few different document formats, however—one for memos, another for draft documents, a third for reports that will be bound and sent to headquarters—one of the best ways to use style sheets is to create style template documents.

Set up empty documents with comprehensive style sheets covering all formats you use in each type of document. Give the template documents descriptive names—memo format, report format, and so on. Then whenever you create a certain type of document, you copy the appropriate style sheet to the new file.

To copy a template style sheet into a new document, open the new document and choose Define Styles. Then choose the Open command from the File menu and double-click on the name of the document with the styles you want to import. The document doesn't open, but its style sheet merges with the current document's style sheet.

(continues)



Why people love their Pro-Tech Computer Paper.

Who wouldn't love a computer paper specially designed for the printer they use?

The Pro-Tech family of specialty computer papers and film provides the consistency and reliability required for superior image quality and is specifically designed for dot matrix and daisywheel, ink jet, laser and thermal transfer printers as well as pen plotters. Pro-Tech enhances your printer's performance. And your image.

The complete line includes: Laser Papers for hi-speed and desktop laser printers (in white and colors, 25% cotton and other special finishes), Ink Jet Paper, Thermal Transfer Paper, Pen Plotter Paper, Printer Papers (in bond, 25% cotton and other special finishes) and Transparency Film. You'll love them.

Yours Free! For free samples of the right paper for your printer, contact Pro-Tech today. Return this coupon to: Pro-Tech Sampler Kit, c/o James River Corporation, Groveton Division, Groveton, NH 03582 or call toll-free Mon-Fri 8:00-5:00 EST...

1-800-521-5035
In MA: 413-589-7592

Name _____

Title _____

Company _____ Phone _____

Address _____

City _____

State _____ Zip _____

My computer printer is a _____
(Manufacturer – Make – Model No.)

JAMES RIVER CORPORATION
GROVETON DIVISION
Groveton, NH 03582

MWD10/87

Pro-Tech™
Because the right paper and film makes all the difference.™

© 1987 James River Corporation

Circle 762 on reader service card

Portrait of the Great American Investor

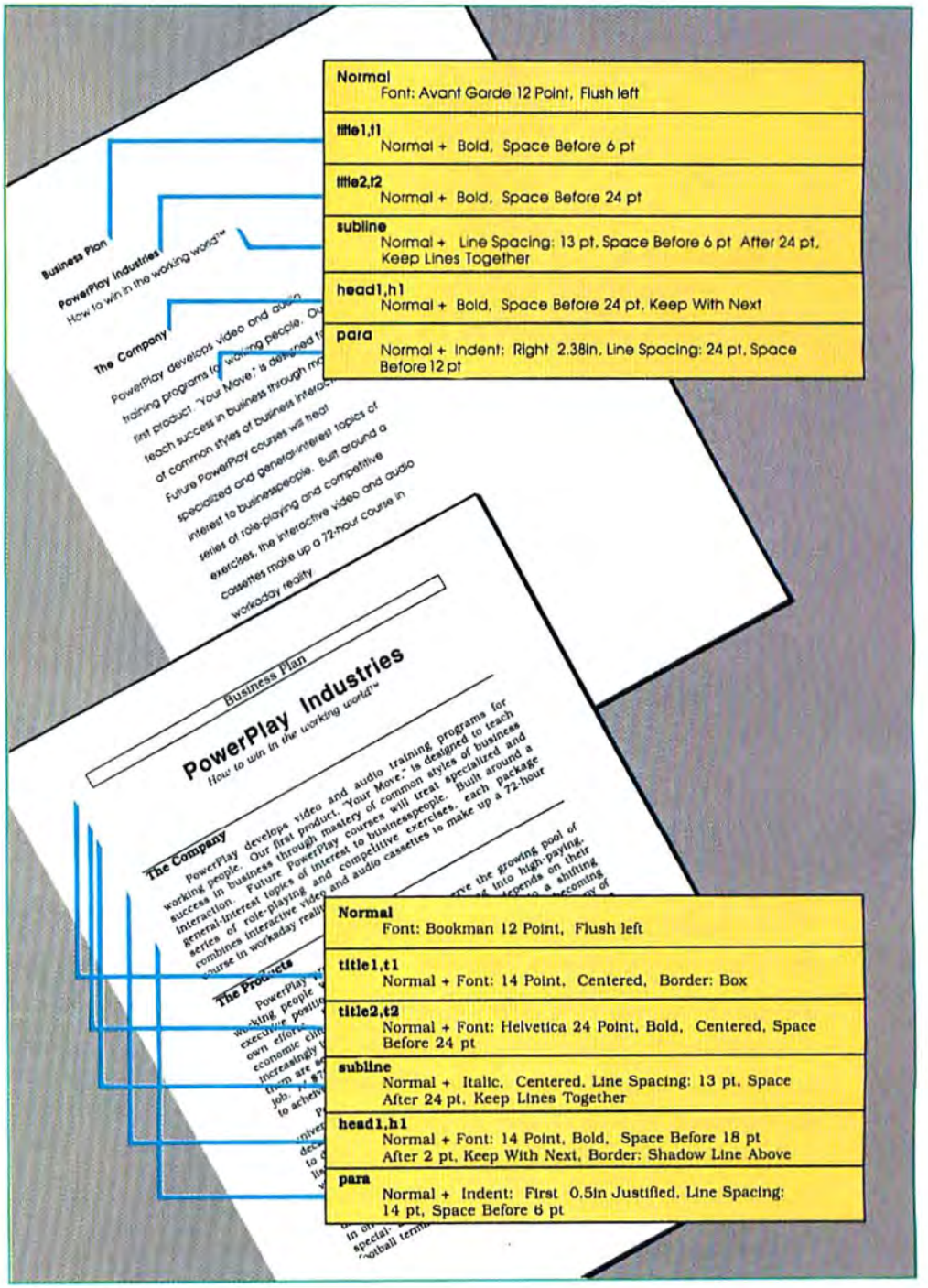
You wouldn't know it to look at him. But he has an investment plan that's working, even though he's not.

From Elm Street to Wall Street, people all over America are discovering that U.S. Savings Bonds have changed.

When held for five years or more, Bonds pay competitive rates, like money market accounts. They're also free from state and local income tax. Find out more, call anytime 1-800-US-BONDS.

Bonds held less than five years earn a lower rate.
A public service of this publication.

U.S. SAVINGS BONDS
THE GREAT AMERICAN INVESTMENT



Draft Style to Final Style

Double spacing and wide margins make drafts easy to work with. Style names for the draft match final style names, so it's easy to reformat for presentation by copying the new style sheet.

Use care when merging: if any styles in the copied style sheet have the same name as styles in the current sheet, they replace those in the current sheet. To avoid unexpected results, copy the template's style sheet before you add styles unique to the new document. Or make sure style names don't conflict before you copy.

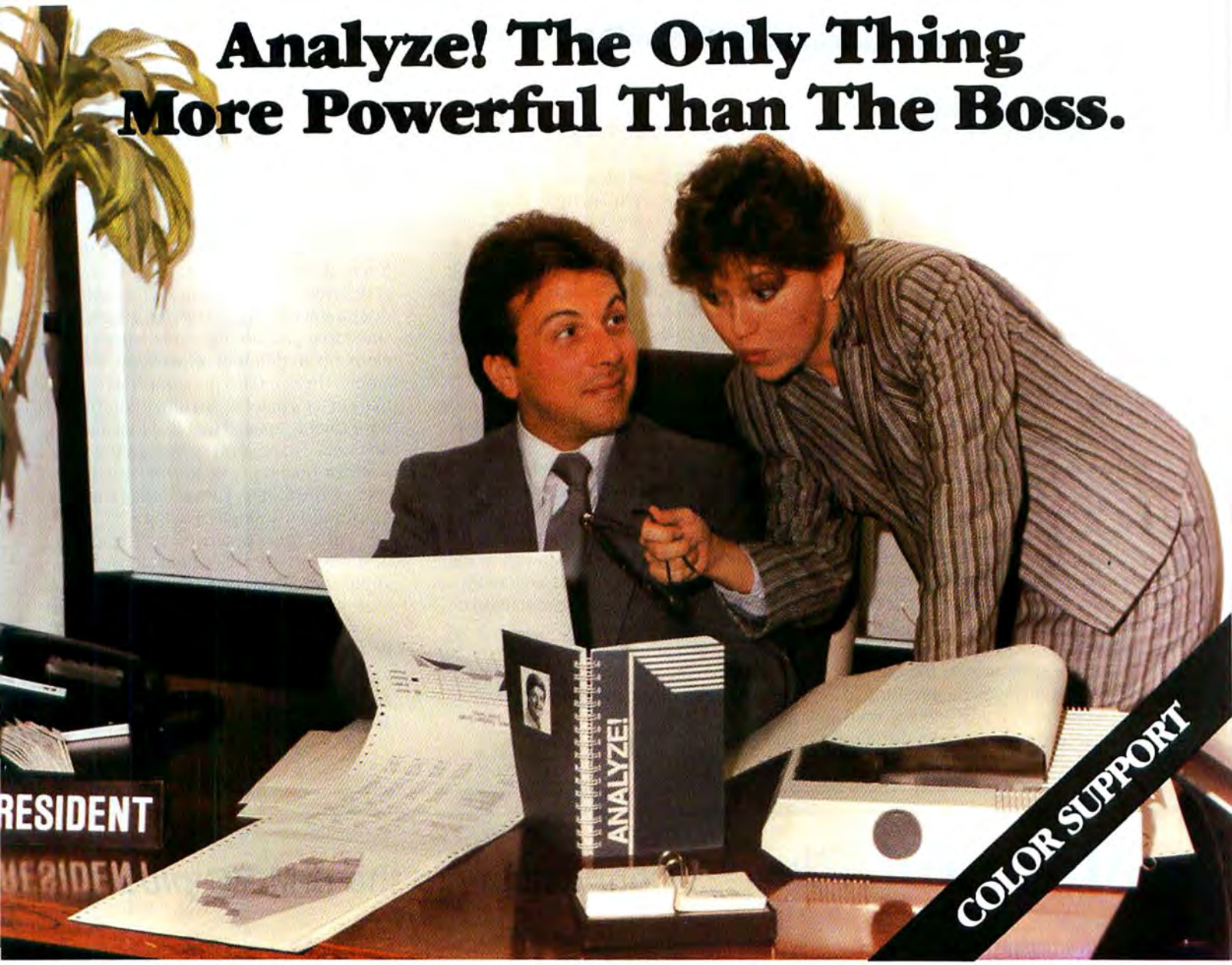
Wear It with Pride

Once your styles are defined, you can apply a complex format to text with just a few keystrokes.

If you don't pick a style before you type it, *Word* applies the Normal style. To

(continues)

Analyze! The Only Thing More Powerful Than The Boss.



Why is **Analyze!**™ more powerful than the boss? Because like your boss it's fast, efficient and most importantly, **Analyze!** is never wrong.

Analyze! is an electronic spreadsheet program for the Macintosh™ that turns you and your computer into financial wizards. **Analyze!** is easy to use, yet sophisticated enough to keep track of anything, from your checkbook to your company's general ledger.

Analyze! commands can be entered from the mouse or keyboard. Dozens of built-in functions make complex calculations effortless.

Your data can be presented using one of **Analyze!'s** 8 breathtaking graph models. As many as 4 graphs in 2, 4 or 16 colors can be displayed to create professional looking sales reports.

Additional features like a macro language to automate your spreadsheets, powerful print, sort functions and compatibility with other popular spreadsheets will make you wonder how you ever lived without **Analyze!.**

Analyze! is easy to learn, supported by an informative reference manual and our expertly trained Technical Support Division.

Ask for a dealer demonstration of this fine product, or call our Technical Support Line at (305) 790-0772

For a dealer near you call:
Brown-Wagh Publishing:
(800) 451-0900
In CA: (408) 395-3838
16795 Lark Ave., Suite 210
Los Gatos, CA 95030

MSS
Micro-Systems Software

12798 West Forest Hill Blvd.
West Palm Beach, FL 33414

Analyze! is a registered trademark of Micro-Systems Software, Inc.
Macintosh is a registered trademark of Apple Computer, Inc.

MICRO-SYSTEMS SOFTWARE, INC. ...8 years of quality software and still growing strong!

Circle 796 on reader service card

choose a style for text before you start typing, select Styles from the Format menu. The Styles command only lets you access styles you've already created–unlike Define Styles, which lets you create and modify them. Choose a style from the list in the dialog box and click OK.

To assign a new style to an existing paragraph of text, click anywhere in the paragraph. (If you want to change more than one paragraph, select them all.) Then choose the Styles command and select the style you want to use. To see the effect of the change, click Apply. When you've got the style you want, click OK.

As a shortcut, you can apply styles directly from the keyboard. To call up a style, press ⌘-Shift-S. The page-number box located in the lower-left of the window then shows the word *Style*. Type the name of the style you want and press Return. (If you have trouble remembering the style names, print a copy of the style sheet by choosing Define Styles and then Print from the File menu.)

When you apply a style, the entire *paragraph* that includes the blinking insertion point–not just any selected text–is formatted accordingly. If you're using the Full Menus option, the current style name appears in the style-name box. If the paragraph contains any extra formatting (some italic text, for example), the style name will be followed by a plus sign.

Next...

Some types of documents–screenplays, forms, outlines–follow a predictable series of styles. In a screenplay, for instance, the line containing the character's name will always be followed by a paragraph of dialog. You can quickly chain from style to style while you're typing by using the Next Style option in the Define Styles dialog box.

Normally, the Next Style box contains the name of the current style–when you press Return, the next paragraph continues in the same style. If you create a style that you know will always be followed by a different one, type that style's name in the Next Style box. When you press Return after typing the first style (say, Character Name), *Word* automatically moves into the next designated style (say, Dialog). You can continue the linking indefinitely.

Bear in mind that Next Style works only when you are typing. When you apply a style to a paragraph that's already written, the following paragraphs don't change.

Building Savoir Faire

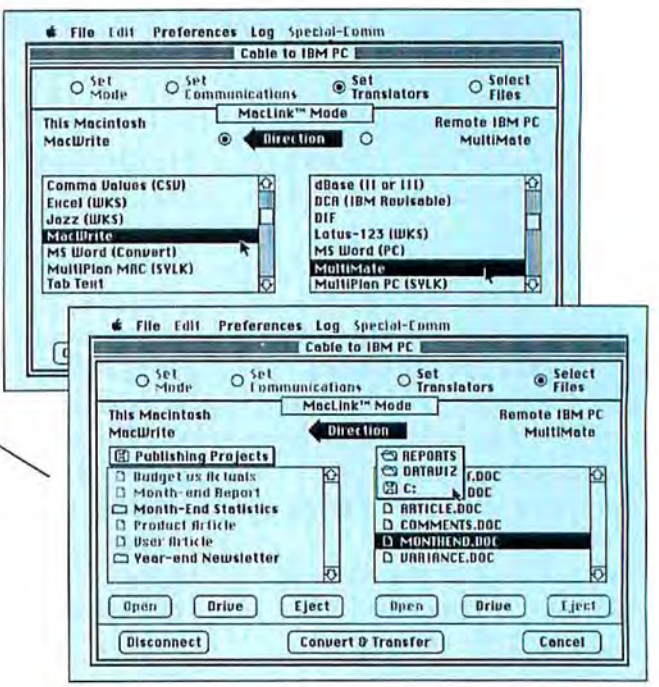
With a little planning, you can use different style sheets for the same document at different stages, making reformatting a document as easy as copying a new style sheet to it. Just use the same names for like elements in different style sheets. For example, the standard paragraph style (Normal) in a format for document drafts could have double-spaced text in a font and size that's easy to read on screen. In the template for final reports, Normal might change the font to Times, indent the paragraph, and use single spacing.

After some practice, you'll find the best ways to use style sheets for your own applications–and learn when it's best to ignore style sheets and just create your formats on the fly. In the end, though, you'll find this new accessory a valuable addition to *Word*'s document processing. □

See *Where to Buy* for product details.

MacLink*Plus*™ ... Connectivity to the IBM PC *plus* ...

- Its a complete "kit" for exchanging files between the Macintosh and the IBM PC (and compatibles)
- Connects to the PC's serial port using modems or the included cable . . . or over AppleTalk when used with a Server or Network Product
- Contains an extensive library of translators to convert word processing formats, spreadsheets and data base information
- Full visibility into remote disks and directories
- TTY terminal emulator for general communications
- $195 includes Macintosh software, PC software, built-in translators, manual and cable
- Wang and NBI options available



DataViz Inc.
16 Winfield St. • Norwalk, CT 06855 • 203-866-4944

Circle 281 on reader service card

For Mac Savings:

1-800-MAC-DISK

UPGRADE SPECIALS

128K-512K	109.00
128K-1024K	229.00
512K-1024K	129.00
512K-2048K	399.00
128K-2MEG	499.00
SCSI Port	69.00
68020	395.00
68020/68881	595.00
1 Meg SIMMs	199.00

- 30-Day Money-Back Guarantee on All Upgrades.
- Over 4500 Upgrades Completed
- 6 Month - 3 Year Warranty

Dove Upgrades:

MacPlus 2MB	249.00
512K-1024K	139.00
512K-2048K	379.00

Hardware

Hard Disk Drives:

Magic20	545.00
Magic91 (Mac II)	1599.00
MacBottom 45MB	1239.00
ProApp20S	649.00
ProApp40S	1099.00
Magic 20MB Tape	599.00
Magic 60MB Tape	699.00
Numeric Turbo	109.00
Turbo Mouse	85.00
MacFan	88.00
MacVision	184.00
Thunderscan 4.0	195.00
A+ Optical Mouse	99.00
Microtek Scanner	1395.00
Radius FPD Screen	1595.00
PC-Mac Keyboard	119.00

Ribbons

Black Ribbons	2.95
Colored Ribbons	4.50
Multicolored Ribbons	9.00

Accessories

The Macintosh Bible	21.00
MacPlus Bag	55.00
Mac SE Bag	69.00
Image II Bag	55.00
Phone Net/Easy Net	39/29
Disk File/30	6.95

Software

Cricket Draw	172.00
Dark Castle	33.00
Financial Plus	218.00
Fontographer 2.2	252.00
GraphicWorks 1.1	61.00
Intermail	236.00
LabView	1849.00
LaserPaint	312.00
Lightspeed C	125.00
Lightspeed Pascal	90.00
Mac3D 2.0	99.00
MacGolf	35.00
MacLink Plus	124.00
MacMoney	39.00
MacZap	32.00
Microsoft Excel	229.00
Microsoft Word	239.00
Microsoft Works	180.00
MiniCAD 3.0	347.00
NFL Challenge	89.00
Omnis3+	279.00
Parameter Mgr.+	289.00
Power Point	215.00
Reflex	55.00
Scoop	310.00
Shadowgate	36.00
Smart Alarms	33.00
Stella	236.00
SuperLaserSpool	98.00
SuperPaint	89.00
Trapeze	175.00
Turbo Pascal	56.00
Word Tools	45.00
Works+Spell	33.00
Versa Term Pro	199.00
VIP	75.00

Disks

Sony SS Boxed	11.60
Sony DS Boxed	16.80
Sony SS Bulk	1.04
Sony DS Bulk	1.34
MacDisk SS Bulk	.99
MacDisk DS Bulk	1.25

Magic30 Hard Drive
$699

October Bargains!

800K Drive
$199

1200 Baud MagicModem
$99

Software Rentals

Try a software product before you buy it. Rentals are only 1/5 of the purchase price.

Ordering Information

National: Call 1-800-MAC-DISK
Texas: Call 1-800-2MAC-TEX
Our hours are 7:30am-7:30pm CDT. There is a $40 minimum on all orders. We accept Visa, MasterCard, C.O.D., Company and Institution PO's, and checks. You are not charged until we ship your order. Texas residents please add 7 1/4% sales tax. Prices are subject to change and items are subject to availability. Returns may be subject to a restocking fee.

Shipping Information

Minimum $3 additional. UPS Next Day Air & 2nd Day Air available.

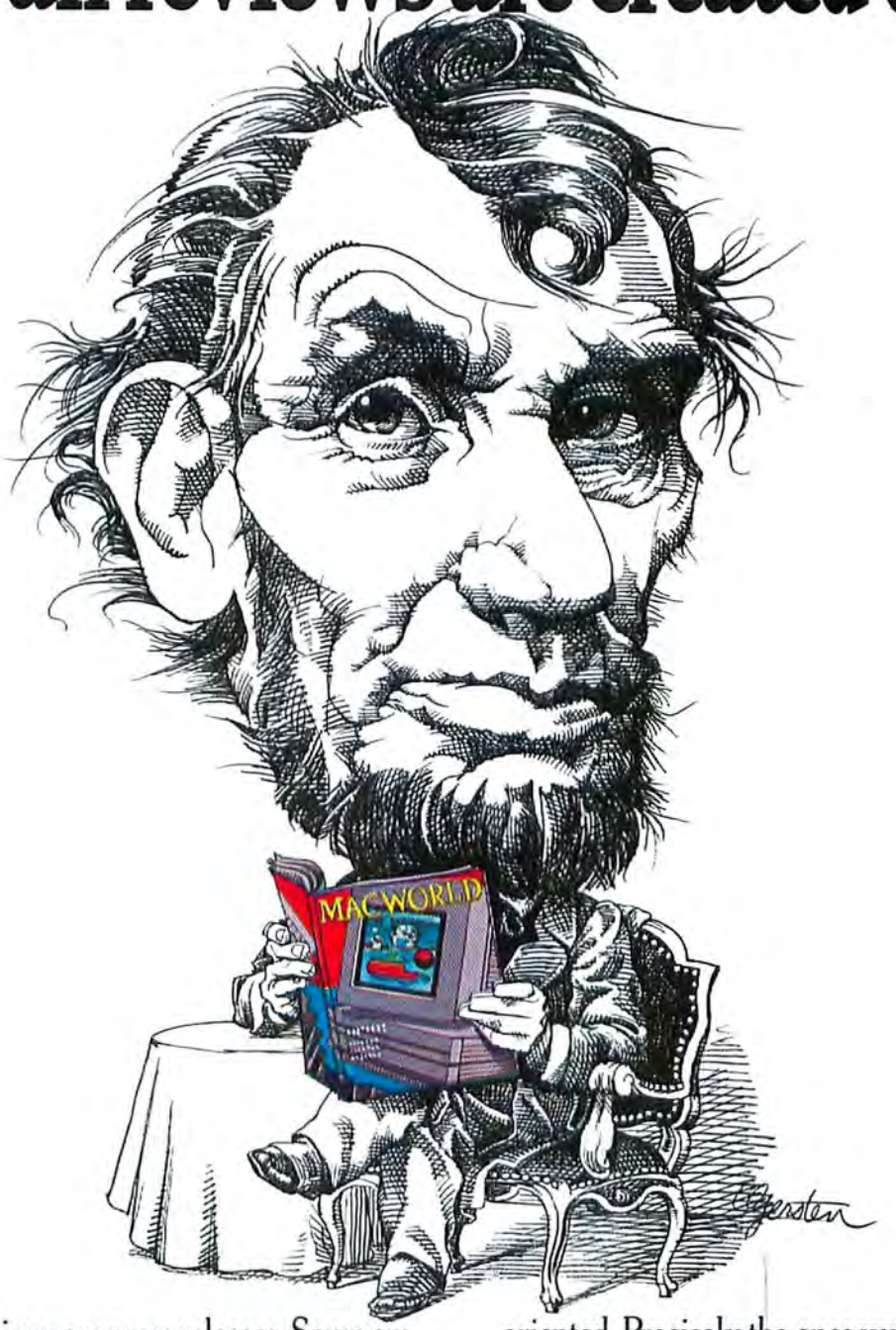
MacProducts USA™ was formed by the consolidation of MagicProducts Vision Technologies, and MacLine. We are a full-service remarketer and producer of goods for the Macintosh.

MacProducts USA MacProducts USA™ MacProducts USA

9709 Brown Lane Suite E Austin Texas 78754 512-832-0335

Circle 459 on reader service card

Not all reviews are created equal.



Some reviews are press releases. Some are synopses. Some are just paragraphs or rating symbols that can't possibly tell you enough. MACWORLD gives you in-depth reviews. Comparative. Analytic. Selective. Solutions-oriented. Precisely the ones you want.

Month after month, our experts work programs thoroughly to give you the information you need to make intelligent, productive choices. MACWORLD, The Macintosh™ Magazine.

MACWORLD GIVES YOU MORE.

MACWORLD

SUBSCRIBE NOW!
SAVE $23.40 OFF THE ANNUAL COVER PRICE

Limited-time offer! Take advantage of Special Savings
Call TOLL FREE 800/524-3200
Visa and MasterCard Accepted

More for less. Honest.

☑ YES, send me one year (12 monthly issues) of MACWORLD for only $24. That's nearly 50% off the annual cover price of $47.40 and $6.00 off the regular subscription rate of $30.00.

SAVE EVEN MORE. ☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires March 31, 1988.

MACWORLD

4BM

More for less. Honest.

☑ YES, send me one year (12 monthly issues) of MACWORLD for only $24. That's nearly 50% off the annual cover price of $47.40 and $6.00 off the regular subscription rate of $30.00.

SAVE EVEN MORE. ☐ $37.90 for 2 years (24 monthly issues)
☐ Payment enclosed ☐ Bill me later

NAME _____

COMPANY _____

TITLE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only. Offer expires March 31, 1988.

MACWORLD

4BM

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

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

Updates

This list brings you 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.

Bullets & Boxes version 1.4 is compatible with System 4.1. New characters include a selection of arrows, diamonds, and astronomical symbols. New version comes with Key Guide reference card. Caseys' Page Mill, 6528 S. Oneida Ct., Englewood, CO 80111, 303/220-1463. $3 shipping and handling; $39 new.

HFS Locator Plus version 2.0 includes a built-in file backup utility. It can search for folders and then manipulate them, too. PBI Software, Inc., 1163 Triton Dr., Foster City, CA 94404, 415/349-8765. $15; $39.95 new.

Mac Man version 2.0 features better joystick control, more frequent intermissions, and unlimited play with or without the Arcade Adapter. Nuvo Labs, 225 Tank Farm Rd., San Luis Obispo, CA 93401, 805/544-5766. $5; $34 new.

MacPlot version 3.0 is a true driver that allows you to plot directly from the application. It plots multiple line widths and assigns text by color. Also includes its own built-in Geneva-style font. CompServCo, 800 Freedom, Slidell, LA 70458, 504/649-0484. $50; Standard $199 new, Professional $399 new.

Mach2 version 2.12 includes an integrated editor, MC 68881 Assembler, extended SANE calls, large-screen compatibility, automatic-launching, autoloading, and kernal customization. Palo Alto Shipping, P.O. Box 7430, Menlo Park, CA 94026, 415/854-7994. Free for version 2.1 owners, $50 for registered owners of 2.0; $99.95 new.

MegaScreen System Software version 8 controls all versions of the MegaScreen large-screen monitors for the Mac and allows simultaneous dual-screen capability. Includes *MegaTalk*. Micrographic Images Corp., 20954 Osborne St., Canoga Park, CA 91304, 818/407-0571. Free.

Quick & Dirty Utilities Volume Two version 1.1 fixes bugs and enhances the Quick & Dirty Editor. Key Map, Lock Finder, Windows DA, and LoadKbd key have been removed. A QuickGrab key replaces the QuickGrab DA. Dreams of the Phoenix, P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. $5; $39.95 new.

SoundWave (formerly *SoundCap*) is now capable of extensive wave editing. It has an Undo command, 3-D display, print capability, a resizable window, digital filtering, and multiple windows. You may customize your own menu. Source code available. Impulse Inc., 6870 Shingle Creek Pkwy. #112, Minneapolis, MN 55430, 800/328-0184. $25; $199.95 new.

Stepping Out version 1.1 is fully compatible with System 4.1. It eliminates cursor flicker, printing slowdown, and sluggishness in reductions and enlargements. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5536. Free; $95 new.

TextTerm+Graphics (formerly *Tekalike*) features fast text display with reverse scrolling and a built-in text editor. Allows text, Xmodem, and Kermit file shipping, and has the ability to copy and save text or tables. Supports large screens, adjustable-line VT100 terminal. Also enables you to read and compose electronic mail without switching between a word processor and a terminal program. Mesa Graphics Inc., P.O. Box 600, Los Alamos, NM 87544, 505/672-1998. $25; $195 new.

Trapeze version 2.0 includes a comprehensive Undo function, rulers, splitters, headers and footers, and a greater importing and exporting ability. Also includes a larger selection of line sizes, color and pattern choices. The program's charting ability has been expanded. Data Tailor, Inc., 1300 S. University Dr. #409, Fort Worth, TX 76107, 817/332-8944. Free; $295 new. □

Send upgrade announcements to Updates, Macworld, *501 Second St., San Francisco, CA 94107.* □

MACWORLD CAN'T BE BOUGHT.

EXCEPT BY YOU.

MACWORLD prints the truth. We bring you the facts, the details, the solutions that make your work successful. You are on the inside track — we tell you which products are hot, which are not. The gems are spotlighted, the dogs disclosed.

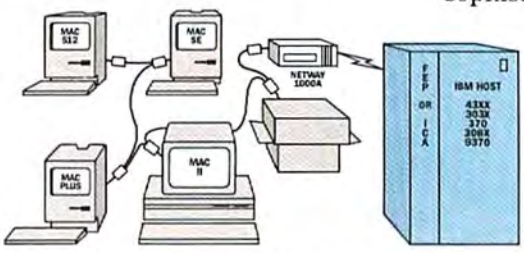
Smart choices become easy. We test and analyze new products and techniques so that you make the most out of your equipment. We give you news, reviews, best-sellers, commentary, where to buy. You get it all.

MACWORLD, The Macintosh™ Magazine

How your Mac family and your 3270 family can be one big happy family.

Your Macintoshes and your mainframe. They have some truly amazing capabilities. Except for one: the ability to easily talk to one another.

But there is a universal solution that unites all your Macs —the 512 KE, the Plus, the SE,



Corporate workgroup using AppleTalk.

and even the Mac II—with your 3270 world. It's Tri-Data's NETWAY 1000A.

This 3270 gateway for your Macs delivers perfect 3274 controller emulation. So it doesn't compromise your SNA or Bisync mainframe environment one bit.

Since we connect to AppleTalk, you are part of a local area network filled with high-end workgroup solutions. Giving you the best of both worlds: 3270 workstation capabilities and a sophisticated LAN.

But that's not all. With our file transfer capability, your Mac and mainframe can exchange text, Mac application files, binary files, and even IBM PC files.

And with our Switcher compatibility, you can integrate an IBM host session with several Mac applications. Without disconnecting from the host.

Given all these capabilities, you may think NETWAY 1000A is an expensive solution. Well, you're in for a pleasant surprise. For a workgroup of 16 Macs, NETWAY 1000A costs less than $200 per active 3278 terminal session.

And if all this sounds too good to be true, here's another pleasant surprise. Tri-Data's NETWAY 1000A has been delivering the best Mac-to-mainframe solutions for more than two years. For many of the biggest names in the Fortune 1000.

The Tri-Data NETWAY 1000A. Exactly what your Mac family, 3270 family, and, ultimately, your corporate family needs.

Contact us about our demo program and connect your Macintosh to your IBM host today. Tri-Data, 505 E. Middlefield Road, Mountain View, CA 94043, Telex: 172282, AppleLink: D0120, (415) 969-3700.

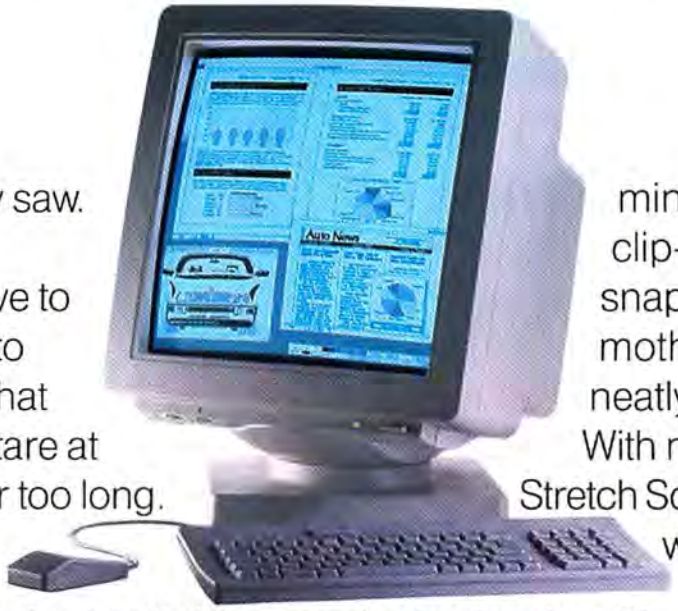
TRI-DATA

Satisfying our customers for 20 years.

Netway is a registered trademark of Tri-Data. Macintosh is a trademark licensed to and AppleTalk is a trademark of Apple Computer. IBM is a trademark of International Business Machines Corporation.

Circle 51 on reader service card

Or, you can just get our big screen.



Imagine a Macintosh screen the size of your home TV. Only clearer and sharper.

They came. They saw. They got eyestrain.

But you don't have to be from outer space to know that's exactly what happens when you stare at a computer screen for too long.

Unless, of course, that screen happens to be unusually large, and easy to read.

Like the new Stretch Screen,™ from NSI.

Stretch Screen is a 20" high-resolution monitor that works with any Macintosh,™ from the 128K all the way up to the new SE.

It's got over a million screen pixels (1024 x 1024, to be exact) so you get a full 80 dots per inch of crystal clear viewing. Which means that laying out multiple pages or tracking monster spreadsheets is a beauty to behold. And tilt and swivel positioning makes it easy not only on the eyeballs, but on the neck and back, too.

That's not all. Unlike other large monitors, the Stretch Screen installs in just fifteen minutes, thanks to a unique clip-on card that simply snaps onto your Macintosh's motherboard. (The cable fits neatly into the security slot.) With no soldering required, the Stretch Screen won't void the Apple warranty, and it comes with a full, one-year warranty of its own.

Open the Mac, snap in the Stretch Screen board, close the Mac.

Eye the power of a Mac II.

There's nothing alien about wanting big performance to go with your big screen. That's why we built the Jump! Board 020.™ This clip-on upgrade installs in the same easy way as the Stretch Screen and gives you up to four megs of RAM, two different clock speeds (12 or 16Mhz), and a performance increase of 400% over the Mac 128K.

The Jump! Board 020: the Macintosh II for the rest of us.

Want to get a good look at these products? Call us at **(415) 467-8411**, Fax **(415) 467-2516** and we'll give you the name of the NSI dealer nearest you.

He'll show you an eyeful.

Network Specialties, Inc.

Trademarks: Macintosh, Apple Computer, Inc.; Software, Migent; Stretch Screen, Jump! Board, Network Specialties. Graphics, Randy Hidalgo

Circle 727 on reader service card

The Best COMPUTER SUPPLIES

P.O. Box 610370
San Jose, CA 95161-0370
(408) 435-3866

Just Got Better!

Free Offer!

Simply Place an Order From this Ad and We'll Include our 52 Page Full Color Catalog FREE!
Featuring over 700 Computer Supplies and Accessories (offer good while supply lasts)

Free Offer!

The Best in Mac Supplies

SONY OR **maxell**

	20+	100+
3½" SS/DD	1.09	1.02
3½" DS/DD	1.59	1.49

Call for Larger Quantity Discounts

wabash DATATECH DISKETTES

	20+	100+
3½" SS/DD	.99	.95
3½" DS/DD	1.19	1.15

Boxed in Tens – Minimum Order: 20

AMARAY
Media Mate 3
Holds 30 3½"
$7.95
with lock
$9.95

Teakwood Diskette Files
Holds 45 3½"
$16.95
Holds 90 3½"
$26.95
Holds 135 3½"
$36.95

Mac-Pacs
Boxed in 50's – Labels Included

	SONY OR maxell.		
	50+	100+	400+
3½" SS/DD	.99	.95	.89
3½" DS/DD	1.29	1.25	1.19

Best

	50+	100+	400+
3½" SS/DD	.99	.95	.89
3½" DS/DD	1.09	1.05	.99

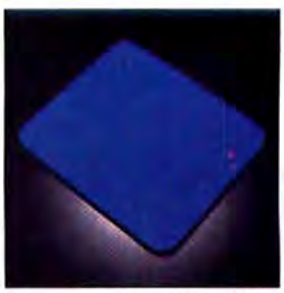
MicroComputer Accessories, Inc.
Deluxe Rolltop File
Holds 55 3½"
$15.95
with lock
$17.95

Order Now
7 am to 6 pm Pacific Time
10 am to 3 pm Saturdays

1 (800) 351-BEST 1 (800) 351-2378
1 (800) 451-BEST In California

FAX (408) 435-3002
Get your FREE 52 Page Color Catalog with Order

Minimum Order: Orders under our $25.00 minimum will be charged a $2.00 handling fee.
Payment Terms: Our terms are Visa, MasterCard, C.O.D. or Prepaid. Corporations rated 3A2 or better, government agencies and schools may send in purchase order on a Net 30 Day basis. C.O.D. orders add $4.00. No sales tax outside CA.
Shipping Charges: Shipping charges are $3.00 per 100 diskettes. Accessories and other items are charged a flat $3.00 charge per order (within the Continental U.S.). APO, FPO, AK, HI, PR and Canada orders add an addition 10% to cover PAL and insurance. All other international orders must be accompanied by a Visa or MasterCard so that we charge the correct postal charges.
Warranty: In no event shall Best Computer Supplies be liable or responsible for incidental or consequential damages of any kind. Satisfaction is guaranteed on all products.



Mouse-Pad In Black-Blue-Grey-Brown-Red
$5.95

Tef-Glides
Teflon Mouse Feet Make Your Mouse Glide.
$2.95

Mouse House
Add a bit of Personality to your Mac.
$5.95

disk·book from MicroStore.

Disk Book 10.... **$9.95**
Holds 10 3½"

Disk Book 32 ... **$19.95**
Holds 32 3½"

Disk Book Plus ... **$19.95**
Holds 16 3½", Plus Manuals, Pens, etc.

Available in Blue Red Burgundy Grey

EHMAN ENGINEERING, INC.
800K Disk Drive
- Totally Silent
- LED (so you know the silent drive is running)
- Compact, style matches Mac
- 12 month warranty

$199.00

Beck-Tech
Fanny Mac
Cooling Fan prolongs Mac life. Cools by 50° or more.
$74.00

New Item!

MORE OF THE BEST MACCESSORIES + over 700 more can be found in our new 52 page full color catalog for just $2.00

Turbo 2400 Mac-Modem
- 2400/1200/300 bps
- Fully Hayes Compatible
- Speed Upgradeable to 4800, 9600 and 19,200 bps
- 5 Yr. Warranty
- Help Screen

$249.00 Includes cable and software

Mac Carrying Case	$55.00	DataShield 200 Watt Back-up Power Source	$299.00	Mac Plus to Imagewriter II 8' Computer Cable ...	$12.50
Mac Plus Carrying Case ...	59.00	Copy II Mac Software...	24.00	Mac Plus to Hayes Modem 8' Computer Cable ...	12.50
Imagewriter II Carry. Case..	49.00	Curtis Univ. Printer Stand...	14.95	Inland 6 Outlet Surge Protection.....	19.95
Mac & Keyboard Cover ...	12.50	Glare/Guard for Mac....	24.95		
Mac Plus & Key. Cover....	12.50	3½" Head Cleaning Kit...	9.95		
Imagewriter I & II Cover	7.50				

Imagewriter Ribbons
Black (2-5) 3.45 (6+) 2.95
Color 6 Packs 20.70
Imagewriter II 4 Color... 13.95
MacInker Ribbon Reinker... 44.00
MacInker Black Ink (2 oz.)... 3.00

Circle 373 on reader service card

Where to Buy

This section contains information about products mentioned in this issue. Programs are not copy protected unless otherwise indicated. All prices are list prices. An asterisk indicates that a product review appears in this issue.

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 Educomp, 742 Genevieve, Ste. D, Solana Beach, CA 92075, 619/259-0255, 800/843-9497, 800/654-5181 in California, or The Public Domain Exchange, 2074C Walsh Ave., Dept. 609, Santa Clara, CA 95050, 408/496-0624, 800/331-8125.

Pages 108 to 113
MultiFinder: The Application Juggler

MultiFinder
Version 6.0. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 1MB minimum memory. Free.

Pages 114 to 121
The Final Spelling Test

Aegis Speed Speller
Version 1.0. Aegis Development, Inc., 2210 Wilshire Blvd. #277, Santa Monica, CA 90403, 213/392-9972, 800/345-9871. 512K minimum memory. $49.95.

FullWrite Professional
Version 1.0. Ann Arbor Softworks, Inc., 2393 Teller Rd. #106, Newbury Park, CA 91320, 805/375-1467. 1MB minimum memory; external drive recommended. $295.

Microsoft Word
Version 3.01. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; requires 800K drive storage; Mac Plus with external drive recommended. $395.

Quark XPress
Version 1.04. Quark Inc., 2525 W. Evans #220, Denver, CO 80219, 303/934-2211. Permits three copies. 512KE minimum memory; requires external drive or hard disk; Mac Plus recommended. $695.

ReadySetGo
Version 4.0. Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653, 201/845-6100, 800/526-9073. 512K minimum memory; requires external drive for 512K; Mac Plus recommended. $495.

Spelling Champion
Version 2.2. Champion Swiftware, 6617 Gettysburg Dr., Madison, WI 53705, 608/833-1777. 128K minimum memory; external drive recommended. $39.95.

Spelling Coach
Version 3.0. Deneba Systems, Inc., 7855 N.W. 12th St. #202, Miami, FL 33126, 305/594-6965, 800/622-6827. 512K minimum memory; requires external drive for 512K. $99.95.

Spelling Coach Professional
Version 3.0. Deneba Systems, Inc., 7855 N.W. 12th St. #202, Miami, FL 33126, 305/594-6965, 800/622-6827. 512K minimum memory; requires hard disk. $199.95.

Spellswell
Version 2.0. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986 in California. 512K minimum memory. $74.95; Medical Dictionary $99.95; Legal Dictionary $99.95.

Thunder
Version 1.1. Electronic Arts/Batteries Included, 1820 Gateway Dr., San Mateo, CA 94404, 415/578-0316. 512K minimum memory; 800K drive storage recommended. $49.95.

WorksPlus Spell
Version 1.0A1. Lundeen & Associates, P.O. Box 30083, Oakland, CA 94604, 800/233-6851, 800/922-7587 in California. 512K minimum memory; requires *Microsoft Works*; Mac Plus recommended. $59.95.

WriteNow for Macintosh
Version 1.0. T/Maker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0195. 128K minimum memory. $175.

Pages 122 to 129
The Two Faces of HyperCard

HyperCard
Version 1.0. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Minimum memory to be announced. $49 (free with all Macintoshes purchased after August 11, 1987).

Pages 130 to 135
Building Bridges and Gateways

AlisaTalk
Version 2.0. Alisa Systems, 221 E. Walnut St. #230, Pasadena, CA 91101, 818/792-9474. Compatible with DEC VAX/VMS systems; requires AppleTalk network, Ethernet, and *FastPath*. $3750 to $11,500.

FastPath
Kinetics, Inc., 2500 Camino Diablo #110, Walnut Creek, CA 94596, 415/947-0998. 512KE minimum memory; requires Ethernet. $2500.

Helix VMX
Odesta Corp., 4084 Commercial Ave., Northbrook, IL 60062, 312/498-5615. $4500 and up, depending on VAX CPUs.

HyperCard
Version 1.0. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. Minimum memory to be announced. $49 (free with all Macintoshes purchased after August 11, 1987).

MacMainFrame DX
Version 3.0. Avatar Technologies, Inc., 99 South St., Hopkington, MA 01748, 617/435-6872. 512K minimum memory; requires *MacTerminal* or *Jazz*, and a modem for remote connection. $1195.

(continues)

Ultrasync.
You're looking at the new star
in display technology.
Actual unretouched screen image.

A screen star is born.

Introducing Ultrasync. The high-resolution, autosynchronous color monitor that's PC and PS/2 series compatible.

Ultrasync, with its exceptionally fine (.28mm) dot pitch, creates a picture of incomparable clarity. Capable of displaying infinite shades of brilliant color with striking contrast and dimension.

But the real beauty of Ultrasync is its versatility. It has the greatest autosynchronizing frequency range combination available with 45Hz to 120Hz vertical scan range (NEC's Multisync starts at 50Hz and peaks out at 75Hz) and 15KHz to 35KHz horizontal scan.

Plug Ultrasync into any IBM PC/PS series, Apple Mac II, or practically any computer system and it will adjust automatically to the standard you are using. There's no fiddling with switches or knobs. Our automatic picture sizing feature prevents display distortion and shrinkage. A simple built-in text switch is provided for your convenience. What's more, you'll enjoy the ease and comfort of Ultrasync's ergonomically advanced design.

Nobody but Princeton Graphic Systems could bring you an image with such star quality at a suggested retail price that's remarkably affordable. $795. After all, we've been doing it all along.

PRINCETON®
GRAPHIC SYSTEMS
THE VISIBLE EDGE

601 Ewing Street, Building A, Princeton, New Jersey 08540 (609) 683-1660

Circle 656 on reader service card

MacTerminal
Version 2.2. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; requires Apple or Hayes-compatible modem. $125.

pcLink
Version 3.9. Pacer Software, Inc., 7911 Herschel Ave. #402, La Jolla, CA 92037, 619/454-0565. 512K minimum memory; requires 800K drive storage. $2000 to $37,500, depending on number of users.

PhoneNet Plus
Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331. 128K minimum memory; requires AppleTalk. $49 per connector.

VersaTerm-Pro
Version 2.0. Peripherals, Computers & Supplies, Inc., 2457 Perkiomen Ave., Reading, PA 19606, 215/779-0522. 512K minimum memory. $295.

Pages 136 to 141
The Accounting Software Match Game

Great Plains Accounting Series
Version 3.0 for Job Cost, version 4.1 for other modules. Great Plains Software, Inc., 1701 S.W. 38th St., Fargo, ND 58103, 701/281-0550, 800/345-3276. 512K minimum memory; requires 800K drive storage and 20MB hard disk. General Ledger, Accounts Payable, Accounts Receivable, Inventory, Payroll, and Order Entry with Point-of-Sale, $695 each; Network Manager and Purchase Order $395 each.

Insight
Version 2.0. Layered, Inc., 85 Merrimac St., Boston, MA 02214, 617/423-9041. 512K minimum memory; requires external drive; hard disk recommended. $595 per module.

MacFlexware
Version 5.3. Microfinancial Corp., 15404 E. Valley Blvd., City of Industry, CA 91746, 818/961-0237. 512K minimum memory; requires hard disk; hard disk with 20MB or more recommended. $795 per module.

MacGuide
Menu–International Software Database, 1520 S. College Ave., Fort Collins, CO 80524, 303/482-5000, 800/622-6368. $4.95 per copy.

The Macintosh Buyer's Guide
Redgate Communications Corp., 3381 Ocean Dr., Vero Beach, FL 32963, 305/231-6904. Single copy $5; annual subscription $14.

Omnis 3 Plus Business Directory
Blyth Software, Inc., 2929 Campus Dr. #425, San Mateo, CA 94403, 415/571-0222. Single copy $8; annual subscription $24.

Rags to Riches
Version 3.1 for General Ledger, Accounts Payable, and Accounts Receivable; version 2.6 for Inventory; version 2.8 for Professional Billing. Chang Laboratories, Inc., 5300 Stevens Creek Blvd., San Jose, CA 95129, 408/246-8020, 800/972-8800, 800/831-8080 in California. 512K minimum memory; SE with hard disk recommended. G/L, A/P, and A/R $199.95 each. Professional Billing and Inventory $399.95 each.

WOS Fund Accounting System
Version 2.0. WOS Data Systems, Inc., 1321 Wakarusa Dr. #2010, Lawrence, KS 66044, 800/843-8101. 512K minimum memory; requires hard disk. Complete system with Budgetary General Ledger, Purchase Order Voucher, Payroll, and Accounts Receivable modules, $5995; various combinations available from $2695 to $4995 (all require GL module).

Pages 142 to 149
Choosing a Programming Language

Advanced AI Systems Prolog
Version 1.13. Advanced AI Systems, Inc., P.O. Box 39-0360, Mountain View, CA 94039-0360, 415/961-1121. 512K minimum memory. $150.

APL Plus System for the Macintosh
Version 1.0. STSC, Inc., 2115 E. Jefferson St., Rockville, MD 20852, 301/984-5123, 800/592-0050. 512K minimum memory. $395.

Aztec C 68K
Version 3.4. Manx Software Systems, P.O. Box 55, Shrewsbury, NJ 07701, 201/542-2121, 800/221-0440. 512K minimum memory; 800K drive storage recommended. C'Prime $75, Professional Level $199, Developer Level $299, Commercial Level $499.

BASIC with Power System
Version 4.22R1.1. Pecan Software Systems, Inc., 1410 39th St., Brooklyn, NY 11218, 718/851-3100, 800/637-3226. 128K minimum memory; external drive recommended. $99.95.

Chalcedony Prolog
Version 1.1. Chalcedony Software, Inc., 5580 La Jolla Blvd. #126E, La Jolla, CA 92037, 619/483-8513. 512K minimum memory; external drive recommended. $99.95.

Consulair MacC Jr.
Version 1.0. Consulair Corp., 140 Campo Dr., Portola Valley, CA 94025, 415/851-3272. 512K minimum memory; external drive recommended. $79.95.

Consulair MacC/MacC Toolkit
Version 5.0. Consulair Corp., 140 Campo Dr., Portola Valley, CA 94025, 415/851-3272. 512K minimum memory; external drive recommended. $425.

Consulair 68000 Development System (formerly Apple MDS)
Version 2.1. Consulair Corp., 140 Campo Dr., Portola Valley, CA 94025, 415/851-3272. 512K minimum memory; external drive recommended. $79.95.

ExperLisp
Version 1.5. ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871, 800/828-0113, 800/826-6144 in California. 512K minimum memory; Mac Plus recommended. $495.

ExperLogo-Plus
Version 2.0. ExperTelligence, Inc., 559 San Ysidro Rd., Santa Barbara, CA 93108, 805/969-7871, 800/828-0113, 800/826-6144 in California. 512K minimum memory. $150.

FORTRAN77 with Power System
Version 4.22R1.1. Pecan Software Systems, Inc., 1410 39th St., Brooklyn, NY 11218, 718/851-3100, 800/637-3226. 128K minimum memory; external drive recommended. $99.95.

Hyper-C for the Macintosh
Version 4.0. WSM Group, Inc., P.O. Box 32005, Tucson, AZ 85751, 602/298-7910. 512K minimum memory; Mac Plus with hard disk recommended. $50.

Lightspeed C
Version 2.01. Think Technologies, Inc., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465. 512K minimum memory; external drive or hard disk recommended. $175.

Lightspeed Pascal
Version 1.0. Think Technologies, Inc., 135 South Rd., Bedford, MA 01730, 617/275-4800, 800/648-4465. 512K minimum memory; external drive or hard disk recommended. $125.

MacAPL
Version 2.21. Leptonic Systems Co., 405 Tarrytown Rd. #145, White Plains, NY 10607, 914/682-0377. 512K minimum memory; requires 800K drive storage. $125.

MacApp: The Expandable Macintosh Application
Version 1.1.1. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 1MB minimum memory; requires *MPW, MPW Pascal,* and hard disk. $100 for APDA members.

(continues)

"Trapeze allows you to do more things in one application than we have ever seen."

INFOWORLD
JUNE 22, 1987

Desktop Publishing Quality

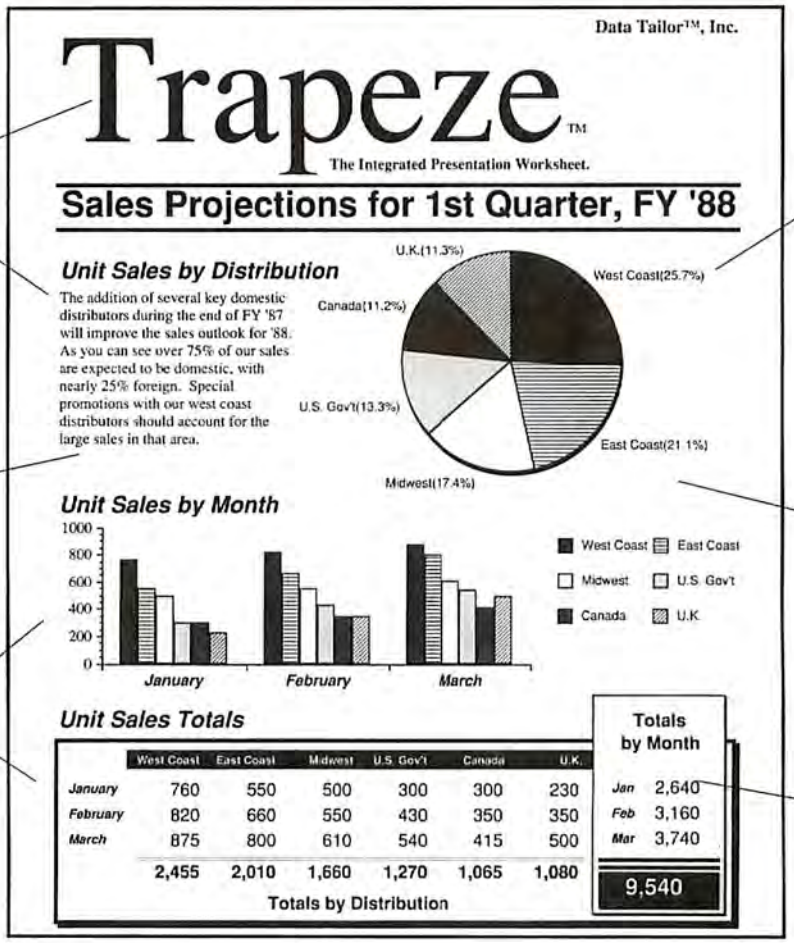
Trapeze lets you use any Macintosh™ font, style, size or color in any block of information, and mix them on a single worksheet. Combining graphics and layout capabilities with powerful data analysis adds a whole new dimension to desktop publishing.

Everything On One Worksheet

Put calculations, text, pictures and charts all on the same worksheet – no need to import from other programs. And have up to 32 worksheets open at the same time.

"Live" Information

No longer are last-minute changes a problem, because your information remains active. Make additions, deletions or "what-if" changes to your data as often as you wish. Trapeze will update every related block of information, including charts. No other program offers this powerful capability.



Flexible, Automatic Charting

Trapeze offers automatic charting functions which surpass even dedicated "chart and graph" programs. Eleven basic chart types are built-in, with thousands of variations possible with a simple click or two of the mouse. And if your information changes, Trapeze updates all related charts automatically.

Power You Control

No matter how complex the data, Trapeze provides the powerful functions you need for analysis. Yet, you retain complete freedom to manipulate the information and its presentation.

Integrated Presentation Worksheet

The result is a clear, eye-catching representation of your information that can make the difference between selling your ideas and sitting on them. Only Trapeze gives you a presentation-quality worksheet in one, integrated program.

One Program. One Worksheet.

Trapeze: the first truly integrated presentation worksheet. It combines spreadsheet, data analysis, text, charting and graphics capabilities in a single program – and lets you perform any or all of them on a single worksheet without the hassle of juggling several programs at once.

Trapeze 2.0 is the most powerful and flexible presentation worksheet on the market. And we believe that, once you try it, you'll agree. If not, return it within 30 days and we'll refund your money.

Visit your local dealer today for a demo or call us at 1-800-443-1022.

Trapeze™

The Integrated Presentation Worksheet.

Minimum system requirements: enhanced Macintosh 512K with 800K external drive. Runs on Macintosh versions 512e, Plus, SE and Mac II *(in color!)*. Supports Laserwriter™ and Imagewriter™ I and II.

© 1987 Data Tailor.™ Inc. Trapeze is a registered trademark of Data Tailor, Inc. Data Tailor and the Trapeze logo are trademarks of Data Tailor, Inc. All rights reserved. Macintosh, Laserwriter, and Imagewriter are trademarks of Apple Computer, Inc.®

Data Tailor, Inc.™ 1300 S. University Drive Suite 409
Fort Worth, Texas 76107

Circle 662 on reader service card

MacFORTH Plus
Version 3.52. Creative Solutions, 4701 Randolph Rd. #12, Rockville, MD 20852, 301/984-0262, 800/367-8465. 512K minimum memory; external drive recommended. $199.

Mach2
Version 2.12. Palo Alto Shipping, P.O. Box 7430, Menlo Park, CA 94026, 415/854-7994, 800/443-6784. 512K minimum memory; 800K drive storage recommended. $99.95.

Macintosh Pascal
Version 1.0. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 512K minimum memory. $125.

Macintosh Programmer's Workshop
Version 2.01B. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 1MB minimum memory; requires hard disk. $275 for APDA members; includes update to version 2.0.

MacMETH
Version 2.0. Modula Corp., 950 N. University Ave., Provo, UT 84604, 801/375-7400. 512K minimum memory; external drive recommended. $100.

MacModula-2
Version 4.1. Modula Corp., 950 N. University Ave., Provo, UT 84604, 801/375-7400, 800/545-4842. 128K minimum memory; 512K with external drive recommended. $150.

MacScheme + Toolsmith
Version 1.0. Semantic Microsystems, Inc., 4470 S.W. Hall St. #340, Beaverton, OR 97005, 503/643-4539. 1MB minimum memory. $395.

MacTran77
Version 2.0. DCM Data Products, 1710 Two Tandy Center, Fort Worth, TX 76102, 817/870-2202. 512K minimum memory; external drive for 512K recommended. $199.

MasterFORTH
Version 1.2. MicroMotion, 8726 S. Sepulveda Blvd. #A171, Los Angeles, CA 90045, 213/821-4340. 128K minimum memory. $125.

McAssembly
Version 6.8. Signature Software, 2151 Brown Ave., Bensalem, PA 19020, 215/639-8764. 128K minimum memory; 512K recommended. $40.

Microsoft BASIC Compiler
Version 1.0. Microsoft Corp., 10611 N.E. 36th Way, Box 97107, Redmond, WA 98073, 206/882-8080, 800/426-9400. 128K minimum memory; external drive recommended. $195.

Microsoft BASIC Interpreter
Version 3.0. Microsoft Corp., 16011 N.E. 36th Way, Box 97107, Redmond, WA 98073, 206/882-8080, 800/426-9400. 128K minimum memory. $99.

Microsoft FORTRAN Compiler
Version 2.2. Microsoft Corp., 16011 N.E. 36th Way, Box 97107, Redmond, WA 98073, 206/882-8080, 800/426-9400. 128K minimum memory; external drive recommended. $295.

MPW C
Version 2.0. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 1MB minimum memory; requires *MPW* and hard disk. $150 for APDA members.

MPW Pascal
Version 2.0. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 1MB minimum memory; requires *MPW* and hard disk. $150 for APDA members.

Neon
Version 2.0. Kriya Systems, Inc., 6 Export Dr., Sterling, VA 22170, 703/430-8800, 800/345-7492. 512K minimum memory; external drive recommended. $195, Neon Assembler $50.

Object Logo
Version 1.5. Coral Software Corp., P.O. Box 307, Cambridge, MA 02142, 617/868-7440, 800/521-1027. 512K minimum memory; requires external drive for 512K. $79.95.

PCMacBASIC
Version 2.01. Pterodactyl Software, 905 W. California St., Mill Valley, CA 94941, 415/388-4827. 512K minimum memory; requires 800K drive storage. $39.95.

SemperSoft Modula-2
Version 1.0. Semper Software, P.O. Box 225, Glen Ellyn, IL 60138, 312/790-1253. 512K minimum memory; requires external drive. $195.

Smalltalk-80
Version 0.4. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 1MB minimum memory; hard disk recommended. $75 for APDA members.

Smalltalk-80
Version 2.2. ParcPlace Systems, 2400 Geng Rd., Palo Alto, CA 94303, 415/859-1000, 800/822-7880. 2MB minimum memory; hard disk recommended. For Mac Plus and Mac SE, CL version $695, DE version $995; for Mac II, CL version $995, DE version $1295.

TDI Modula-2 for the Macintosh
Version 3.00a. TDI Software, Inc., 10355 Brockwood Rd., Dallas, TX 75238, 214/340-4942. 512K minimum memory; external drive recommended. Regular version $99.95, developer version $149.95, commercial version $299.95.

Terrapin Logo for the Macintosh
Version 1.0. Terrapin, Inc., 222 Third St., Cambridge, MA 02142, 617/492-8816. 512K minimum memory; external drive recommended. $79.95.

TML Modula-2
Version 1.0. TML Systems, Inc., 4241 Baymeadows Rd., Jacksonville, FL 32217, 904/636-8592. 512K minimum memory; requires *MPW*; external drive for 512K recommended. $99.95.

TML Pascal
Version 2.5. TML Systems, Inc., 4241 Baymeadows Rd., Jacksonville, FL 32217, 904/636-8592. 512K minimum memory; external drive for 512K recommended. $99.95.

True BASIC
Version 1.2. True BASIC, Inc., 39 S. Main St., Hanover, NH 03755, 603/643-3882, 800/872-2172. 128K minimum memory; 512K recommended. $99.95.

Turbo Pascal
Version 1.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-8400, 800/255-8008, 800/742-1133 in California. 512K minimum memory; external drive recommended. $99.95.

UCSD Modula-2 with Power System
Version 4.22R1.1. Pecan Software Systems, Inc., 1410 39th St., Brooklyn, NY 11218, 718/851-3100, 800/637-3226. 128K minimum memory; external drive recommended. $99.95.

UCSD Pascal
Version 2.0. Pecan Software Systems, Inc., 1410 39th St., Brooklyn, NY 11218, 718/851-3100, 800/637-3226. 128K minimum memory; external drive recommended. $99.95.

UCSD Pascal with Power System
Version 4.22R1.1. Pecan Software Systems, Inc., 1410 39th St., Brooklyn, NY 11218, 718/851-3100, 800/637-3226. 128K minimum memory; external drive recommended. $99.95.

VIP (Visual Interactive Programming)
Version 2.2. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301, 818/991-6540. 512K minimum memory. $124.95.

ZBasic Interactive BASIC Compiler
Version 4.0. Zedcor, Inc., 4500 E. Speedway #22, Tucson, AZ 85712, 602/795-3996, 800/482-4567. 512K minimum memory. $89.95.

(continues)

National Semiconductor

We were ready for the Mac II almost before they were.

INTRODUCING THE NS8/16 MEMORY EXPANSION BOARD FOR THE MACINTOSH II

National has been providing high-level add-in products for over a decade. We've helped well over a hundred thousand multi-tasking, multi-user business environments run faster and better. So even before Apple was ready with the new Mac™ II, we were ready with the expertise and technology to help it work harder.

In fact, we viewed the Macintosh™ II as an 'open' invitation to provide power users with the right tools. And now we're proud to introduce the NS8/16 Memory Expansion Board.

GET 4, 8, 12, OR 16 MBYTES OF RAM FEATURING:

- Apple/UNIX® (A/UX) compatibility.
- RAMdisk software.
- Advanced NuBus™ support.

Speed through memory hungry applications like: CAD/CAM. Desktop Publishing. High Resolution Graphics. Big Databases and Spreadsheets. Financial/Accounting packages. And AI Programming. Just to name a few.

AND RUN A/UX MORE EFFICIENTLY

High-end applications will run at top performance levels under A/UX. Without modifications. And the NS8/16 remains completely transparent to the user.

In the Macintosh II operating system, the RAMdisk utility allows an application to treat the NS8/16 as one, or a series, of pseudo disk drives, accessing files at NuBus memory speeds.

So memory intensive applications will go much faster. As will switching between applications.

ALL WITH QUALITY AND SUPPORT YOU CAN RELY ON

Get a full 5-year warranty on the NS8/16. Backed by the leader in memory products. And customer service.

National is the company you should think of for add-in products. Now, with our NS8/16 Memory Expansion Board. And in the future — you can expect to see a whole line of add-in products for the Mac II.

It's experience that lets us make a promise like that. So now that you have the Mac II ready to run, you know who can help you see how far it can go.

FOR MORE INFORMATION CALL THE COMPATIBLE PRODUCTS GROUP AT 800-345-4006 OUTSIDE OF CALIFORNIA CALL 800-538-8510

National Semiconductor

Macintosh and Mac are trademarks of Apple Computer, Inc.
UNIX is a registered trademark of AT&T Bell Labs.
NuBus is a trademark of Texas Instruments Incorporated.
© 1987 National Semiconductor Corp.

Circle 196 on reader service card

Where to Buy

Page 150
AppleShare Revisited

AppleShare
Version 1.1. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/966-1010. 1MB minimum memory; requires dedicated Mac Plus, hard disk, and AppleTalk. $799.*

Page 151
Life in the Maze

Maze Wars+
Version 1.1. MacroMind, Inc., 1028 W. Wolfram St., Chicago, IL 60657, 312/871-0987. 512K minimum memory; requires AppleTalk network or modem. $49.95.*

Page 153
Key Replacements

Mac-101 Enhanced Keyboard
Version 1.0. DataDesk International, Inc., 7650 Haskell Ave., Van Nuys, CA 91406, 818/780-1673, 800/826-5398, 800/592-9602 in California. 128K minimum memory. $169.95.*

PC MacKey
Tangent Technologies, Ltd., 5720 Peachtree Pkwy. #100, Norcross, GA 30092, 404/662-0366. 128K minimum memory. $120.*

Page 154
Riding the Desktop Express

Desktop Express
Version 1.0. Dow Jones & Company, Inc., P.O. Box 300, Princeton, NJ 08543, 609/520-4000, 800/257-5114. 512K minimum memory; requires Hayes-compatible modem. $149.*

Page 156
More Than Just an Upgrade

SideKick
Version 2.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-8400, 800/255-8008. 512K minimum memory. $99.95.*

ThinkTank 512
Version 1.3. Living Videotext, Inc., 117 Easy St., Mountain View, CA 94043, 415/964-6300. 512K minimum memory; external drive recommended. $195.

Page 157
Masterpiece: Theatre It's Not

Masterpiece
Version 2.70. Strategic Planning Systems, 15233 Ventura Blvd. #708, Sherman Oaks, CA 91403, 818/784-6863. 512K minimum memory; requires hard disk. $3500.*

Page 158
Where Did All the Slide Rules Go?

Frame Mac
Version 1.11. Erez Anzel Software, 113 McCabe Crescent, Thornhill, Ontario, Canada L4J 2S6, 416/738-4601. 512K minimum memory; 800K drive storage recommended. $595.*

Page 159
The Video's in the Works

VideoWorks II
Version 2.0. MacroMind, Inc., 1028 W. Wolfram St., Chicago, IL 60657, 312/871-0987. 512K minimum memory; external drive or hard disk recommended. $195.*

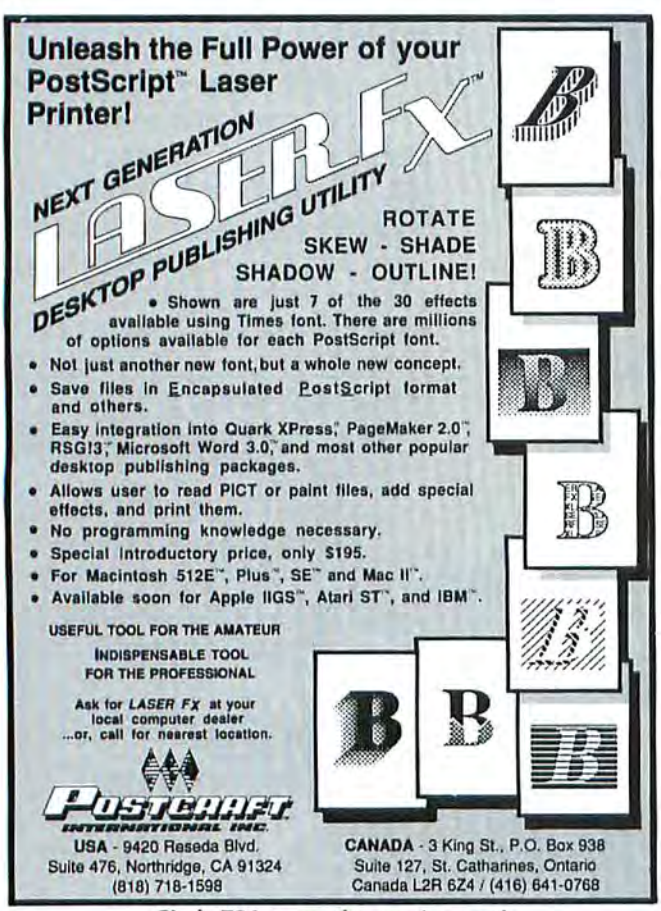
Page 161
The Big Picture

Stepping Out
Version 1.1. Berkeley System Design, Inc., 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5536. 512K minimum memory. $95.*

Page 162
The Digital Audio Workstation

Softsynth
Version 2.0. Digidesign, Inc., 1360 Willow Rd. #101, Menlo Park, CA 94025, 415/327-8811. Key-disk copy

(continues)



Circle 724 on reader service card

Circle 301 on reader service card

DOES WILLIAM F. BUCKLEY, JR. REALLY NEED A THESAURUS?

If you've ever watched his show Firing Line, you know Bill Buckley to be one of the most articulate, erudite people who ever spoke the King's English. His superior vocabulary makes you lean forward in your chair to keep up with him. If anyone could get by without a thesaurus, he could. But we have his letter praising our comprehensive, contemporary Word Finder. No big words, just a nice letter saying how much he liked it and uses it. Didn't mention the 220,000 synonyms for 15,000 words. Didn't say anything about how in just seconds Word Finder performs the whole cycle of look-up and replacement, so you continue writing without taking your eyes off the screen or your fingers off the keyboard. Nothing about how simple it is—just select the word you want an alternate for, and up pops a window of synonyms. Pick a new word and the window disappears, and your new word takes the place of the old word. But he did say: "It's a bloody miracle. Word Finder has changed my life. I never used to use a thesaurus."* To order call 800-828-6293 (in New York State call 716-377-0130).

Word Finder installs as a desk accessory. It is not copy protected.

Retail $59.95

NEW FOR THE MAC®

*Mr. Buckley volunteered this statement about Word Finder, and is not being compensated for his endorsement.

Special Introductory Offer

Rush me **Word Finder** for $59.95 (Add $2.50 shipping: NY residents add sales tax)

☐ Visa ☐ MasterCard ☐ American Express ☐ Check ☐ COD

Card Number _____ Exp. Date ____/____

Name _____

Phone _____

Company _____

Address _____

City _____ State _____ Zip _____

WORD FINDER® SYNONYM FINDER™

© Copyright 1987, Microlytics, Inc.
Word Finder™ is a trademark of Microlytics, Inc.

Microlytics, Inc.,
300 Main Street, Suite 126, East Rochester, NY 14445 (716) 377-0130
(800) 828-6293
Dealers please call

Circle 774 on reader service card

Advertiser Index

Reader Service Number		Reader Service Number		Reader Service Number		Reader Service Number	
212	ABA Software, Inc., 201	—	Crown Publishers, 206	11	Kensington, BC	—	Motorola Semiconductor Products, Inc., 74-75
678	Adobe Systems, 44-45	615	DEST Corp., 52-52	123	Kingsley atf, 37, 256	633	Nantucket Corp., 78-79
552	Adobe Systems, 73-72	662	Data Tailor, 247	119	La Cie, Ltd., 42	196	National Semiconductor, 249
306	Aldus Corp., 22-23	377	DataCopy, Inc., 212	721	Laser Connection, The, 35	727	Network Specialties, Inc., 240-241
760	Anatex, Inc., 175	281	DataViz, 234	720	Laser Connection, The, 58	777	New Directions, 220
204	Ann Arbor Softworks, 100-101	232	Dayna Communications, 224	318	Layered, Inc., 14-15	737	NuData, 81
—	Apple Computer, Inc., 31	761	Deneba Software, 56-57	652	Letraset, Inc., 8-9	13	Odesta Corp., 227
590	Automated Language Processing Systems, 207	634	Diehl Graphsoft, 24	238	Lionheart Press, 199	794	Omnigate, 92
67	Avery, 62	562	Diskette Connection, 204	—	Living Video Text, 10, 51	695	On-Line Store, 206
490	Bede Tech, 36	600	E-Machines, Inc., 88	601	Lundeen & Associates, 98	718	Open Mac Enterprises, 176
627	Bering Industries, Inc., 25	312	Fifth Generation Systems, Inc., 180-181	397	MSC Technologies, Inc., 50	754	PMC Telesystems, 182
434	Berkeley System Design, 70	683	Firebird Licenses, Inc., 90	—	MacConnection, 102-107	553	Peachtree Software, 61
373	Best Computer, 242	—	1st Aid Software, Inc., 198	459	MacProducts, 235	560	Personal Training Systems, 210
38	Blyth Software, Inc., 217	445	First Class Peripherals, 28-29	16	MacStore, 256	724	Postcraft Int'l., Inc., 250
394	Bose Corp., 59	778	GDT Softworks, 254	781	MacroMind, Inc., 96	211	Practical Computer Applications, Inc., 21
301	Budgetbytes, 250	475	GE Information Services, 39	653	Macropac, Int'l., 71	631	Precision Data Products, 199
657	CMS Enhancements, Inc., 219	791	GW Instruments, Inc., 188	796	Micro Systems, 233	656	Princeton Graphic Systems, 244-245
770	Cahners Exposition Group, 215	143	General Computer, 83, 84-85	786	MicroStore, 222	194	Programs Plus, 64-64C
757	CasadyWare, 54	530	I/O Design, Inc., 208	774	Microlytics, 251	334	Public Domain Exchange, The, 62
607	Central Point Software, 188	272	Icon Review, 48-49	—	Microsoft Corp., IFC-1, 38	763	Publishing Ink, 184
524	Centram Systems, 40-41	249	Infosphere, 218	470	Microtech Peripherals, Inc., 223	577	Radius, 192-193
330	Compuserve, 80	765	JDL, Inc., 94	694	Migent, 211	149	Rodime, 13
271	Computer Friends, Inc., 200	762	James River Corp., 231	742	Migent, Inc., 257	630	SBT Corp., 186
548	Computer Shoppe, 254	747	Jasmine Technologies, 18-19	779	Moniterm Corp., 177	—	Satori Software, 172
611	Coral Software, 60	748	Jasmine Technologies, 6			418	Scorpio Systems, Int'l., 230
685	Cricket Software, 189					345	Sensible Software, Inc., 46
684	Cricket Software, 191					787	Shiva Corp., 183
						743	Sigma Designs, Inc., 26
						266	Silicon Beach Software, Inc., 195-197
						—	Software Library, 34
						210	Software Ventures, 16
						405	Solutions, Inc., 214
						731	Spectrum Digital Systems, 76-77
						398	Spectrum Holobyte, Inc., 33
						225	Statsoft, 198
						93	Studio Advertising Art, 63
						618	Sun Remarketing, 194
						—	SuperMac Software, 30, 82
						—	SuperMac Technology, 209
						332	T/Maker Co., IBC
						6	Tallgrass Technologies, 170-171
						70	Tempest, 226
						96	Think Technologies, Inc., 7
						712	3M, 68-69
						167	Thunderware, 196
						51	Tri Data, 239
						248	Turner Hall Publishing, 66
						483	Tussey Computer Products, 185
						61	U.S.Robotics, 176
						134	USA-Flex, 190
						537	Uptime, 5
						48	Varityper, 202
						27	VeloBind, Inc., 229
						439	Warp Nine, 65-65A
						374	Williams & Macius, 47
						40	WordPerfect Corp., 178
						726	Zericon, 63

Living outside the U.S.?

Subscriptions are available for those living outside the U.S. Additional postage will apply, and prepayment is required in U.S. dollars.

Enclose payment with your order and send to:

MACWORLD
P.O. Box 54515
Boulder, CO 80322

1 year - $30.00
2 years - $60.00
3 years - $90.00

For Canada and Mexico, additional postage is $6/subscription year. All other countries must add $12/year surface mail, or $80/year airmail.

MACWORLD

The Macintosh™ Magazine

Free Product Information Service

Get more information on products you're interested in— simply return one of these cards today. There's no cost. And no obligation.

1. Your primary job function:
a. Corporate or general manager
b. Department manager
c. MIS or micro manager
d. Engineering or scientific
e. Professional
f. Reseller/VAR
g. Self-employed
h. Other

2. Number of employees in your company:
1. 25 or fewer
2. 26-99
3. 100-499
4. 500-999
5. 1000 or more

3. Plan to buy:
a. Now
b. In 4-6 months
c. In 7-12 months
d. More than 12 months from now
e. For reference only

4. For how many personal computers do you buy products? (Include both company and personal units, please.)
1. 1
2. 2-4
3. 5-9
4. 10 or more

5. How many of the above are Macintoshes?
a. 1
b. 2-4
c. 5-9
d. 10 or more

Valid through 1/19/88

It's easy to get more information on products advertised in *Macworld*. Here's how:

- Print or type your name and address and circle the appropriate answer to each question.
- Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ads and in the Advertiser Index.
- Apply first-class postage before mailing.

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	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	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
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	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	999			

Please print or type all information

Name

Title

Company

Address

City, State, Zip (zip code needed to ensure delivery)

Phone: Area code/Number

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in *Macworld*. Please send editorial comments or inquiries to The Editor, *Macworld*, 501 Second St. #600, San Francisco, CA 94107.

S1

Circle number 999 to subscribe to *Macworld*. We will bill you $30 for a 1-year (12-issue) subscription (U.S. only).

October 1987

MACWORLD

The Macintosh™ Magazine

Free Product-Information Service

Get more information on products you're interested in— simply return one of these cards today. There's no cost. And no obligation.

1. Your primary job function:
a. Corporate or general manager
b. Department manager
c. MIS or micro manager
d. Engineering or scientific
e. Professional
f. Reseller/VAR
g. Self-employed
h. Other

2. Number of employees in your company:
1. 25 or fewer
2. 26-99
3. 100-499
4. 500-999
5. 1000 or more

3. Plan to buy:
a. Now
b. In 4-6 months
c. In 7-12 months
d. More than 12 months from now
e. For reference only

4. For how many personal computers do you buy products? (Include both company and personal units, please.)
1. 1
2. 2-4
3. 5-9
4. 10 or more

5. How many of the above are Macintoshes?
a. 1
b. 2-4
c. 5-9
d. 10 or more

Valid through 1/19/88

It's easy to get more information on products advertised in *Macworld*. Here's how:

- Print or type your name and address and circle the appropriate answer to each question.
- Circle the numbers that correspond to the reader service numbers for the products that interest you. These numbers appear in the ads and in the Advertiser Index.
- Apply first-class postage before mailing.

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	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	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
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	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	999			

Please print or type all information

Name

Title

Company

Address

City, State, Zip (zip code needed to ensure delivery)

Phone: Area code/Number

PLEASE NOTE: This card is for your convenience in obtaining information on products advertised in *Macworld*. Please send editorial comments or inquiries to The Editor, *Macworld*, 501 Second St. #600, San Francisco, CA 94107.

S2

Circle number 999 to subscribe to *Macworld*. We will bill you $30 for a 1-year (12-issue) subscription (U.S. only).

October 1987

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP.)

MACWORLD

Product Information Service
P.O. Box 8260
Boulder, CO 80329-8260

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP.)

MACWORLD

Product Information Service
P.O. Box 8260
Boulder, CO 80329-8260

Product Index

Reader Service Number

Software

Business

212 ABA Software, Inc., 201
306 Aldus Corp., 22-23
760 Anatex, Inc., 175
434 Berkeley System Design, 70
685 Cricket Software, 189
684 Cricket Software, 191
662 Data Tailor, 247
249 Infosphere, 218
318 Layered, Inc., 14-15
652 Letraset, Inc., 8-9
238 Lionheart Press, 199
— Living Video Text, 10, 51
601 Lundeen & Associates, 98
781 MacroMind, Inc., 96
653 Macropac, Int'l., 71
796 Micro Systems, 233
694 Migent, 211
742 Migent, Inc., 257
13 Odesta Corp., 227
794 Omnigate, 92
754 PMC Telesystems, 182
553 Peachtree Software, 61
560 Personal Training Systems, 210
630 SBT Corp., 186
— Satori Software, 172
210 Software Ventures, 16
405 Solutions, Inc., 214
731 Spectrum Digital Systems, 76-77
225 Statsoft, 198
51 Tri Data, 239
374 Williams & Macius, 47

Vertical

590 Automated Language Processing Systems, 207
— Satori Software, 172

Data Management

38 Blyth Software, Inc., 217
653 Macropac, Int'l., 71
635 Nantucket Corp., 78-79
13 Odesta Corp., 227

Word Processing

204 Ann Arbor Softworks, 100-101
601 Lundeen & Associates, 98
774 Microlytics, 251
— Microsoft Corp., IFC-P1, 38
345 Sensible Software, Inc., 46
352 T/Maker Co., IBC
40 WordPerfect Corp., 178

Communications

524 Centram Systems, 40-41
281 DataViz, 234
252 Dayna Communications, 224
119 La Cie, Ltd., 42
794 Omnigate, 92
787 Shiva Corp., 183
210 Software Ventures, 16
51 Tri Data, 239

Educational

560 Personal Training Systems, 210

Reader Service Number

Graphics/Desktop Publishing

678 Adobe Systems, 44-45
552 Adobe Systems, 75-72
306 Aldus Corp., 22-23
204 Ann Arbor Softworks, 100-101
67 Avery, 62
757 CasadyWare, 54
548 Computer Shoppe, 254
685 Cricket Software, 189
684 Cricket Software, 191
634 Diehl Graphsoft, 24
123 Kingsley atf, 37, 256
652 Letraset, Inc., 8-9
777 New Directions, 220
724 Posteraft Int'L, Inc., 250
93 Studio Advertising Art, 63

Desktop Engineering

791 GW Instruments, Inc., 188
266 Silicon Beach Software, Inc., 195-197

Entertainment

685 Firebird Licenses, Inc., 90
211 Practical Computer Applications, Inc., 21
418 Scorpio Systems, Int'L., 230
398 Spectrum Holobyte, Inc., 33

Languages/Development Systems

611 Coral Software, 60
96 Think Technologies, Inc., 7

Utilities

607 Central Point Software, 188
761 Deneba Software, 56-57
312 Fifth Generation Systems, Inc., 180-181
— 1st Aid Software, Inc.,198
123 Kingsley atf, 37, 256
119 La Cie, Ltd., 42
653 Macropac, Int'L., 71
248 Turner Hall Publishing, 66

Miscellaneous

306 Aldus Corp., 22-23
67 Avery, 62
394 Bose Corp., 59
301 Budgetbytes, 250
350 Compuserve, 80
778 GDT Softworks, 254
475 GE Information Services, 39
560 Personal Training Systems, 210
334 Public Domain Exchange, The, 62
— Satori Software, 172
— SuperMac Software, 30, 82
374 Williams & Macius, 47
374 Williams & Macius, 47

Hardware

Computer Systems

— Apple Computer, Inc., 31
70 Tempest, 226

Printers/Plotters

765 JDL, Inc., 94
726 Zericon, 65

Boards

196 National Semiconductor, 249
727 Network Specialties, Inc., 240-241
718 Open Mac Enterprises, 176

Digitizers/Scanners

615 DEST Corp., 52-52
377 DataCopy, Inc., 212
720 Laser Connection, The, 58
167 Thunderware, 196

Display

271 Computer Friends, Inc., 200
600 E-Machines, Inc., 88
779 Monterm Corp., 177

Reader Service Number

727 Network Specialties, Inc., 240-241
577 Radius, 192-193
743 Sigma Designs, Inc., 26
— SuperMac Technology, 209

Modems

271 Computer Friends, Inc., 200
695 On-Line Store, 206
61 U.S.Robotics, 176

Hard Disks/Storage

627 Bering Industries, Inc., 25
657 CMS Enhancements, Inc., 219
445 First Class Peripherals, 28-29
143 General Computer, 83,84-85
747 Jasmine Technologies, 18-19
748 Jasmine Technologies, 6
470 Microtech Peripherals, Inc., 223
737 NuData, 81
149 Rodime, 13
6 Tallgrass Technologies, 170-171
439 Warp Nine, 65-65A

Miscellaneous

760 Anatex, Inc., 175
373 Best Computer, 242
271 Computer Friends, Inc., 200
778 GDT Softworks, 254
721 Laser Connection, The, 35
397 MSC Technologies, Inc., 50
— Motorola Semiconductor Products, Inc., 74-75
411 National Data Products, 86
618 Sun Remarketing, 194
48 Varityper, 202

Reader Service Number

Accessories

Floppy Disks/Holders

562 Diskette Connection, 204
712 3M, 68-69

Miscellaneous

770 Cahners Exposition Group, 215
— Crown Publishers, 206
530 I/O Design, Inc., 208
762 James River Corp., 231
11 Kensington, BC
721 Laser Connection, The, 35
16 MacStore, 256
780 MicroStore, 222
631 Precision Data Products, 199
763 Publishing Ink, 184
537 Uptime, 5
27 VeloBind, Inc., 229

Mail Order

373 Best Computer, 242
272 Icon Review, 48-49
— MacConnection, 102-107
459 MacProducts, 235
194 Programs Plus, 64-64C
— Software Library, 34
483 Tussey Computer Products, 185
134 USA-Flex, 190

Taking care of business.

Moving? Having any problems with your subscription? Please let us know as soon as possible so that we can correct it. It is important to affix your current mailing label.

☐ I'm moving. Please change my address to the one shown below.

☐ I'm having problems with my subscription; details are on attached sheet.

Name _____
(Please Print)

Company _____

Address _____

City _____ State _____ Zip _____

For immediate service, you may phone toll-free 800/525-0643; from Colorado, Alaska, Hawaii and outside the U.S., please phone 303/447-9330.

MACWORLD
Subscriber Service Dept.
P.O. Box 54529
Boulder, CO 80322-4529

protection, installs on hard disks. 512K minimum memory; requires external drive, sampling keyboard, and MIDI interface. $295.*

Sound Designer
Version 1.12. Digidesign, Inc., 1360 Willow Rd. #101, Menlo Park, CA 94025, 415/327-8811. Key-disk copy protection, installs on hard disks. 512K minimum memory; requires external drive, sampling keyboard and MIDI interface; hard disk recommended. Mirage version $395, other versions $495.*

Page 164
Current Events

C.A.T.
Version 1.0. Chang Laboratories, Inc., 5300 Stevens Creek Blvd., San Jose, CA 95129, 408/246-8020, 800/972-8800, 800/831-8080 in California. 512K minimum memory; SE with hard disk recommended. $295.*

SideKick
Version 2.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-8400, 800/255-8008. 512K minimum memory. $99.95.

Page 165
Amazing Space

Space Quest: Chapter 1– The Sarien Encounter
Version 1.5D. Sierra On-Line, Inc., P.O. Box 485, Coarsegold, CA 93614, 209/683-6858. 512K minimum memory. $49.95.*

Page 166
Financial Plans for Pros

MacDraw
Version 1.9.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K with external drive recommended. $195.

MacPaint
Version 1.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K with external drive recommended. $125.

Optum-3
Version 1.3. JLC Software, Inc., 2950 S. Ceylon Way, Aurora, CO 80013, 303/690-5443. Permits two hard-disk installations. 512K minimum memory; 800K drive storage recommended. $699.95.*

PageMaker
Version 2.0a. Aldus Corp., 411 First Ave. S. #200, Seattle, WA 98104, 206/622-5500. 512K minimum memory; requires hard disk for 512K or external drive for 512KE; Mac Plus (with hard disk), Mac SE, or Mac II, and PostScript printer recommended. $495.

Page 167
Take a Note

Comment
Version 1.1. Deneba Systems, Inc., 7855 N.W. 12th St. #202, Miami, FL 33126, 305/594-6965. 512K minimum memory; external drive recommended. $99.95.*

Page 169
Hold Those Disks!

Dial-A-Disk
Total System Integration, Inc., 99 W. 10th Ave. #333, Eugene, OR 97401, 503/345-7395, 800/874-2288. $7.95.*

Disk Case and Disk Pocket
Kensington Microware Ltd., 251 Park Ave. South, New York, NY 10010, 212/475-5200, 800/535-4242. $29.95.*

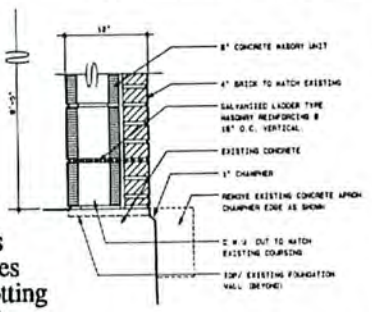
Disk File
Bede Tech, 8327 Clinton Rd., Cleveland, OH 44144, 216/631-1441, 800/772-4536. $7.95, $27.95 for 4.*

(continues)

MACPLOTS II™

Business Version-$195 *Drafting Version-$295*

MacPlots II™ is a software package that turns your Macintosh® or MacPlus into CAD system with color plotting from a full range of plotters.....up to "E" size. Can plot files saved in PICT format. Not just a plotter utility, but alot more! See your dealer today for a demonstration.



Features include:
- Easy to use
- Fast loading of files
- Faster Bit Image Support
- Supports full range of plotters
- Plot position can be controlled
- Supports variable line thicknesses
- Supports popular drafting packages
- Optimization of file for faster plotting
- Dashed line support for MacDraft
- **Bold**, *Italics*, & Underline text supported in all sizes.

In addition, the Drafting Version also features:
- Clipping (hidden line removal)
- Quick Plot (one pass overview)
- Design your own fill patterns
- Faster speed for the MacPlus
- Allows you to use plotter text and bit image text in the same document
- Supports "E" size plotters

Computer Shoppe
(919) 299-4843
P. O. Box 18344
Greensboro, NC 27419

Circle 548 on reader service card

NEW One Single Driver will now support
- ANY daisywheel printer or typewriter with
- ANY Macintosh computer in
- ANY Macintosh application.

MAC DAISY LINK™
PRINTER DRIVER

- Easy installation via the chooser.
- Supports sheet feeders - 3 bins.
- Auto proportional word spacing, and micro character adjustment.
- Fully justifies text to within 1 pt.
- Follows the "What you see is what you get" philosophy.
- User customizable for stylistic changes ie. bold, underline, italics.
- Foreign letter characters, or special symbols supported.
- Custom fonts provided for 6 or 8 lines per inch, and user formattable for other fonts on typewriter.
- Modem baud rates from 300 to 57600 baud.
- Supports all applications that follow the Mac user interface guidelines.

The "PRINT-LINK™" continues to be the preferred tool for dot matrix printers.

Contact your Apple dealer or
For inquiries: (604) 291-9121
To Order: 800-663-6222

GDT Softworks Inc.
Suite D, 2800 Douglas Road, Burnaby B.C. V5C 5B7, Canada

Macintosh™ is a trademark licensed to Apple Computer, Inc.
The PRINT-LINK™ & MAC DAISY LINK™ are trademarks of GDT Softworks Inc.

Circle 778 on reader service card

5 good reasons to attend MACWORLD Expo/ San Francisco '88

January 15-17 — Moscone Center

1. See and touch the latest Macintosh™ products. Visit hundreds of exhibits and see the newest hardware, software and peripherals available for the Macintosh.

2. Save time and money. Simply fill out and return the coupon below and we'll send you the information to pre-register for MACWORLD Expo/San Francisco.

3. Pick from dozens of tutorial sessions. No matter where you use your Macintosh — in the office, at school or at home, you'll be able to choose the session that's best for you.

4. Pinpoint new areas for increasing your profits. If you develop, produce or sell Macintosh products, the Industry Sessions are your opportunity to hear the latest in industry trends.

5. Apply your expertise right on the spot. Use one of the many Macintoshes available to test and fine-tune your skills.

This is the original Macintosh-exclusive computer show bringing you a world of Macintosh knowledge not available anywhere else!

Sponsored by MACWORLD, the Macintosh™ Magazine. An IDG Communications Publication.

MACWORLD is an independent trade show not affiliated with Apple Computer, Inc. APPLE and the APPLE LOGO are registered trademarks and MAC, MACINTOSH, and MACWORLD are trademarks of Apple Computer Inc.

For further information just fill in the coupon below and return it to us. Or call us at 617-329-7466.

☐ **Yes.** I want to learn more about the MACWORLD Expo/San Francisco to be held on January 15-17, 1988 at Moscone Center. Please send me:

☐ Exhibiting information.
☐ Attending information.

MACWORLD EXPOSITION
SAN FRANCISCO

Name _____

Company _____

Street _____

City/State/Zip _____

Phone _____

MW1

Send this coupon to MACWORLD Expo, Mitch Hall Associates, P.O. Box 155, Westwood, MA 02090

PUBLISHING
DESKTOP PUBLISHING
PUBLISHING

Scale from miniature to BIG, BOLD, BLACK HEADINGS.

Digital fonts *new* from Kingsley ATF. World's leader in type design for 100 years.

Kingsley atf TYPE CORP

See ad page 37

Circle 123 on reader service card

We RENT Mac Software !!

MacStore™ 1671 Executive Dr. New Braunfels Texas 78130

National 800-847-0026

Ask about our frequent renter program !

We'll match any software rental price in this issue.

We have hundreds of other titles available for the Mac. If you don't see what you want - call us !

Accessory Pak 1 or Art Grabber	8.80	Mac Golf	9.10
Accounting Packages	Call	Mac Labeler	8.80
Battery Pak	8.80	Mac Lightning	14.80
Bulk Mailer	18.70	Medical or Legal Dictionary	13.30
Business Filevision	56.25	Mac Mat Book (all volumes 1 - 6)	25.47
Calendar Maker or Certificate Maker	8.80	Mac Publisher & Mac Publisher II	Call
Click Art, Effects, Letters, Publications (each)	8.80	Mac Spell Right or Mac Spell +	13.85
Consultant	28.80	Mac 3 D	31.81
Copy II Mac	8.80	Mac Tracks	8.80
Championship Boxing or Baseball	8.80	Mac the Knife 1, 2, or 3 (Art, Fonts, Ripper)	Call
Cricket Graph	27.90	Max RAM Max PRINT	8.80
Davinci (We have them all!)	Call	Micro Planner Plus	72.00
Dollars and Sense	18.70	More	34.69
Double Helix	60.50	Musicworks or Videoworks	13.19 & 14.15
Excel	52.75	Omnis III Plus	57.12
Filemaker Plus	36.50	OverVue	35.80
Fluent Fonts, Fontastic, Font Explorer, Laser Fonts, Superfonts, UltraFonts...	Call	Picture Base or Postermaker	8.80
Ferrari Grand Prix or Flight Simulator	8.80	Pinball Construction Set	8.80
Full Paint	13.56	Quick Disk, Quick Word, Quick Paint (each)	8.80
Gato, Orbitor, or Gridwars	8.80	Ready Set Go	Call
Helix	49.50	Smart Alarms	8.99
Infocom games	Call	Super Paint	13.40
LaserSpool	15.16	Tempo	15.36
Keystroke	64.68	Thunderscan	41.60
Kid's Time	8.80	Will Writer	8.80
Languages (Asm, Basic, Z Basic, C, Cobol, Experlisp, Fortran, TML Pascal, etc.)	Call	Write Now or Word Handler	Call
Microsoft Chart, File, Multiplan, Word	Call	Works	37.90
Mac Attack	8.80	**Accessories**	
Mc Cad	62.56	Cables - we stock most Mac cables	Call
Mac Challenger or Mac Command	8.80	Carrying Cases for all Macs	Call
Mac Draft	33.84	10 Boxed Sony Disks	10.95
Mac Draw	32.47	800k External Drives (double sided)	184.50
		Upgrades & Power Supply Board Repairs	Call
		20 Meg SCSI Hard Disk	695.00

No membership fee • 16 day rentals • Rental applies to purchase

The store logo is a trademark of MacStore, Inc., the apple logo a trademark of Apple Comp. Inc.

MasterCard VISA AMERICAN EXPRESS DISCOVER

In Texas 800-222-1537 After tone ask operator for extension 993265

or dial direct 512-629-5419

Circle 16 on reader service card

Where to Buy

The Library
Innovative Technology Communications, Inc., 5649 La Jolla Blvd., San Diego, CA 92037, 800/525-2226, 800/824-6097 in California. $34.95.*

Micro Disk Minder
International Datawares, Inc., 2278 Trade Zone Blvd., San Jose, CA 95131, 408/262-6660, 800/222-6032. $8.50.*

Micro Flip Pak
International Datawares, Inc., 2278 Trade Zone Blvd., San Jose, CA 95131, 408/262-6660, 800/222-6032. $2.00.*

Weber Disk File
Weber & Sons, Inc., 3468 Highway 9, R.D. #4, Freehold, NJ 07728, 201/431-1128, 800/225-0044. $11.95.*

Weber Kit #500
Weber & Sons, Inc., 3468 Highway 9, R.D. #4, Freehold, NJ 07728, 201/431-1128, 800/225-0044. $74.95.*

Pages 203 to 210
Insights on PageMaker 2.0

Guide
Version 1.0. OWL International, Inc., 14218 N.E. 21st St., Bellevue, WA 98007, 206/747-3203. 512K minimum memory; hard disk recommended. $134.95.

Microsoft Word
Version 3.01. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; requires 800K of drive storage; Mac Plus with external drive recommended. $395.

PageMaker
Version 2.0a. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. 512K minimum memory; requires hard disk for 512K or external drive for 512KE; Mac Plus (with hard disk), Mac SE, or Mac II, PostScript printer recommended. $495.

PageTutor
Version 2.0. Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635. 512K minimum memory; requires external drive and *PageMaker*. $49.95 per module.

WriteNow for Macintosh
Version 1.0. T/Maker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0195. 128K minimum memory. $175.

Pages 213 to 222
Mac Programming Tools

ISAM/SORT
Version 2.0. Rocinante, P.O. Box 55427, Seattle, WA 98155, 206/365-0897. 512K minimum memory; external drive recommended. $79.95.

MacExpress
Version 1.13. ALSoft, Inc., P.O. Box 927, Spring, TX 77383, 713/353-4090. 128K minimum memory; 512K recommended. $195.

ResEdit
Version 1.0.1. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 128K minimum memory. Bundled with Macintosh Development Utilities; $25 for APDA members.

Turbo Pascal
Version 1.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-8400, 800/255-8008, 800/742-1133 in California. 512K minimum memory; Mac Plus or SE with hard disk recommended. $99.95.

Pages 225 to 234
Mac Word Processing Tools

Microsoft Word
Version 3.01. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; requires 800K of drive storage; Mac Plus with external drive recommended. $395. □

The Barbecue Brothers would rather bake beans than count them.

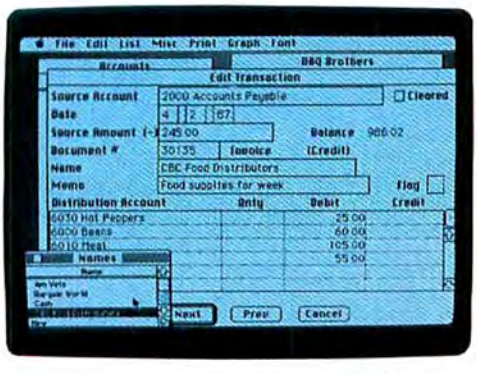
It's only the best chili in the whole doggone state.

But it might not be, if Larry Keenan and Curt Fischer had to spend more time balancing their books and less time balancing their spices.

That's why they bought In-House Accountant,™ from Migent.

With In-House Accountant, the boys spend very little time entering transactions. Or reconciling bank accounts. Instead, the program does it for them. Automatically, and in a very Macintosh™ kind of way.

That means all the information is right there on the desktop, so the guys can see at a glance things like their checking balance, or the amount they spent on hot peppers last month. For payables and receivables, they simply zip among their accounts without ever having to change modules, or even close a window. And when they enter a transaction, all related items in other lists are updated immediately. So there's never a need for "posting."



All of which means they have more time to do what they do best: which is make the best chili in the whole doggone state.

In-House Accountant.

See your nearest Migent dealer, or call **1-800-633-3444** for more information.

Yes. Please send me information about In-House Accountant.

Name

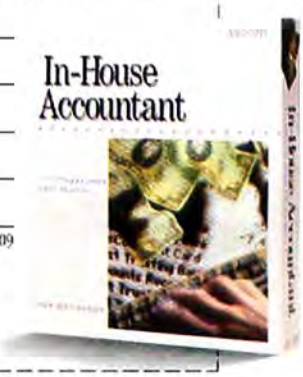
Title

Company

Address

City/State/Zip IHAM/MW/09

MIGENT Send to: Migent, Inc., 865 Tahoe Blvd., Call Box 6, Incline Village, Nevada 89450-6062, Attn: Alexis



Trademarks: In-House Accountant, PC Software Development, Macintosh, Apple Computer, Inc.

Circle 742 on reader service card

Join the decision makers who get scoops and early warnings from SUBROUTINES, *David Bunnell's Newsletter from Inside the Personal Computer Industry.* Belong to this select group and get critical information not available to outsiders. Be the one to know who's doing what long before others find out elsewhere.

Month after month, you get the how and why behind computer industry events: advance news, hot projects, stock analysis, product developments, interviews, trade show reports, market trends. All flavored with Bunnell's penetrating insight and wit. Subscribe to SUBROUTINES. Be in the know, produce results, and float on up.

Get your information from an inside source.

Subscribe now to SUBROUTINES. Get a FREE copy and special savings.

Call TOLL FREE
800-222-2990

Send me a free copy of SUBROUTINES. If I like it, I'll pay $24.95 for a 6-month trial subscription—a 75% savings over the $195 annual rate. If not, I'll write "cancel" on the bill, return it to you, and owe nothing.

Name

Company

Title

Address

City/State/Zip

Offer good in the U.S. only. Allow 6 to 8 weeks for shipment of your first issue.
Offer expires October 31, 1987.
SUBROUTINES, P.O. Box 10735, Palo Alto, CA 94303-9909

55E7B

SCALA/Art Resource, NY

Macworld Directory

The Macworld Directory is a comprehensive listing, by category, of products and services available for the Apple Macintosh. It provides advertisers with a low-cost advertising alternative and our readers with an easy reference guide.

FORMAT: The standard format includes a product ID, a 300-character descriptive ad, and a company name, address, and telephone number.

Advertisers may choose among categories already in use, or they may create their own. Display advertisers can cross-reference their current ad to the Macworld Directory for increased exposure.

RATES: Listings are accepted for a three-time consecutive insertion at a rate of $850. We offer a six-time insertion at $1450 that reflects a 15% frequency discount. Listings must be prepaid (except for established display advertisers) upon submission of ad copy. Checks, money orders, Visa, and MasterCard are accepted.

DEADLINE: For copy deadlines and further information please contact Niki Stranz, your Macworld Directory Account Manager, at 415/546-7722 or 800/435-7766 (800/435-7760 in California). Please send copy and prepayment to the Macworld Directory, 501 Second St., San Francisco, CA 94107.

■ *Accessories*

○ *Bags*

Cordura Bag for Mac SE

- Organize Mac components for easy access, w/padded interior compartments.
- Tough Cordura® & resilient foam padding for protection.
- Quality material & carefully crafted construction–guaranteed.
- Ask about our Imagewriter II case.
- Call your local dealer today! For the dealer nearest you, call us or write. Dealer inquiries invited.

West Ridge Designs, 305 N.W. 12th Ave., Portland, OR 97209, 503/248-0053

○ *Cables*

Mac Lock/Mac Cables

Mac Lock, finest security kit for Mac/+, secures Mac, keyboard, mouse, 2nd drive, modem, & printer. Attractive red vinyl-covered steel 3/16" cables. Lock included. No tools req. $-back guarantee. Also, IBM, Apple, etc. $40. Mac Cables provide any length custom cables for Mac/+ (incl. keyboard) or almost any computer need. $20 & up.

Mac Products, 20231 San Gabriel Valley Dr., Walnut, CA 91789, 714/595-4838

SCSI Cables

ARTISOFT manufactures and stocks these Mac cables:

- Mac-SCSI $4.95
- SCSI-SCSI 3' $8.25
- SCSI-SCSI 6' $11
- Mac Plus-Modem 3' $4.95

Custom logos and other lengths available for OEMs. Call for price quotes & catalog. (Qty 50+)

Artisoft Inc., 3550 North 1st Ave. #330, Tucson, AZ 85719, 602/293-6363

○ *Hardware*

MACOPENER™

The finest one-piece tool to open the Macintosh case. Do your own upgrades, installations, adjustments, and repairs. No moving parts. One year warranty, parts and workmanship. Suggested list $19.95 + $3 shipping and handling. Dealer inquiries welcome.

Central Products Corp., 2211 Norfolk #518, Houston, TX 77098, 713/529-1080

○ *Mouse*

RealClean™/MouseEase™

New! *RealClean* mouse cleaning kit gets grime off internal rollers. Special tool advances and scrubs rollers. Includes tweezers & cleaning solution. $14.95 + $2 s/h. For all Apple mice. From the makers of *MouseEase*, teflon paws for 512K/Plus Apple mice. $2.95 + .50 s/h. CA res. add sales tax. Send check to:

Tacklind Design, 250 Cowper St., Palo Alto, CA 94301, 415/322-2257

○ *Supplies*

LaserWriter Toner Recharge

Don't throw out empty toner cartridges. Sell them to us. Cartridge $6.50, cleaner $3, & box + packing $.50. • PRINTERS: Apple LaserWriter, HP & more • COPIERS: Canon PC models • BUY OUR RECHARGED CARTRIDGES $50, Blu/Brn $70. We supply empty cartridge & felt cleaner. QC test sheet provided. Support available.

Michlin Computer Consultants, Inc., Laser Cartridge Division, 3770 Plaza Dr. #1, Ann Arbor, MI 48108, 313/663-9800

Laser Cartridge Recharge!

$$$Save a lot of money recharging laser-printer toner cartridges for Hewlett-Packard LaserJets, Canon, Apple LaserWriter, Corona, QMS. Recharged cartridges are reconditioned to work like new but last 20% longer. Money-back guarantee. Send $40 per cartridge plus $3 s/h. Monthly discounts.

Toner Technologies/Laser Systems, 7 North Main, P.O. Box 407, Kaysville, UT 84037, 801/544-3090

Diskettes/Fire Protection

Sony 3½" diskettes: single-sided $1.53 each, double-sided $1.93. Unbranded, unboxed, unlabeled. Any quantity, no minimum order. Labels 7¢ ea. Halon fire extinguisher–small desktop size (18 oz.), class 1B:C, won't harm computer equipment, $21.95. Visa/MC/check/MO. Add 2 s/h.

Casablanca Software, P.O. Box 214, Dept. AA, Hicksville, OH 43526, 419/542-8145

Recharge Dealerships!!

Hot New Field!! Join our network & make money now. Train at our location. High profit, low overhead. Established company (over 500 retail accounts). Learn it right–no drill & fill! Factory-like recharge method, LONG LIFE'S for only $59. Receive tools, supplies, trade secrets, marketing strategy & technical support. Free call for information.

Laser Charge Co., 11782 Jollyville Rd., Austin, TX 78759, 800/223-8134 or in TX call collect 512/335-8191

■ *Advertising*

○ *Novelties/Premiums*

Create a You-nique Gift

YOUR logo or artwork on our gifts

• LG. UMBRELLA	$44.50/32.50*
• AWARD PLAQUE	$24.50/19.50*
• TRAVEL BAG	$24.50/19.50*
• SWEATSHIRT	$17.50/13.50*
• T-SHIRT	$12.50/9.50*
• COFFEE MUG	$12.50/9.50*
• MOUSE PAD	$12.50/9.50*
• CHOCOLATE	$9.50/7.50*

Apple Corp. Xmas gift supplier. *12+ price. Quantity pricing on larger order. Free catalog!

Computer Expressions, 3700 Market St. #308, Philadelphia, PA 19104, 215/222-4400

○ Mailing Lists

Macintosh Mailing Lists
Macintosh user names & addresses on adhesive labels or as Mac files on diskettes. Over 120,000 names to choose from. Only 5¢ per name for one-time rental. No charge for selecting, sorting, key coding, media, or delivery. Choose any quantity. This extremely high-quality list is updated daily. Ask for our one-time rental agreement before sending payment.
Semaphore Corp. 207 Granada Dr., Aptos, CA 95003, 408/688-9200

■ Consulting

Custom Developer
Specializing in integrated systems for legal, medical, sales & corporate mgmt. communities. Macros, templates, custom applications developed using *4th Dimension,™ Omnis 3+,™* & *Tempo.™* Nationwide service through our 24 hr. BBS. Fixed price, T&E, or hourly contract negotiable.
Phoenix Support Systems, 3232 San Mateo NE #199, Albuquerque, NM 87110, 505/765-9666

■ Hardware

○ Bar Code

Bar Code/Mag Card Readers
Bar code & mag stripe (credit card) readers for all Macintosh computers, easily connected on the keyboard circuit, requiring no additional program or port; simple but powerful code-39 bar-code printing program for ImageWriter & LaserWriter; magnetic encoder/verifier. GSA pricing avail.
TPS Electronics, 4047 Transport St., Palo Alto, CA 94303, 415/856-6833

○ Hard Disk/SCSI

YOUR MAC SOURCE
Dataframe 20, 40MB SCSI hard disk drive and Rodime 20, 45MB SCSI internal and external hard drives. For all your Mac needs from hard disk, software, peripherals, Mac cases, books, networking and consulting. Call us today!
Your Mac Source, 5600 Roswell Prodo North #264, Atlanta GA 30342, 404/843-2267, 800/367-7552

○ Lisa/Mac XL

MACsimize Lisa/Mac XL
Dafax provides full service & support for your Lisa/Mac XL. We carry a full line of upgrades, replacement parts & peripherals, including HFS, 20MB replacement hard disks for *all Lisas & XLs,* RAM upgrades & more. For latest new product information call our toll-free hotline 800/782-7823.
Dafax Processing Corp., 14 North Drive, Malba, NY 11357, 800/323-1751 (orders & info.), 215/574-0357 (PA)

○ Memory Upgrade

Memory Enhancements
Upgrade your Mac to 512K, 1024K, or 2048K of contiguous memory. SCSI port & fans available. Factory flow-solder techniques used for high reliability. 120-day warranty. Local 20-minute installation or mail order. Dealer inquiries welcome. Call for pricing and information.
Ehman Engineering, 115 Apache Dr., Evanston, WY 82930, 800/257-1666

SIMM Modules
• Bring your SE & Mac II up to its maximum memory configuration. These SIMMs utilize state-of-the-art surface mount technology to produce a low-profile compatible module. All modules carry a 90-day warranty. • Specs: 1M DRAMS are 120NS in the 20 PIN SOJ package. CMOS components are selected for cooler operation & greater reliability. • All inquiries welcome. Call for pricing and info.
CDC Enterprise, 2883 E. LaPalma, Anaheim, CA 92667, 714/630-4633

ONE MEGABYTE SIMMS
Upgrade your Mac Plus, Mac SE, or Mac II by 2 Megabytes for $575. These SIMM modules are the newest state-of-the-art plug-ins for Macs isted above. Low power eliminates the need for cooling devices. Using surface-mount technology these units should fit most future models for many years. We offer a limited lifetime guarantee against mfg. defects. (Dealers welcome.) Visa/MC accepted.
D.M.S. (Data Memory Systems), Box 785, Middleton, MA 01949, 617/683-2325

○ Networking

PhoneNET System
The PhoneNET system creates an AppleTalk network with the convenience, added distance, & flexibility of telephone wire. PhoneNET supports AppleTalk & can use standard telephone cabling, even existing wiring. Components include: PhoneNET PLUS Connector, the PhoneNET StarController, the TrafficWatch network analysis pkg. & the PhoneNET CheckNET desk accessory. Call for the dealer nearest you.
Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704, 415/849-2331

CompuNet Connector
LOW COST-HIGH QUALITY AppleTalk PhoneNet™ compatible network connector. Uses standard telephone wire. No special hardware required for 3000 ft. AppleTalk networks. $24.95 retail. SCSI Cables 25-50 & 50-50 UL. $24.95 retail. Dealer inquiries welcome.
Trimar USA Inc., 236 W. 15th St., New York, NY 10011, 800/872-4454, 212/645-7008

Ethernet for the Mac
Kinetics provides Ethernet hardware and software for all Macintosh computers. These product include:
• FastPath: An AppleTalk-Ethernet gateway
• EtherSC: A SCSI-Ethernet controller
• EtherPort SE: An internal Ethernet option card for the Macintosh SE
AppleTalk and TCP/IP software is supported.
Kinetics, Inc., 2500 Camino Diablo #10, Walnut Creek, CA 94595, 415/947-0998

○ Peripherals

Sunol Systems Hard Drives
• Sunol offers mass storage ranging from 21 to 245MB.
• SUN*TALK (disk server) increases productivity by sharing files and programs for Mac, Apple II, IIgs, IBM and other computers.
• Expandability, networking and backups are some of our features.
• High capacity SCSI drives available.
• Prices range from $1095 up.
Sunol Systems, Inc., 1177 Quarry Ln., Pleasanton, CA 94566, 415/484-3322

○ Printer Interfaces

Grappler C/Mac/GS
This Universal Parallel Printer Interface makes most popular laser and dot matrix printers perform flawlessly with the Mac Plus, SE and II. The Grappler's built-in intelligence allows the printer to emulate Apple's own ImageWriter II, eliminating unreliable drivers and erratic page sizes. Just plug it in and print. It's that easy! Suggested retail: $99.
Orange Micro, Inc., 1400 N. Lakeview Ave., Anaheim, CA 92807 Order: 800/223-8029, in CA 714/779-2772

○ Video

MacMonitors/Projectors
• 17-& 23-inch hi-res monochrome monitors w/ antiglare, white phosphor, vari scan. When your Mac must be seen in the classroom, trade show, office, etc. Only $1095 & $1295.
• Projector systems for the ultimate in Mac viewing pleasure from $3895.
• Rental MacMonitors & Projectors avail. • Dealer inquiries welcome.
National Data Systems, 2113 Wells Branch Bldg. 6-100, Austin, TX 78728, 512/251-1392, 800/531-5143, 800/252-8286 in Texas

Free! How to Link Video...
From *any* Mac (512K, Plus, SE, II)
....To large screen MacProjectors™ –Color or B & W, to 10' tall!
....To king-sized MacMonitors™ –Shows, schools, user groups!
....To regular TV or VCR for titles –NTSC, VHS, Beta, 8mm, Pro!
• Digitize images in PostScript for LaserWriter halftone pictures!
Comtrex, Ltd., P.O. Box 1450, El Toro, CA 92630, free newsletter 800/443-2751 x145, technical questions 714/855-6600

■ Insurance

Safeware
Insure your computer. Safeware provides full replacement of hardware, media, and purchased software. As little as $39 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8 a.m. to 10 p.m. EST (Sat. 9 to 5).
Safeware, The Insurance Agency Inc., 2929 N. High St., P.O. Box 02211, Columbus, OH 43202, 800/848-3469 (national), 614/262-0559 in Ohio

Data Security Insurance

The "all risk" Personal Computer Policy from DSI includes essential coverage not available with other policies: protection against loss of data (even from accidental erasure), loss of custom programs, & fraud. As low as $35 a year. Coverage can be bound by telephone, 9 to 4 Mountain Time.

Data Security Insurance, 4800 Riverbend Rd., P.O. Box 9003, Boulder, CO 80301, 303/442-0900, 800/822-0901

■ *MIDI*

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., 900 W. First St., P.O. Box 1090, Reno, NV 89504, 702/826-6434

■ *Recruitment*

Mac Product Marketing

One of the oldest, fastest-growing PC software companies has immediate opening for experienced Macintosh zealot. New position as Product Marketing Manager for exciting new software. Req. extensive experience w/Mac marketplace. 3 yrs. in product marketing or product management. Other experience in windowing environments & graphic interfaces a plus. Equal Opportunity Employer. Write only with resume & salary history.

Attention J. Haney, #3532, One Penn Plaza, New York, NY 10119

■ *Services*

○ *Data Conversion*

Electronic Data Conversion

Conveniently translate data files from mainframes, minis, dedicated word processors, typesetters, & PCs (word processing embedded codes, database structures & spreadsheet reports & formulas) to Mac or almost any system. Ultimate technology. Nation's leading firms use our invaluable services!

CompuData Translators, Inc., 3325 Wilshire Blvd., #1202, Los Angeles, CA, 213/462-6222, 800/825-8251

Tape/Disk Conversions

Conversion services for your Macintosh, to or from over 800 computer systems:

- Mag tapes
- Microcomputers
- Word Processors
- Typesetters

Our conversion capabilities include to or from 3½-inch, 5¼-inch, and 8-inch disks & mag tapes.

Pivar Computing Services, Inc., 165 Arlington Heights Rd., Dept MC, Buffalo Grove, IL 60089, 312/459-6010

○ *Desktop Publishing*

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 52188, Livonia, MI 48152-0188, 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 $5 per page ($3.50 volume discount). LaserWriter $.50 per pg. Desktop publishing specialists in consulting & design services. Hardware/software sales. Xerox Ventura Publisher for sale at low price. Full offset printing & bindery services avail.

Laser Printing Services, 26058 W. 12-Mile Rd., Southfield, MI 48034, 313/356-1004 (MI), 800/722-3475 (nat'l) Modem: 313/356-3186

Laser Typesetting

Professional-quality file output service at competitive prices. Mac or IBM, via disk or modem to our LaserWriter or Linotype. Same-day service. We can also keyboard your copy, from a letterhead to a full-length novel. Also available: complete darkroom services and platemaking for your printer. Write or call toll free:

Hodgins Engraving, Box 597, Batavia NY 14020, 800/354-6500 (Nat.) or 800/626-8900 (NY)

PC Publishers

The Image Makers. Typesetting–635, 1270, and 2450 dpi on Linotype L300–and laser printing from MS DOS or Mac. Modem and MCI Mail. Graphs, charts, and slides in full living color. 24-hour turnaround. Designers on staff.

PC Publishers, 240 East 27th St., New York, NY 10016, 212/532-6895

Desktop Pub. Experts

Use Silicon Valley experts for your manuals, catalogs, and other major publishing projects. We turn IBM and Macintosh text files into beautiful camera-ready art. • Difficult or large projects • Technical illustration • Graphics and pasteup • We take IBM disks. TECHDOC created over 20,000 pages last year for Bank of America, Pacific Bell, National Semiconductor and others.

TECHDOC, 23990 Schulties Rd., Los Gatos, CA 95030, 408/353-2663

○ *Graphics*

NYC/NJ/Phil./DE Designers

Desktop publishing doesn't have to look cheap! IBM or Mac files, disk or 24-hr. modem, for high-resolution L300 output through award-winning color printing, binding, & mailing. Impartial system advice, in-depth training, & support for major DTP pkgs. + PostScript itself. Messenger service! Ask for K. Downs.

Waldman Graphics, 9100 Pennsauken Hwy., Pennsauken, NJ 08110, 212/925-2420, 215/627-7200, 201/522-8778, 609/662-9111

West Coast Connection!

Upload by disk or 24-hr. modem for 2540-line L300 output, with up to 30 font calls per page. Support all Adobe fonts, Mac & PC software including Ventura, Pagemaker, and most PC word processors. 24-hr. turnaround. Adobe type dealer; beginning and advanced training for Mac, L300 and PC users. Convention service.

Lazer Graphix, 314 Las Vegas Blvd., Las Vegas, NV 89101, 800/492-0020, 702/386-2626 (Voice), 702/384-6761 (Fax). (24 hr. modem on line)

○ *On-Line Info Service*

Telefolders

Telefolders is a national electronic information service for Mac users only. Our software lets your Mac & any-speed modem access out public data base using only standard icons, windows, & pull-down menus. Browse, upload and download, with just a click of the mouse. No commands to learn, no typing to do. Over one-year old. $49.95 gets you a complete starter kit, access time included.

Semaphore Corp., 207 Granada Dr., Aptos, CA 95003, 408/688-9200

○ *Typesetting*

Command Typographer®

MAC TYPOGRAPHY. Macintosh/*Quality* Typesetting. *Command Typographer®* features were on minis & mains. *Sophisticated* multipass H&J provides kerning, formats, tabs, vertical justification, micro justification, automatic leader, letter spacing. $495. Save $, copy disk/modem, high-res. typesetting/24 hrs. Typesetting avail.

Regional Typographers/The Software Shop, 229 Bedford Ave., Bellmore, New York 11710, 516/785-4422

■ *Software*

○ *Accounting*

Payroll-General Ledger

CheckMark PAYROLL and AMS GENERAL LEDGER are full-featured accounting programs for $195 each. PAYROLL calculates all employer and employee taxes. Prints checks and W-2s. User-modifiable tax tables. GENERAL LEDGER has extensive reporting capabilities. Profit centers, budgeting, previous-year balances.

CheckMark Software, Inc., P.O. Box 860, Fort Collins, CO 80522, 800/426-2466 ext. 338

Turn-Key Accounting™

4 modules that run w/ Omnis 3+™

- RECEIVABLES/ORDER ENTRY–Back order control; prints invoices, delivery slips, aging anytime
- PAYABLES/PAYROLL–Checks, aging anytime
- INVENTORY–PO's
- GENERAL LEDGER–Posting can be delayed until convenient.

Modules $195 locked, $395 unlocked w/commented listing

Software Products Division, 22612 South Avalon Blvd., Carson, CA 90745-4190, 213/835-6077

○ *Apple Emulator*

II in a Mac™ new Ver.

2.5RUN Apple II software on a Mac and still use desk accessories & Cut & Paste to Clipboard. Transfer Apple II disks to the Mac by cable or phone. Use UniDisk directly w/Mac drives. CONVERT *Appleworks* or any other Apple II data file into standard Mac textfiles. DEVELOP software using Apple II BASIC & ML. Full 65C02 debugging system built in.
NOT COPY PROTECTED.....$149.95
Computer:applications Inc., 12813 Lindley Dr., Raleigh, NC 27614, 919/846-1411

○ *Artificial Intelligence*

Instant Expert™

A simple and powerful *Expert System Shell* designed to be the easiest to use. The powerful inference engine provides an easy-to-use expert system application query. Forward and backward chaining as well as a unique mixed strategy gives real flexibility to users. The system can explain *how* and *why* a conclusion was reached and give the user special *Solution* information. $198.
Human Intellect Systems, 1670 S. Amphlett Blvd., San Mateo, CA 94402, 415/571-5939

○ *Authorship*

NEW-Course Builder™

Go from concept to code with no middleman. Create stand-alone applications with user input, graphics, animation, and sound. This visual language provides a next-generation development environment. Programming is as easy as drawing a flowchart of your thoughts. Send for a brochure, demo on *CompuServe*. $300.
TeleRobotics™ International, Inc., 8410 Oak Ridge Hwy., Knoxville, TN 37931, 615/690-5600

○ *Backup/Restore*

HFS Backup™

Back up (archive) data from your hard disk. Back up/restore the entire disk, selective files, or changes only. Includes/excludes files based on name, class, or data modified. Creates backup templates, saves/prints file list (hierarchically by folder or alphabetically by file) $49.95. (*Appleshare version avail.* $149.) MC/Visa or at your dealer.
Personal Computer Peripherals Corp., 6204 Benjamin Rd., Tampa, FL 33634, 813/884-3092, 800/622-2888

○ *Billing*

Invoicing/Job Costing

Office Productivity System™ (OPS). For professionals that bill based on time-use. Includes invoicing, time-keeping/productivity reports, job budget/cost tracking, client database with mail merge and accounts receivable. Multiuser capable. 512K Mac with hard or external drive. Avail. now for $475.
Applied Micronetics, 3 Burnt Oak Circle, Lafayette, CA 94549, 415/283-4498

Attorneys, CPAs–Billing

Professional Time Billing Template. Ideal small/medium office system for billing time or fixed fees. Ready-to-use billings, client letters, lists & reports. Open design allows other uses. Detailed user's guide included. Field-tested. Req. min. 512K Mac & hard disk. $125; combo program/template $325.
Kallan Enterprises, 511 Estudillo Ave., San Leandro, CA 94577, 415/351-8400, MCI 148-1080

○ *ClipArt*

MAC-ART LIBRARY

Illustrate your ideas w/ *MAC-ART LIBRARY!* 12 disks of professional *MacPaint* images:

- Animals
- Farm Life
- Geography
- Kitchen
- Sports
- Tools
- Buildings
- Flowers/Trees/Plants
- Greeting Cards
- People
- Transportation
- Signs/Symbols/Borders

Sgl. disks $39.95. Full library $250. Sampler $49.95. $3 s/h. Other disks.
CompuCRAFT, P.O. Box 3155, Englewood, CO 80155, 303/791-2077

Interesting Graphics

Our skilled illustrator has produced 5 collections for your Mac: *Horror/Fantasy #1, Bytes of Fright, Dinosaur Bytes* (natural history), *Sky Bytes* (aerospace), and *Classic Sci Fi*. The collections contain a variety of images, each of which is carefully crafted. Each collection is $29.95 ($32.05 in CA).
AAH Computer Graphics Productions, Box 4508, Santa Clara, CA 95054, 408/980-7363

Alternative Graphics

Bored w/clip art? We offer 2 exciting new graphics collections:
• DRAWINGS BY LEONARDO–Leonardo da Vinci's finest drawings of anatomy, engineering, nature & science–faithfully reproduced as *MacPaint* images. • COMICARDS –Create personalized cards, messages, invitation, or "art for art's sake" w/creative & humorous vol. of cartoons & illus. $29.95 ea. + $3 s/h. Chk/MO only. (CA res. add 6%)
ScanMaster,™ 2700 West Coast Hwy. #220, Newport Beach, CA 92663, 714/548-5967

○ *Communications*

Mac2624: HP CRT Emulator

Lets your Mac emulate the HP2624, HP2392, and HP2394, reliably running all HP3000 software. Implements HP modes, parameters, keyboard features, and display characteristics within the Mac's mouse/menu/⌘-key environment. Ultrafast file transfer (with text and graphics conversion options) included $199.
Tymlabs Corp., 211 E. Seventh St., Austin, TX 78701, 512/478-0611, Telex 755820

pcLINK™

A complete Macintosh interconnect solution for VAX (VMS and ULTRIX) and UNIX systems. Provides terminal emulation (VT241, VT220, VT100), file-transfer, virtual-disk, and print-server functionality. Supports serial line, remote modem, AppleTalk, Ethernet, or Omninet communications media.
Pacer Software, Inc., 7911 Herschel Ave., #402, La Jolla, CA 92037, 619/454-0565

MAC3000: HP Emulation

MAC3000 provides full terminal emulation of the Hewlett Packard 2624, HP2392, as well as DEC VT-100, IBM3278, & TTY Terminals. MAC3000 also offers the ability to communicate with a variety of computers & electonic information services such as *The Source, Dow Jones News/Retrieval & CompuServe*. Both text & binary file transfer supported. $150. Distributed by...
NetSolutions, 8 Mariposa Ave., San Anselmo, CA 94960, 415/454-7607

Reflection™ for the Mac

Combine the power of your Macintosh and your HP2392 Terminal. More than an emulator, *Reflection* provides background processing with Switcher, error-checking file transfer protocol, and our programmable command language for automating repetitive or complex tasks. $199.
Walker Richer & Quinn, 2825 Eastlake Ave. E, Seattle, WA 98102, 206/324-0350, 800/872-2829

TextTerm+Graphics

A new, fast, flexible DEC VT100 text emulator and Tektronix (4014, 4105) graphics emulator. Reverse scroll; transfer text, tables, graphics (Paint/PICT); high-quality color printing/plotting; file shipping; editor for correcting/electronic mail, direct LaserWriter support. $195.
Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998

Contact:™

Burroughs emulation. *Contact* software emulates TD/MT/ET terminals. Sophisticated data capture–all screen data can be used by spreadsheet, database, word processor-...CANDE & XMODEM file transfer. Fully *a la Mac* interface. Soft keys, multiple pages & addresses, password protection...Soon: full file-transfer capabilities, Sperry terminal emulation.
Avenue Software, Inc., 1173 W. Charest Blvd., Quebec, QC, Canada G1N 2C9, 418/682-3088

○ *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. $995 complete.
Biopac Systems, 42 Aero Camino #215, Goleta, CA 93117, 805/968-8880

○ *Desktop Engineering*

Parameter Manager™

Designed for people who need to manage, analyze & graph time, date, or sample-based data. No macros or templates are needed to produce trend plots, strip charts, histograms, forecasts, parametric plots, statistics, correlation, and financial high-low charts. Plot up to 32,000 data points, 96" x 48" in size. Text import & "Calculated Parameters" $495. Complete Demo $10. MC/Visa.
Structural Measurement Systems, Inc. (SMS), 651 River Oaks Parkway, San Jose, CA 95134, 408/263-2200. Orders 800/654-5147, 800/247-4994 (CA)

○ *Desktop Presentations*

Carousel Color Slides

Carousel Color Slide Software lets you easily create 256-color 35mm slides from *MacDraw* files. You assign colors with *MacDraw* Patterns. Slide files are transferred by modem to a professional slide-imaging center. 2K slides only $7 each, 4K slides $14. Slides in 48 hrs. Free delivery. Call for free samples.
20/20 Data Systems, 7000 Cameron Rd., Austin, TX 78752, 512/454-2508

○ *Desktop Publishing*

Interactive PostScript

Program Postscript™ interactively over AppleTalk using the PostHaste™ integrated programming environment. Full-featured editor, separate error-message capture window, & fast uploader with no file size limit. Great for the beginner, essential for the serious PostScript programmer! $59.95.
Micro Dynamics, Ltd., Dept. W, 8555 Sixteenth St., #802, Silver Spring, MD 20910, 800/634-7638 or 301/589-6300

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

Desktop Design Tools

- *MiceType*™–Newsletter for those who love letters. $30/yr.
- Free Subscription to buyers of M/A Prospera,™ our latest serif text & display alphabet family for LaserWriters $59.95. (Award-winning designer. Ligatures, etc.)
- Free issue with samples. Just ask!
- Also MacStamp™–rubber stamp art for your Mac, w/MacWoodtype™ (1800's letters, borders) for $39.95!

Macrocosm Arts/Alphabets, Inc., 804 Dempster St., Evanston, IL 60202, 312/328-2733

○ *Educational*

Gradebook/Test Generator

MICROGRADE–flexible course & grading, 400 students/100 assignments per class, prints stats & various reports. Ideal for any grade level. MICROTEST II–create, update, generate, & store exam materials. Easy question entry, large database, multiple test versions. Demo $5. FREE EDUCATIONAL CATALOG.
Chariot Software Group, 3659 India St. #MD1, San Diego, CA 92103, 619/298-0202

Brainchild Grade™

Unique graphic interface, like paper grade book, extremely easy to use. Total integration of spreadsheet, database, & report-generating software. Free-form class structure, enormous capacity, & speed! Complete stats & graph program. Intricately detailed user's manual. Value-priced at $25. No other program comes close!
Brainchild Corp., avail. through the Kinko's Academic Courseware Exchange. To order, call 800/235-6919, 800/292-6640 in California

Best Testing System!

LXR•TEST brings desktop publishing to test generation! Combining graphics, word processing, and database management; LXR•TEST enables you to produce tests easier and better than ever–*We guarantee it!* See why LXR•TEST has been proclaimed the "best educational tool on the market!"
Logic eXtension Resources, 9651-C Business Center Dr., Rancho Cucamonga, CA 91730-4537, 714/980-0046

NEW-Course Builder™

Create stand-alone courseware for teaching, training, or testing with the click of a mouse. Built-ins:
- Draw
- Paint
- Animate
- Sound
- Voice
- Music
- Grades
- Branches
- Text,

Numeric, mouse input. Send for brochure, demo on *CompuServe.* $300.
TeleRobotics™ International Inc., 8410 Oak Ridge Hwy., Knoxville, TN 37931, 615/690-5600

MacKids™

The Learning Edge

Alphabetizer	Lemonade Stand
Naval Battle	ClockWorks
BodyWorks	WordSearch
CoinWorks	FlashWorks
Preschool 1	Preschool 2
Early Elementary 1	EarthWorks

Each title $39.95 MC/Visa/Chk. Write or call for a free catalog.
Nordic Software, Inc. 3939 North 48th St., Lincoln, NE 68504, 800/228-0417, 402/466-6502

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., 4805 Westheimer, Houston, TX 77057, 713/977-2655

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., Triverton, RI 02878, 401/253-9454

Children's Programs

Exceptional graphics, multiple activities & difficulty levels.
- *Macrobots* (to 5 yrs.) $49.95
- *Animal Kingdom* (6- 10) Science & language arts $49.95
- *Read-A-Rama* (5-9) 2 disks of reading programs $59.95
- *Math Wizard* (5-12) 4 games $49.95
- *Fraction Action* (8 & up) Talking arcade game & tutorial $49.95
- *Decimal Dungeon* (9 & up) $49.95
- MC/Visa/AE–free catalog

Unicorn Software Co., 2950 E., Flamingo Rd. #B, Las Vegas, NV 89121, 702/737-8862

Algebra Homework Tutor

Revolutionary HomeworkTutor™ lets you do your Algebra homework or classwork on a Mac. Checks each step you enter, gives hints, poses practice problems, solves and explains examples, and prints completed homework. Easy editing, standard Mac interface, and too much more to tell. Send for free brochure.
Missing Link Software, Box 3280, South Amboy, NJ 08879, 201/721-2569

○ *Educational/Games*

WHO AM I?

A challenging and entertaining educational quiz game about the lives of famous people, past and present, from around the world. Billions of different plays to intrigue you. You may even earn yourself a named certificate! Excellent training for TV shows, contests, etc. All ages. 512K min. US $44.95
Mimics Software, 21 Wood St., Eastwood NSW 2122, Australia (61)-2-8683572

○ *Engineering*

Digital Logic Design Aid

LogiWorks is an interactive digital logic drawing & simulation package for the Macintosh. Features:
- built-in library of common gates, flip-flops, etc.
- user-defined devices, PROMs & PLAs
- adjustable device delays
- 3-state & open-collector devices
- produces timing diagram of selected signals
- $159.95 (U.S.)
- Pkg. incl. 7400, analog libraries, & net list utility $199.95

Capilano Computing, 300-1120 Hamilton St., Vancouver, B.C., Canada, V6B 252 604/669-6343

Structural

Powerful, easy-to-use analysis programs with design aids for beams, 2-D frames, trusses: *BEAM MAC, BEAM MAC II, FRAME MAC.* Structure, loading, internal force, deflection diagrams, input & output texts. Section table, more. From $145 to $595. Money-back guarantee, free support. Demo available.
Erez Anzel Software, 113 McCabe Crescent, Thornhill, Ontario, Canada L4J 2S6, 416/738-4601

Graphics File Translator
DXF now available! CADMOVER is expanding, tranlations between DXF, IGES, MiniCad, MacDraw, PICT, DIMENSIONS, and more. Multiple translation paths allow maximum flexibility in your work environment. Creates MSC/pal model definition files. Runs on Mac 512K, Plus, SE and Mac II. $495.
Kandu Software Corp., P.O. Box 10102, Arlington, VA 22210-1102, 703/532-0213

Finite Element Analysis
MSC, the leader in FEA technology, markets a full line of FEA tools for personal computers. Starting at $45 for MSC/pal INTRO on either the IBM PC or the Apple Macintosh, our products are designed to be complete and easy-to-use. Interfaces for most CAD systems available.
The MacNeal-Schwendler Corp., 815 Colorado Blvd., Los Angeles, CA 90041, 213/259-3888

Radar Seminar
A combined pictorial and text presentation discussing the principles of target detection. An automated Blake Chart is included for the calculation of radar range. The Seminar is at the introductory level, but the Blake Chart is useful at all experience levels and enhances parameter iteration. $25 including s/h.
Bold Ideas, 1411B S. Diamond Bar Blvd. #134, Diamond Bar, CA 91765

Scientific Plotting Package
SoftWear Plot produces publication-quality plots using multicolumn 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

Microprocessor Devlpmt.
Macintosh-based absolute cross-assemblers & editor for MPUs:
- 6800/01/02/03/08/6301/6303
- 6804/HC04 • 8048/C48/49/50
- 6805/HC05 • 8051/C51/52
- 6809/HC09 • 6502/CO2/C00
- 68HC11 • 1802/05 • COPS400

Fast. Macros & conditional ass'y. supported. Generates S/Hex records. US $99.95 ea. (specify MPU series) + $4 s/h. Call/write for brochure. MC/Visa Check/COD.
Micro Dialects, Inc., Dept. MW10, P.O. Box 30014, Cincinnati, OH 45230, 513/271-9100

Continuous Beam Analysis
W or w/o overhang at one or both ends. 23 prgs. for concentrated loads & 23 prgs. for distributed loads (lb./ft.). 3 loads/2 supports consecutively thru 25 lds/24 sup. Easy to use–click the icon for number of loads & go. Runtime-interpreter 25 lds/24 sup or compiled 23 lds/22 sup. $280 either. Mac Plus & external dd drive req'd.
Joe Mcgee Consulting Engineer (Regis. P.E.), 1401 NW 105 Terrance, Oklahoma City, OK 73114, 405/751-4275

○ *Entrepreneurial*

Moonlighting Made Simple
How to Moonlight with Your Computer is the greatest gold mine of easy ways to earn extra money that has ever been crammed into one big book. Send for you FREE BROCHURE today! Another way you can strike pay dirt is with the amazing power of *Real Estate Partners*. See July '87 *Macworld* Product Announcement. Demo disk $10.
Meta Venture Technology, 326 E. Colorado Blvd. #253, Dept. MW, Pasadena, CA 91101, 818/796-5479

○ *Financial*

Loan Amortization
AmPack is a straightforward loan-amortization software package designed by a CPA & tax attorney. *AmPack* supports variable rates, graduated, skipped, & principal-only payments. Also includes balloons, negative amortizations, customized schedules, loan analysis, & more. $49.50 + $5 s/h. MC/Visa.
Softflair, Inc., 8753 Park View, Milwaukee, WI 53226, 414/-778-7200

MacMoney™
Gain control of your finances with this record keeper & financial planner designed for the Macintosh™ with your needs in mind. Easy transaction entry. Print checks, multiple reports, & graphs. Transfer data to a text file for extra benefits from *Excel*™ or other programs. Introductory price $74.95 + s/h. Req. 512K.
Survivor Software Ltd., 11222 La Cienega Blvd. #450, Inglewood, CA 90304, 213/410-9527

○ *Financial Planning*

Masterpiece™
A comprehensive Financial Planning System developed by CFPs to cover all areas of financial concern and practice management for financial planners, stockbrokers, & CPAs. Completely integrates *Omnis 3* & *Microsoft Excel*, $3,500. Multiuser and demo versions avail.
Strategic Planning Systems, 15233 Ventura Blvd., #708, Sherman Oaks, CA 91403, 818/784-6863

○ *Fonts*

Downloadable Laser Fonts
Specialized fonts for the LaserWriter. Classical Greek $85. Serif/sans serif for scientific texts $75. Font of 100 chemical structures $125 (with scientific text fonts $160). Polish serif or sans serif $85 each (4 styles). Serif small caps $40. Regular or Polish (4 styles). Soon: modern Greek. MC/Visa. As mentioned in Feb. '87 issue.
Allotype Typographics, 1600 Packard Rd. #5, Ann Arbor, MI 48104, 313/663-1989

FONTagenix & LASERgenix
FONTagenix™: 4 volumes of dot-matrix display fonts $29.50 each vol. (all 4 $99.50) FOREIGN FONTS EDITION™: 22 foreign language fonts on disk, $49.50. LASERgenix™: Downloadable laser fonts, text, extended Cyrillic & new bold fonts. $32.50 each. (Add $3 s/h, CA res. add 6%. Write for samples or order at:
Devonian International Software, P.O. Box 2351, Montclair, CA 91763, 714/621-0973

Free PostScript Font
LaserFonts, the world's largest PostScript font library. 32 font families and growing. ITC fonts. Rated four mice by *MacUser*. For a free, full-function font, send blank disk and business size envelope with 76¢ postage. Catalog with full-page samples, $2. Call or write for free info.
Century Software, Inc., 2483 Hearst Ave., #175, Berkeley, CA 94709, 415/549-1901, 213/829-4436

○ *Genealogy*

MacGene™ (version 2.0)
Ideal for beginners & advanced users. Fastest & most complete genealogy program. Designed specifically for the Mac. Fully integrated data entry, search, select, list, chart printing. Features: descendant, pedigree, group charts, extensive notes, LDS & user defined fields. Compatible w/*MacWrite, Macterminal, Microsoft File*, supports Data Transfer, 60% faster. $145. Call/write for free info:
Applied Ideas, Inc., P.O. Box 3225, Manhattan Beach, CA 90266, 213/545-2996

Family Heritage File
Most powerful genealogy program on the Mac. Licensed version of *Personal Ancestral File*,™ produced by the LDS Church.
- Mac user interface • Supports all Macs & hard disks except 128K Mac
- 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

FAMILY ROOTS™
Do it YOUR way! Huge variety and capacity for your family history. Makes pedigree charts and indices. Phased releases will add group sheets, searches and much, much more. Standard Mac screens/mouse. Free brochure and sample printouts. Satisfaction guaranteed. Currently $72.50, add $22.50 per each new release (total $185) MC/Visa/AE.
Quincept, Box 216, Lexington, MA 02173, 617/641-2930

○ *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. $179.
B. Knick Drafting, 313 Marlin Pl., Melbourne Beach, FL 32951, 305/727-8071

MGMStation–Prof. CAD

by Micro CAD/CAM, Inc. is a high powered CAD program for the Mac similar to AutoCAD. MGM boasts over 140 powerful functions including: *x-y* coordinate input, polar or digital data input, 100 power zoom accurate to 4 decimals, tangent drawing tools and much more! $799. Demo disk and/or VCR tape avail.
CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484

Perspective Drawing

GridMaker:™ persective grid construction set. Create a variety of 3-dimensional grids that can be used within *MacDraw* or *MacDraft* as a guide for perspective drawing. Grid shape, dimensions, line density, rotation, and perspective are independently controlled. *Switcher* compatible $49. Visa/MC.
Folkstone Design Inc., P.O. Box 86982, N. Vancouwer, B.C., Canada V7L 4P6, 604/986-8060

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 seperate 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

GraphPack Plot Library

Appends to a Microsoft FORTRAN program to generate charts/graphs. Includes industry standard calls (plot, line, axis, etc.) and 3D hidden-line routines. Direct interface to clipboard and printers (e.g. LaserWriter) for high-quality output. Graphs can be edited in *MacDraw.* Source code included. $69.95.
Lipa Software, 165 Harcross Rd., Woodside, CA 94062, 415/366-0547

GraphicPainter™

Already proven in industry and university use! 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. Full I/O of data & graphics, undo & manual, 512K+ req. $50.
Greg Brasel, P.O. Box 4274, Chesterfield, MO 63006, 314/256-3317

MapMaker Business Map

Uses boundary definitions to draw maps to required size. Includes U.S. by state and county, world by country, and census data. Assigns data, unique pattern/color to each region. Can combine areas into custom regions. Import/export data (e.g. *Excel*™) and graphics (Paint or PICT). Print on LaserWriter or in color on ImageWriter II. Color display on Macintosh II. $295.00
Select Micro Systems, Inc., 40 Triangle Center #211, Yorktown Heights, NY 10598, 914/245-4670

○ *Health*

Healthcare Management

Creators of *DentalMac, MediMac, ChiroMac* & *OptiMac.* First software line exclusively for health-care industry. Software utilizes Macintosh interface. Single-user & multiuser versions available. Practice management software that generates additional income and enhances patient relationships. Send for information or DemoDisk kit.
HealthCare Communications, 245 South 84th St., #301, Lincoln, NE 68510, Toll-free: 800/422-6227

Nutritional Software

Take steps to eat more sensibly. Analyze diets for nutritional content (calories, sodium, etc.) *Nutri-Calc Plus*™ includes 32 nutrients, 1700+ foods (3000 avail.). Offers RDA Comparison, tracks histories, energy analysis. $225. *Nutri-Calc*™ analyzes 8 nutrients, 900+ foods. Plots progress, analyzes recipes. $95. Both have brand name & fast foods, NCP.
CAMDE Corp., 4435 S. Rural Rd., #331, Tempe, AZ 85282, 602/821-2310

FamilyCare Software™

Illness? Injury? Learn what to do when your child is hurting. *FamilyCare* will help you diagnose the problem and tell you how to get proper medical help–anytime day or night. Developed by expert pediatricians, *FamilyCare* is comprehensive, reliable, and easy-to-use. Ages newborn–15 yrs. $180, guaranteed.
Lundin Laboratories, 29451 Greenfield Rd., #216, Southfield, MI 48076, 800/426-8426

○ *Imports*

Japanese Software

E/G Word (Ergosoft Inc.) is a Japanese word processor; can turn romaji sentences into kana & kanji. $399. Req. 512K. Also:
E/G Bridges $249. *JAM* (A & A Co. Ltd.) Input Japanese in major Mac application software, $149.
- *Japanese Clip-Art* Vol. 1 & 2, $79.95 ea.
- *Mac Calligraphy* simulates medium of ink & brush on paper $149.95. (Enzan Hoshigumi Co.)

Qualitas Trading Co., 6907 Norfolk Rd., Berkeley, CA 94705, 415/848-8080

○ *Investment*

Profits!

Powerful, very fast, very flexible, *new* program allows you to pick winning trades, avoid the losing trades. Charting tools include stochastics, MACD, moving averages, RSI, and much more. For the stock, commodities, or options investor or broker.
Button•down Software, P.O. Box 19493, San Diego, CA 92119, 619/463-7474

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 & is 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 90064, 213/312-0154

○ *Languages*

FORTRAN + Mac Interface

McFace Tools 3.0 provides Fortran programs with Mac interface by modifying only three lines of code. Includes full DA, file, & edit menus and multiple windows. Source code included *McFace. sub* 3.0, allows further flexibilitypicture editing, alerts, dialogs, & more without a toolbox call. Tools $119, sub $40. Both $149.
Tensor Laboratories, P.O. Box 9723, Stanford, CA 94305, 707/763-7873

LISP Development System

MacScheme+ Toolsmith™ has what you want for interactive development:
- Native code compiler
- Stand-alone applications
- Easy-to-use window & menu objects
- Multitasking & interrupts
- A standard LISP dialect: Scheme

1 RAM, $395. Interpreted MacScheme™ still only $125. (Req. 512K)
Semantic Microsystems, Inc., 4470 S.W. Hall St., #340, Beaverton, OR 97005, 503/643-4539

○ *Management*

GYST

The only information management program for salespeople and other professionals
- Client organization systems
- Record each contact with a client
- Integrated appointment calendar
- Powerful report generator
- Mail merge

The productivity of your entire office will improve. $99.95.
Contact Systems, Inc., 509 Riverview Dr., Marietta, GA 30067, 404/953-8242, 800/322-4588

○ *Market Research*

MaCATI™

Computer Assisted Telephone Interviewing pkg. Survey/market research, political polling/telemarketing.
- Auto dialing
- Handles skip patterns
- Call records/appts.
- Statistics
- Networks interviews
- 500 questions/2yrs. in devlpmt.

$795 for 2 station pkg. $200 ea. additional pkg.
PSRC Software, Bowling Green State University, Bowling Green, OH 43403, 419/372-2497

○ *Mathematics*

PowerMath
Solves problems from simple algebra to complicated calculus expressions. You can differentiate, integrate, plot polynomial expressions, manipulate matrices, solve simultaneous equations, and create custom functions. If you are a student, engineer, or work with math, you'll love the easy-to-use versatility. Retail $100.
Central Products Corp., 2211 Norfolk #518, Houston, TX 77098, 713/529-1080

○ *Medical*

Medical & Dental Mgmt.
Solo or multipractitioner office includes patient (responsible party) billing, recall, paper/electronic claims, aging, collections, SuperBill, labels, diagnostic history, *Word/MacWrite*, audit & productivity reports. 24-hr. support. 512K+ hard disk or XL, MacSE & II. *Mac Office.* Demo from $100. AMEX/Visa/MC. 2,400+ dealers.
CMA Micro Computer, 55888 Yucca Trail, P.O. Box 2080, Yucca Valley, CA 92286-2080, 619/365-9718

○ *Networking*

Connections Newsletter
Provides in-depth information on networking Macs to each other, to PCs, minicomputers, and mainframes. This timely resource contains product reviews, user articles on network planning, and implementation & intros to networks and *AppleTalk.* If you're thinking of networks, you need *Connections!*
Connections, P.O. Box 5894, Fullerton, CA 92635, 714/738-1492

○ *Payroll*

Time Saver Payroll™ V.3.0
COMPLETE FULL-FEATURED Payroll System
• *Calculates* • *Accumulates* • *Prints reports* • Salaried, hourly, & comm. wages • 10 deductions, incl. fed. & state taxes • Tax tables easily edited by user • Monthly & quarterly reports, incl. 941, FUTA/940, SUTA • Prints checks and W-2 forms • *Flexible–easy to use!* Req. Microsoft *Excel* $75 + $3 s/h. MC/Visa/Chk. Demo $10 + $3 s/h.
Western Software Associates, 110 El Dorado Rd., Walnut Creek, CA 94595, 415/932-3999

Payroll Made Easy!
The AATrix Payroll™ program for the Macintosh generates federal and state tax reports and bookeeping records. The program also calculates FICA, insurance deductions, federal and state withholdings tax. Prints out paychecks on your custom designed forms. Price: $99.
AATrix Software, P.O. Box 217-A, Grand Forks, ND 58206, 701/746-7202

○ *Plotter Drivers*

Plot-It
Plots *MacDraw, MacDraft, MacProject, MacPaint,* etc. on popular Apple, HP, or Houston Instruments pen plotters in sizes A,B,C,D, and E. Use for accurate engineering and architectural drawings or color data plots. Flexible color interface and scaling. $125. See review in October '86 *Macworld.*
Mesa Graphics, P.O. Box 600, Los Alamos, NM 87544, 505/672-1998

○ *Printer Drivers*

Printer Choice for Mac
MAC DAISY LINK,™ a new member of the GDT printer driver family, is a single driver that allows any daisy wheel printer or properly interfaced typewriter to be used w/any Mac. User configurable ($82).
THE PRINT-LINK™ continues as the printer-specific family member that supports a variety of dot matrix printers (9 & 24 pin) & ink jet printers. Printers too numerous to list ($62). Both install using Choser. Mac to printer cable $22.95, LQ adapter cable $15.
GDT Software, P.O. Box 1865, Point Roberts, WA 98281-1865

○ *Project Management*

AEC Information Manager™
Powerful, easy-to-use project-oriented database designed specifically for the *design* and *construction* industries. Allows project managers to schedule, organize and track: • Correspondence • Transmittals • RFI's • Revisions • Change Orders • Submittals • Shop Drawings • Punch Lists • Projects. First of its kind!
AEC Management Systems, Inc., 20524 Amethyst Ln., Germantown, MD 20874, 301/428-3694

○ *Programming Tools*

Programmer's Extender™
Compiled libraries speed up Macintosh application development. Vol 1: windows, menus, text edit, scroll bars, dialogs. Vol 2: list mgr. support, text & graphics printing & I/O, marquee, lasso, zooming, & tiling windows. Avail. for *LightspeedC, TML Pascal,* & *Lightspeed Pascal.* $89.95/volume.
Invention Software Corp., P.O. Box 3168, Ann Arbor, MI 48106, 313/996-8108

Extender GrafPak™
Compiled libraries for creating professional quality graphs in your applications. Line, scatter, bar, column, log, semi-log plots. Customizable tick marks, plot symbols, grid patterns. Multiple curves & patterns. Available for Turbo, Lightspeed, & TML Pascal $69.95.
Invention Software Corp., P.O. Box 3168, Ann Arbor, MI 48106, 313/996-8108

○ *Public Domain*

Mac Software from $3.00
The best, most complete public domain & shareware collection available, with over 360 disks. Everything from business programs to games and desktop publishing. We offer the best after-the-sale service, with toll-free order lines, overnight & second-day delivery, technical support hotline. Call or write for free 128 pg. catalog.
Educomp, 742 Genevieve, Suite D, Solana Beach, CA 92075, 800/843-9497, 800/654-5181 (in CA), 619/259-0255 (for info.)

PD Software Club
We have the best in proven updated PD software. We scour all the national and local sources for you. Our 50 disks contain only current versions of over 1000 items. $2 gets you our catalog & a $2 coupon. $20 annual membership fee gets you monthly newsletters and 2 FREE disks of fonts and DAs. Monthly disks $6.95, library disks $8.95. Visa/MC.
Translatum International, 1730 E. Oltorf St. #127, Austin, TX 78741, 512/442-0266

2300+ Pgrms•Tips•Nwsltr
No club has more programs or a better newsletter. Members in 31 countries. 1-time $20 subscription gets you our intro disk with 10 terrific prgms plus a 3-disk description of our HUGE library of over 2300 pgrms PLUS our quarterly newsletter filled with tips and new programs. Members pay $9 for any disk (plus $1 s/h).
PD Mac, Dept. 110, P.O. Box 5626, Sherman Oaks, CA 91423

Affordable Mac Software
Outstanding collection of public domain software covering all topics for only $5 per disk. No minimum req. Disks are packed to the brim with the latest software releases. Double sided 800K disks are also available. For free membership, bulletins & a beautifully illustrated catalog, send $1 to:
MCUS, P.O. Box 6963, Dept. 55, San Jose, CA 95150, 408/723-3388

More Bytes for your Buck!
Choose from our HUGE library of 1800+ programs, games, DAs, fonts, & artwork at only $3.50 per disk or 3/$10! No membership fees, no minimums, no gimmicks. Just great software at honest prices. Disks are packed full with the latest releases. Send $2.50 for disk catalog & 5 free programs! MC/VISA. See display ad this issue!
Budgetbytes,™ P.O. Box 2248, Topeka, KS 66601, 913/271-6022

○ *Real Estate*

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, 930 Laguna St., Santa Barbara, CA 93101, 805/966-3666

Investment Analysis v. 5.1
From RealData, the leader in real estate software. Latest tax reform rules incl. in powerful sensitivity analysis for income property. Detailed 10-yr. report of income, expenses, financing, depreciation, cash flows, tax consequences (incl. passive losses), future value & resale, IRR/FMRR/cash-on-cash/cap. Rate, lease analysis & more. Flexible, easy to use. Req. *Excel,™ Works,™* or *Jazz.™ $195.* MC/Visa/Amex/COD
RealData, Inc., 78 North Main St., South Norwalk, CT 06854,503/255-2732

The Appraisal Office

Developed by professional appraisers just for the Mac. Completes the new URAR Residential Form quickly & accurately. Menu-driven, shows form on screen, performs all calculations. Stores, searches, retrieves & pastes comps to/from database. Includes billing system. Req. *Excel*™ $395. Also avail. *Appraisal Office Jr.* for forms processing only $250. MC/Visa/Amex/COD welcome.
RealData, Inc., 78 North Main St., South Norwalk, CT 06854, 503/255-2732

Income Property Analysis

REMS Investor 2000, the only CCIM Recommended Software for the Mac, performs multi-year cash flow projections, IRR, FMRR. Partial year, powerful financing. Fully updated for the new tax law. Excellent tool for realtors, bankers, CPAs, investors. Uses all Mac interfaces, no templates. Demo disk available, 30-day money-back guarantee! $395.
REMS Software, 3860 159th Ave. NE, Suite 110, Dept. MW-1, Redmond, WA 98052, 206/883-7000

Property Management

Complete manager's tool for residential & commercial properties. Features include full accounting & budgeting, operating statements, & easy starting balances; Rental, Repair & Tenant Managers; auto. rent increase & late fees; over 40 reports per IREM specs; *Personal Investor $595, Professional $1,295.*
MacLord Systems, Inc., 9487 Magnolia Ave., Riverside, CA 92503, 714/687-1919

TRACK™

Multi-user database for tracking clients & prospects; contact history, mail labels & more. Also includes electronic index cards, appointment calendar, auto-dialer, mortgage calculator, expense log, tickler & terminal function. 1 of 8 new products in 1987. $395.
Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

FOR SALE™

Multi-user farming system for increased sales and listings. Maintain database on all property types including property description and owner. Search by any field; mail labels; contact history; & more. Includes appointment calendar, auto-dialer, & tickler functions. Great for market evaluations! $695.
Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

LIST™

Multi-user property listing system maintains listing info for lease & sale properties including pictures, keeps comparables for CMA's. Search any field. Reports & graphs. User-customizable. Like having your own multiple listing system. 1 of 8 new products in 1987, $795.
Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

LEAD™

Multi-user management system for the solicitation of owners selling their own properites. Classify leads. Sales forecasts and YTD reports & graphs. Also includes electronic index cards, auto-dialer, & tickler functions. $595.
Softworks, Inc., P.O. Box 2285, Huntington, CT 06484, 203/926-1116

MacAppraiser™

Easiest and fastest processor on the market. Stand-alone program completes URAR, CONDO and INCOME. Forms excatly duplicated on screen, unfilled areas highlighted, word-wrap, drawing capability for URAR sketch; performs all calculations including sketch area, batch printing; super fast scrolling. Complete URAR in 15-30 min. $395.
Bradford and Robbins, 400 East Remington, #B220, Sunnyvale, CA 94087, 408/746-3988

○ *Rental*

The MacLibrary, Inc.

Try before you buy....low 16-day rental rates that apply towards purchase–no obligation to buy. We offer a huge selection of Mac software. All the popular programs plus plenty of hard-to-find titles. No fees. Free membership. Special discounts for rapid returns and FREE gifts for frequent users. Plus FREE assistance HOT LINE. Whatever you're looking for, if it was made for the Mac, we probably have it...at LOW RATES.
The MacLibrary, Inc., 17280 Newhope St. #3, Fountain Valley, CA 92708, 714/957-5767, 800/426-2777 (CA), 800/622-4774 (Nat'l)

○ *Restaurant*

Restaurant Management

Total control for any size restaurant. System includes: inventory control, menu management, help screens, documentation, hotline support, $995. Accounts payable, accounts receivable, restaurant payroll, and general ledger. $125. Visa/MC Demo $25. Req. 512E & Omnis3. Dealers invited. Money-back guarantee.
Keller Systems Inc., 105 Narcissus St. #310, West Palm Beach, FL 33401, 305/833-3358, 800/458-8430

○ *Sales/Marketing*

Market Master for the 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

○ *Scientific*

Tools for Scientists

Two low-priced products that enhance the usefulness of your Mac. Our *Scientific Symbols Fonts* disks contain all the characters in IBM's Selectric™ symbols ball and more for $40. The *Spectral Analysis* package provides four basic functions: forward and inverse transform, power spectrum and autocorrelation for $75.
Probability Distribution, P.O. Box 27276, Austin, TX 78755-2276, 512/338-1250

○ *Security*

Advanced Copy Protection

The leading software manufacturers depend on Softguard copy protection. Introducing our *Protection Kit*, a complete copy protection system that runs on the Macintosh.

- Stops all copybusters
- FULL HARD DISK support
- No source code changes
- Compatible with all Macintosh systems. Free demo disk.

Softguard Systems, Inc., 2840 San Tomas Expwy. #201, Santa Clara, CA 95051, 408/970-9240

○ *Statistics*

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. Two data editors provided. Can read text files w/entries separated by spaces, commas, or tabs. $75 + $3 s/h.
Clear Lake Reseach, 5615 Morningside #127, Houston, TX 77005, 713/523-7842

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

○ *Stock Market*

Portfolio/Market Link

- *Stock Portfolio System*, a complete portfolio manager, incl. 9 reports, tie to Dow Jones or manual update. Han dles diversified investments.
- *Market Link*, auto fetch up to 120 quotes up to 8 times in unattended mode. Tie to DJ or Source. Bridge quotes to *Excel*.

Free brochure + 100% rebate offer.
Smith Micro Software, Inc., P.O. Box 7137, Huntington Beach, CA 92615, 714/964-0412

○ *Word Processing*

MacΣqn/Equation Writer

MacΣqn is a desk accessory equation processor that lets you include complicated mathematical equations in your technical documents. *MacΣqn* supports integrals, sums, products, multiline expressions, roots, super-& subscripts on the same character. Automatic character sizing, etc., $44.95 Educational discount avail.
Software for Recognition Technologies, 55 Academy Dr., Rochester, NY 14623, 716/359-3024

Macworld Best-Sellers

Business Software

Months on chart	Last month	This month	
28	1	1	**Microsoft Word** *Microsoft*
20	3	2	**Microsoft Excel** *Microsoft*
8	2	3	**Microsoft Works** *Microsoft*
16	4	4	**PageMaker** *Aldus*
6	–	5	**SuperPaint** *Silicon Beach Software*
1	–	6	**MacMoney** *Survivor Software*
2	9	7	**Cricket Draw** *Cricket Software*
1	–	8	**WriteNow for Macintosh** *T/Maker*
25	7	9	**MacDraw** *Apple Computer*
12*	8	10	**MacPaint** *Apple Computer*

Education Software

Months on chart	Last month	This month	
12	2	1	**KidsTime** *Great Wave Software*
12	1	2	**Math Blaster** *Davidson and Associates*
10	4	3	**Typing Tutor III** *Simon and Schuster Computer Software*
4	5	4	**Early Games** *Springboard Software*
2	–	5	**Typing Made Easy** *QED Information Sciences*

Entertainment Software

Months on chart	Last month	This month	
12	1	1	**Flight Simulator** *Microsoft*
8	2	2	**Dark Castle** *Silicon Beach Software*
12	3	3	**MacGolf** *Practical Computer Applications*
1	–	4	**Ferrari Grand Prix** *Bullseye Software*
1	–	5	**Smash Hit Raquetball** *Primera Software*

Networking/Data Communications

Months on chart	Last month	This month	
12	1	1	**AppleTalk** *Apple Computer*
8	2	2	**TOPS** *Centram*
4	4	3	**AppleShare** *Apple Computer*
11	3	4	**MacServe** *Infosphere*
18	–	5	**MacTerminal** *Apple Computer*

Hard Disk Drives

Months on chart	Last month	This month	
8	1	1	**Apple Hard Disk 20/20SC** *Apple Computer*
12	2	2	**DataFrame 20** *SuperMac Technology*
1	3	3	**Macintosh Internal HD-20SC** *Apple Computer*
10	–	4	**HyperDrive 20** *General Computer*
1	–	5	**MacBottom 20** *Personal Computer Peripherals Corporation*

Books

Months on chart	Last month	This month	
12	1	1	**Excel in Business** *Douglas Cobb, Microsoft Press*
11	2	2	**Inside Macintosh** *Addison-Wesley*
2	5	3	**The Macintosh Bible** *Dale Coleman and Arthur Naiman, Goldstein & Blair*
1	–	4	**The Macintosh Advisor** *Bencion Calica and Cynthia Harriman, Howard Sams Company*
2	–	5	**MacBook** *Arthur Naiman, Hayden Book Company*

Product Watch

Editors' choice:
Other recent products of particular interest.

MultiFinder *Apple Computer* multitasking Finder

VersaCAD *Versacad Corporation* computer-aided design software

WalkMac *Colby Computer* portable Mac with gas plasma display

Source: Exclusive InfoCorp survey of more than one hundred Macintosh retailers and selected mail-order suppliers. Covers sales during June 1987.

** Formerly bundled with the Mac.*

The Word is Out...

"Absolutely AMAZING word processing program. I want it WriteNow!"

Robert Forras,
MacTimes

"WriteNow feels perfect.... It's hot. Highly recommended. This is THE word processor to use if you use a Mac."

John Dvorak,
San Francisco Examiner

"Right now, WriteNow comes the closest to delivering on the promise of future word processing."

Michael Miller,
InfoWorld

"This is the word processor that we designed and built Macintosh for."

Steve Jobs,
NeXT Inc.

"T/Maker's WriteNow For Macintosh is a polished word processor that retains the elegance of MacWrite but adds features like multiple windows, footnotes, multiple columns, and a spell checker."

Dan Farber,
MacWorld Magazine

Best New Word Processor
MacUser Magazine 1986

"...WriteNow adds up to a great new word processor. ...its ease of use and speed put it way ahead of Microsoft Word and MacWrite for most jobs."

Vicky Jo Varner,
The MACazine

WriteNow
FOR MACINTOSH™

Performance Word Processing for the Macintosh

To learn more, see your local computer dealer today, or call or write to:
T/Maker Company, 1973 Landings Drive, Mountain View, CA 94043 (415) 962-0195

Suggested retail price of WriteNow For Macintosh is $175. Runs on any Macintosh.

T/Maker®

Pagemaker 2.0 now imports & exports WriteNow documents.

T/Maker is a registered trademark of T/Maker Co. WriteNow is a trademark licensed to T/Maker Co.
Macintosh and MacWrite are trademarks of Apple Computer, Inc.

Circle 332 on reader service card

Macworld World Class Award – Best Input Device

Turbo Mouse™. Twice the speed, in half the space.

Finally, a Mouse that's really quick. One that doesn't require a lot of room on your desk. One that's easy to use, even on a desk full of papers. Turbo Mouse from Kensington.

Turbo Mouse turns mouse technology upside down. It puts the mouse ball on top, rather than on the bottom like a standard mouse. You move only the mouse ball, not the whole mouse. That's why Turbo Mouse is quicker, quieter, and easier to use.

Turbo Mouse doesn't get its speed only from this ease of use. It has an automatic acceleration feature that senses the speed at which you are working and moves the cursor further when you move the mouse ball faster.

Turbo Mouse has two mouse buttons – one for right-handed users and another for lefties. And, since it's only 4" x 6", Turbo Mouse will fit neatly at the end of your keyboard.

For Macintosh™, Mac Plus, Apple® IIe, or IIc, ask for model 62350.
For Macintosh SE, Mac II, or Apple IIGS, ask for model 62352.
For more information, or a dealer near you, call (800) 535-4242.
In NY (212) 475-5200.

KENSINGTON™

© 1987 Kensington Microware Ltd.

Circle 11 on reader service card