

MACWORLD

August 1987 \$3.95
Canada \$4.95

The Macintosh™ Magazine

The Mac Goes MS-DOS

*Three paths
to connectivity*

**9 Tape Drives for
Hard Disk Backup**

**Desk Accessories
Boost Performance**

**A Printing Primer
for Publishers**

**Macintosh and
the Music Business**



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.

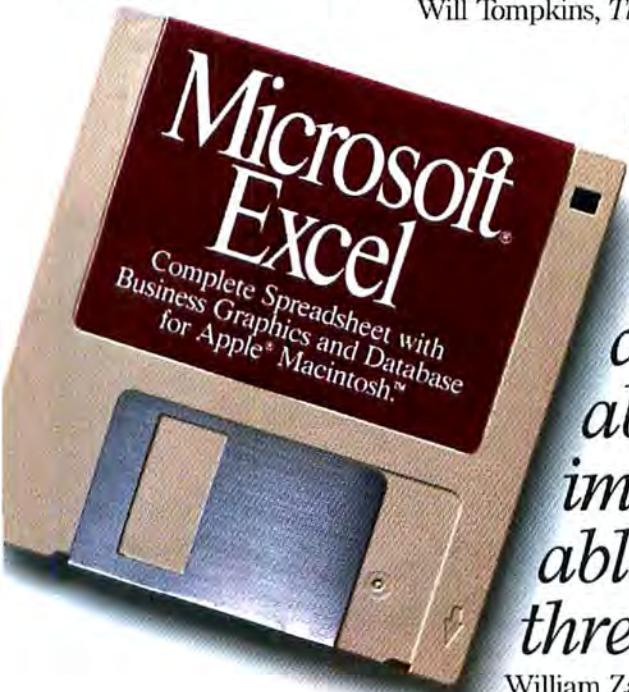
Microsoft and the Microsoft logo are registered trademarks of Microsoft Corporation. Apple is a registered trademark and Macintosh is a trademark of Apple Computer, Inc. 1-2-3 is a registered trademark of Lotus Development Corporation.

“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

August 1987

The Macintosh™ Magazine

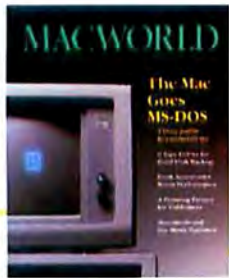
Departments

- 11 Mac Bulletin**
Late-breaking news.
- 17 David Bunnell**
- 25 Letters**
- 41 Commentary/Jerry Borrell**
- 49 Contributors Notes**
- 53 Steven Levy**
- 69 Verbatim**
Former Apple evangelist Guy Kawasaki looks back.
- 167 New Products**
A quick look at new Mac software, hardware, and accessories.
- 181 How To/Quick Tips**
The SCSI peril, word processing in the margins, longer keyboard cables, a mainframe text tip, and more.
- 193 How To/Getting Started with Macintosh Graphics**
From *MacPaint*'s pencil to PostScript programming—graphics concepts explained.
- 205 How To/Insights on More**
Make your outlines *More* flexible, *More* efficient, and *More* appealing.
- 217 How To/Mac Graphics Tools**
Exploring *Cricket Draw*.
- 226 Updates**
Software upgrade news.
- 239 Where to Buy**
Information on products in this issue.
- 244 Best-Sellers**

93 Macworld News

- **Real Estate Software Boom** New tools for brokers, investors, and buyers.
- **Teaching English with the Mac** The English Consortium stretches students' language skills.
- **Mac II and 3-D** The first color 3-D programs arrive.
- **Robots and Beyond** The Mac stars in a state-of-the-art traveling technology show.

Plus reports on desktop video, new *Inside Macintosh* volumes, favorite desk accessories, the Mac in Yemen, and more.



On the Cover

If you're surprised to see this IBM on the Macworld cover, wait till you see a PC program on the Mac screen. For details on IBM connectivity, see p. 108. (Photograph by David Bishop.)

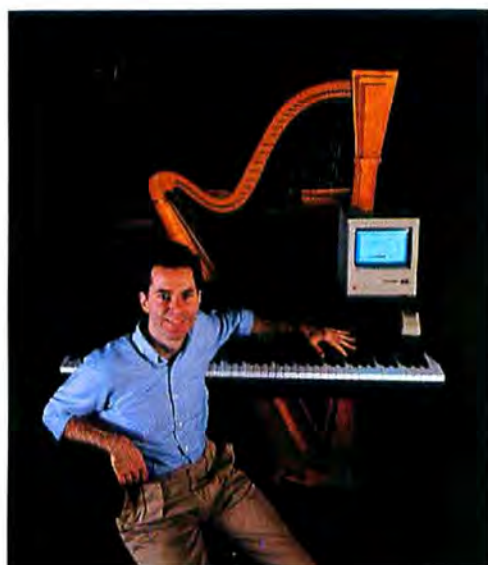


Catch up with the galactic hitchhiker—p. 93.



Features

- 108 The Road to MS-DOS**
New hardware and software products that bridge the gap between Apple and IBM.
- 114 First Edition**
A printshop primer. Put your publication in print without putting yourself in hock.
- 120 A DA in the Life**
Better living through desk accessories.
- 128 Safety Net for Storage**
Walk away from disk crashes: nine tape drives for easy backup.
- 138 Top of the Charts**
The Mac's a hit in the music biz: sound advice from top pros.



In the pit with the New York City Ballet's Tom Moredock—p. 138.

Reviews

- 146 A Portable Finder**
DiskTop Finder alternative.
- 148 XPress! XPress! Read All About It!**
XPress desktop publishing.
- 150 Spelling Problems**
Spellswell, from Working Software.
- 151 The Perils of Normandy**
Patton vs Rommel war game.
- 151 Easy Ways to Excel**
Excellent Exchange templates for *Excel* applications.
- 153 A Programming Language**
STSC's *APL Plus*.
- 154 Billing Your Clients**
Let *Project Billing* mind the meter.
- 156 Made to Specifications**
MacSpec word processor for technical documents.
- 157 Seize the Data**
Data Desk statistical analysis.
- 158 Fast Relief for Security Headaches**
Hard Disk Partition organizes and protects hard disk files.
- 159 Gender-Specific Leather and Lace**
Leather Goddesses of Phobos and *Moonmist* interactive fiction.
- 160 High-Power Communications**
inTalk communications and terminal emulation.
- 162 Making It Big**
Zoom in with *inLarge*.

Don't let disk crashes bring you down. Protect your data with a tape drive—see "Safety Net for Storage."

MACWORLD

David Bunnell

Editor-in-Chief

Jacqueline Poitier

Director/Art and Design

J. Kelley Younger

Editorial Director

Karen Wickre

Editorial Administrator

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: Nancy E. Dunn

(Departments), Janet McCandless

(Reviews)

East Coast Editor: Brita Meng

(617/574-9344)

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

Assistant to the Editorial Director:

Daniel C. Berkowitz

Editorial Secretary: Sharon Roe

Contributing Editors:

Danny Goodman, Jim Heid,

Steven Levy, Erfert Nielson,

Lon Poole

Art and Design

Designer: Susan Howard

Associate Art Director:

Joanne Hoffman

Senior Design Associate: Leslie Barton

Design Associate: Victoria Floyd

Production

Director: Herbert Linden

Senior Production Manager:

Lee R. Trevino

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

Publisher: Shirley Gines

Special Projects: Jeffrey S. Glines

Administrative Assistant:

Emily Bower

James E. Martin

Publisher

Marketing and Advertising Sales

National Advertising Manager:

Larry Hilderbrand

Regional Advertising Manager:

No. California (San Francisco):

Penny Rigby (415/546-7722)

No. California (San Jose),

Northwest: Patricia Navone

(415/546-7722)

Midwest: Shannon Dolan (312/827-4477)

Southeast: Judy Sutter

(404/394-0758)

Eastern Advertising Manager:

New England: Linda Holbrook

(617/879-0700)

New York: Gale Paterno (201/967-1350)

So. California, Southwest, Texas:

Cynthia L. Ramsey (213/201-5900)

Directory/6-Page Ads: Niki Stranz

Circulation

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

Herbert Linden

Vice President

James E. Martin

Vice President

Jacqueline Poitier

Vice President

Cheryl Woodard

Vice President

Andrew Fluegelman

1943-1985

Founding Editor

August 1987**Volume 4, Number 8**

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. 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 80522-4529. Second-class postage paid at San Francisco. POSTMASTER: Send address changes to *Macworld*, P.O. Box 54529, Boulder, CO 80523-4529. 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.

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.



A disk each month

PACKED with PROGRAMS

Over 500,000 sold
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.

Circle 537 on reader service card



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

ILL BYTE!!!
SAVE \$89.90 → 12

I'm a Macintosh enthusiast who wants more.
Disk Issues \$89 ☐

6 Disk Issues \$59 ☐
(Add \$2 per issue in foreign countries, except Canada and APO)

3 Disk Issues \$36 ☐

1 Disk Issue \$14.95 ☐

Name _____
Address _____
City _____

Type of Computer _____
☐ Payment enclosed.

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

Signature _____

Account No. _____

State _____ Zip _____

(Please make checks payable to UPTIME.)

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

See us at
MACWORLD
Booth #512

ADB
Version
now
available!

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.

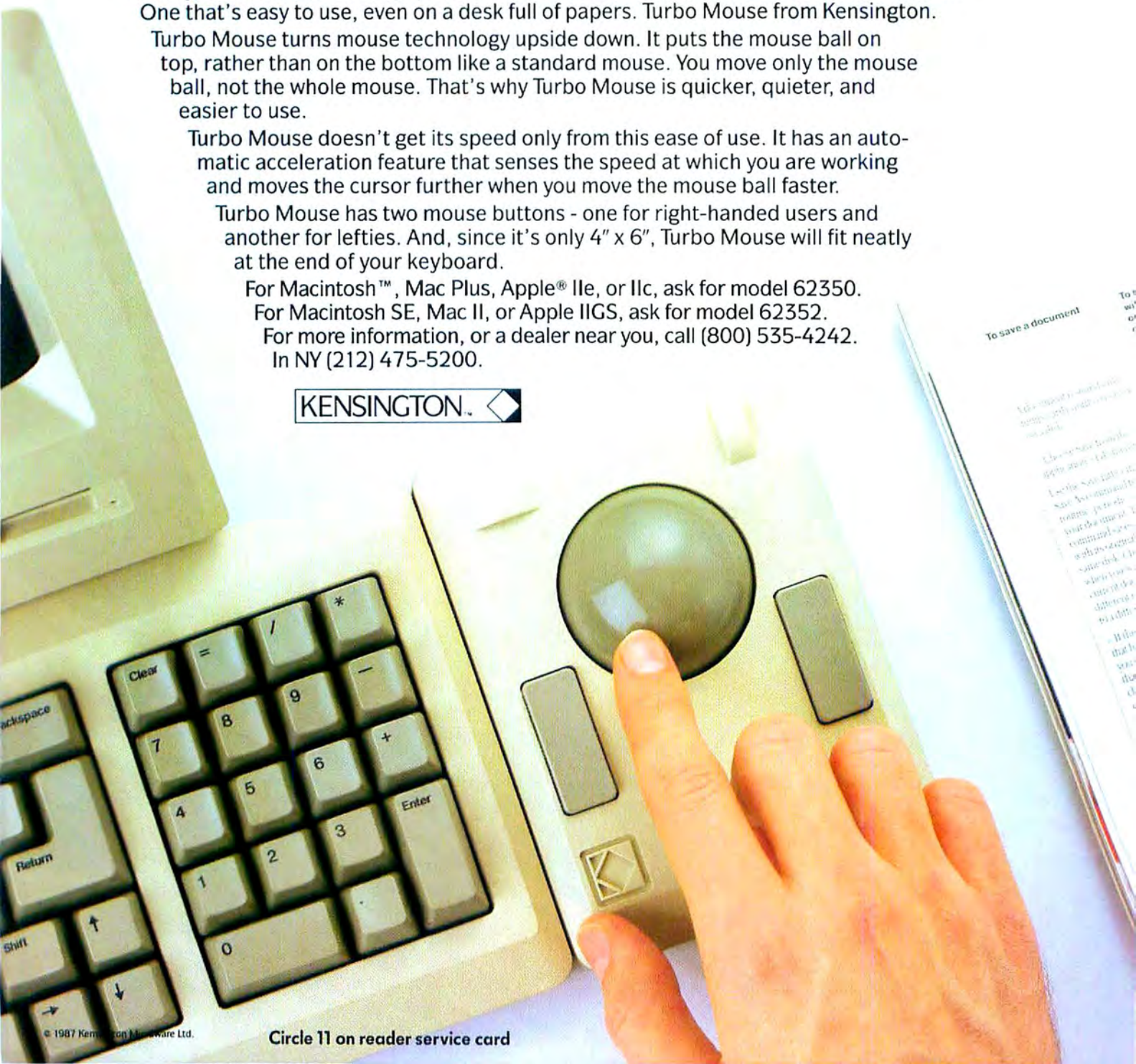
For Macintosh™, Mac Plus, Apple® IIe, or IIc, ask for model 62350.

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. 





Check your in-box.

Now check ours.

THINK Technologies proudly presents InBox,[™] winner of the MacUser Editors' Choice Award for 1986 as the best new desktop communications package. The InBox family of products can be used on AppleTalk[™] and NetBIOS LANs to transfer spreadsheet, word processing, database, graphics, publishing and other files from Mac to Mac, Mac to PC, PC to Mac and PC to PC. You can also create, send and receive memos and phone messages. All while running other applications. Plus, new Version 2.0 supports multiple message centers for larger networks and no longer requires a dedicated Mac. Now you can share information, communicate more and meet less. For more information or the name of the dealer nearest you, call 1-617-863-5595. Or write to us at the address below.



THINK Technologies, Inc.

420 Bedford Street, Lexington, Massachusetts 02173

InBox is a trademark of THINK Technologies, Inc.

Macintosh is a trademark of McIntosh Laboratory, Inc. and is used

by Apple Computer, Inc. with its express permission.

AppleTalk is a trademark of Apple Computer.

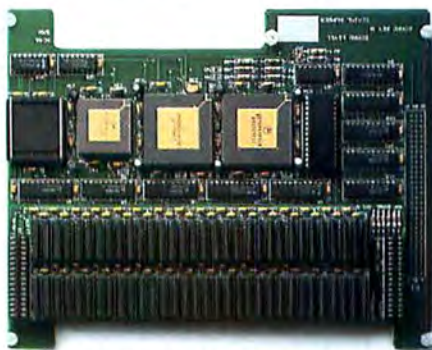
THINK



Macintosh SE. The perfect place to start building—equipped with a built-in 20MByte hard disk (or a second internal floppy) and one internal expansion slot.



Plug a card into the SE and make a quick connection with mainframes and networks.



Floor it. In a Macintosh SE, a 68020 accelerator card gives you license to exceed the speed limit.



Add a 5.25" disk drive, and (with the right card) you can use information created on IBM or compatible PCs. Or run MS-DOS programs.

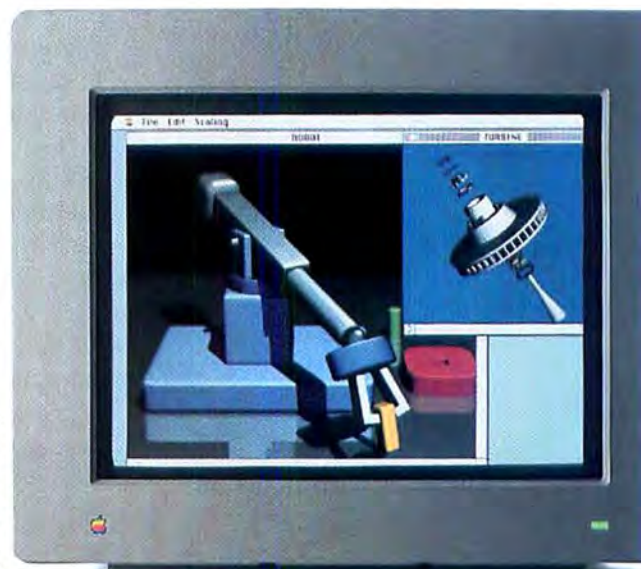


A new keyboard, re-designed for the new generation of Macintosh computers.



In scientific or engineering applications, a special card can connect an SE or a II to lab instruments.

The new AppleColor® High-Resolution RGB monitor can create brilliant hues and true gray scale on your Macintosh II. In finely-detailed 640 x 480 pixel resolution. Also available: a 12" monochrome monitor.



How to build your

You've heard about them. You've read about them. By now, you've probably even seen them.

Our latest leaps in technology, the new Macintosh™ SE and Macintosh II personal computers, have been getting their share of press.

But to add to what you may already know, we'd like to tell you more about their most powerful feature: expandability.

It's something we made possible by adding expansion slots. So you can easily customize your Macintosh to meet the demands of any business.

You can, for example, set up a system that's perfect for major-league number crunching. Or add features to give you even greater power for Apple Desktop Publishing, like displays as big as 21 inches.

The SE sports one expansion slot.

While the Macintosh II takes the idea of expansion to the extreme—with six 32-bit NuBus slots. Which have the good sense to configure themselves, and require you to do nothing more than plug in the options of your choice.

Such as an 80286 co-processor card that lets you run programs written for MS-DOS computers. And a video card that produces near-photographic images

presenting the Apple Extended Keyboard. Complete with 15 programmable function keys, as well as separate cursor and numeric keypads.

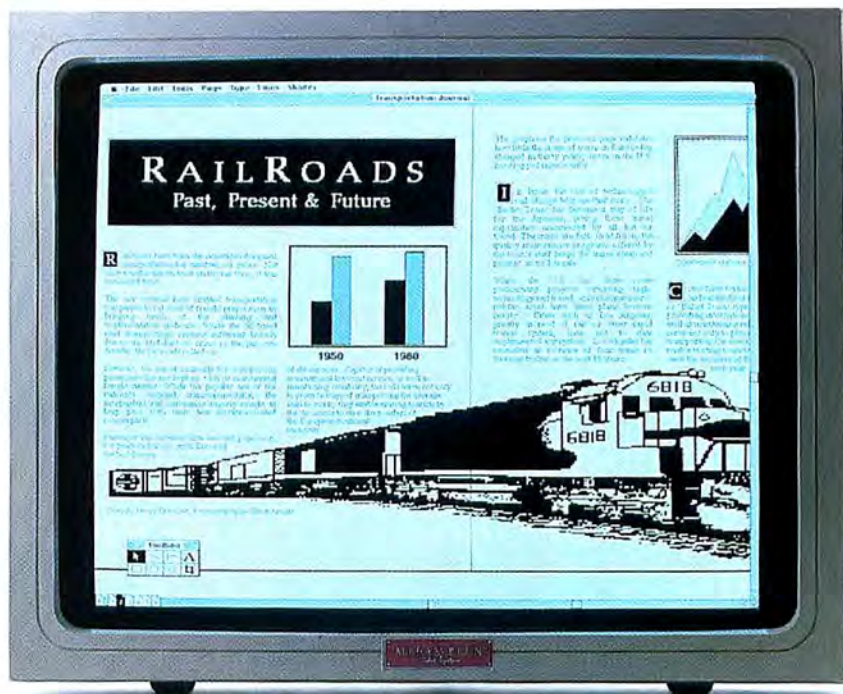
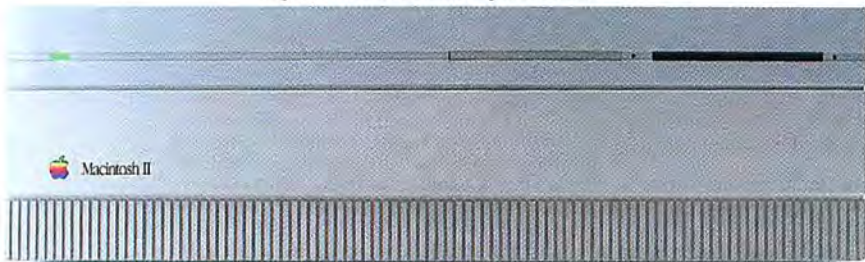


Via the expansion slots, you can add an AST co-processor card to either the SE or Macintosh II.

Using one of the II's six slots, you can tie into the company intranet or an office network like Ethernet.



Build yourself a power station. The Macintosh II has a lightning-fast 32-bit Motorola 68020 processor, a 68881 co-processor and six NuBus expansion slots.



With either the SE or the II, a large-screen monitor (available from other manufacturers) can give you the big picture. And show you up to two pages at once.



If you lose it, you can't use it. The Apple Tape Backup 40SC safeguards the work on your hard disk. Pronto.



The Macintosh II Video Card can generate colors 256 at a time, at up to eight bits per pixel. Using a palette of over 16 million colors.

own Macintosh.

from a palette of over 16 million colors.

The new Macintosh computers are built to be customized in other ways, too.

You can set up your SE with up to four megabytes of memory, so it has the power to run the most sophisticated programs. And configure the II with up to eight megabytes of memory on the main board, or a whopping 1.5 gigabytes using the expansion slots.

As for storage, there's plenty. With either computer, you get the option of an internal hard disk. Or an external one that can store up to 80 megabytes.

You can also choose between two keyboards. One of which has 15 function keys that come in handy when delving into special applications.

And as you might expect, we've done more than just give you a very good

way to build the Macintosh of your dreams.

We've also arranged to make sure you have the perfect workshop: an authorized Apple® dealer.*

Where you can get some expert assistance choosing your options.

So all you have to do is stop in. And get to work.



The power to be your best.™

THE NEW YORK TIMES:

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

new
VERSION 1.1

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.

Let's get technical box.

- 50 to 57,600 Baud
- Supports XMODEM YMODEM ASCII 1K BLOCKS MACHINARY 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

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.

MicroPhone™
Communications Software
for the Macintosh



MacUser Editor's
Choice Award



SOFTWARE
VENTURES

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

Circle 768 on reader service card

ity to the SE through clip-on MegaModules (\$99 each). The first two modules are MMVideo, which offers user-definable video capabilities—including NTSC, PAL, and external Mac standard signals—and MegaModule Developer Kit, which allows access to the Mac SE's data bus through a 60-pin connector.

More Fonts and Printers

Speaking of PostScript, two additional high-resolution plain-paper printers are coming on the market. From East Hanover, New Jersey, comes Varityper's VT600 (\$18,750), a 600-dots-per-inch laser printer that uses its 68020-based raster image processor to produce ten pages per minute. Compu-graphic of Wilmington, Massachusetts, is marketing the CG 400-PS (\$29,995), which is Agfa-Gevaert's 400-dpi laser printer with Adobe's Atlas raster image processor, a 20MB hard disk, and 73 fonts. Qume Corporation of San Jose, California, introduced Script-Ten, a 300-dpi, ten-pages-per-minute laser printer that offers emulation of the HP Laserjet Plus. Script-Ten comes in a 2MB version (\$4795) and a 3MB version (\$5295).

New fonts due out from PostScript originator Adobe Systems include New Gothic; Tiffany; Cooper Black; Carta (a cartographic font developed at Adobe); and two sets of Letraset display fonts—one set contains Stencil, Hobo, and Brushscript; the other offers Aachen, Revue, University Roman, and Freestyle Script.

The More DAs the Merrier

A forthcoming utility, *Suitcase*, will let you load up on fonts, F-keys, and desk accessories to your heart's content—without resorting to the Font/DA Mover shuffle. The small Init (which you install simply by dragging its icon into the System Folder) comes from Steve Brecher, who is also responsible for the shareware Finder-substitute *WayStation*. Originated by another programmer, Ron Risley, to break through the Mac's restrictions on the number of desk accessories, Brecher's current beta version provides instant access to practically unlimited quantities of fonts, F-keys, and desk accessories, all without any System installation. Savvy followers of utility programs may recognize *Suitcase* as the successor to *Da Thing* and *Da Mob*.

Suitcase requires 512K or more RAM and works with the recently introduced Mac SE and Mac II; the utility will not be copy protected.

In a departure from his past efforts, Brecher plans to commercially distribute the utility himself, this time posting only a demonstration version of *Suitcase* on information services like CompuServe.

PC Network Files Chapter 11

PC Network, a Chicago mail order hardware and software supplier, filed for protection from its creditors under Chapter 11 of the Federal Bankruptcy Code. The company, which grossed about \$40 million last fiscal year, at press time owed about \$5 million to creditors, including roughly \$1 million to consumers. Most of that

\$1 million is owed to customers whose purchases were on back order, according to company president Steve Dukker.

The company canceled all back orders in May (people who still want the goods must call in again). People who paid for unreceived goods with a credit card can make a charge-back claim to their credit card company (tips for charge-backs were printed in "Navigating the Mail Order Channel," *Macworld*, March 1987).

According to Dukker, the company is now operating profitably but remains saddled with debt from a business slump a year ago. Dukker predicts that the company will emerge from Chapter 11 this fall—as long as PC Network's reorganization plan is accepted by its creditors—with a little help from investors who were waiting in the wings at press time.

Desktop Publishing Network

The latest wrinkle in desktop publishing: *multiuser* page layout. Migent of Incline Village, Nevada, is introducing a page-makeup program that works on a network, so a group can compile a publication by committee. The \$395 product, due out this summer, promises to be the Mac's first multiuser electronic publishing system.

Tentatively named *Lighthouse*, the program provides all the standard features, such as kerning, adjustable leading, and positioning text and flowing it across pages, as well as advanced graphics capabilities and a substantial word processor with a thesaurus, a glossary, and a spelling checker. Text files can be shared to the para-

graph level and graphic objects to the single-object level (no two users can work simultaneously on the same paragraph or object). *Lighthouse*, which runs on the Mac Plus, the SE, and the Mac II, can also import text and graphics from MS-DOS files, providing yet another dimension of networking functionality.

Migent also publishes *In-House Accountant* and makes a portable battery-operated modem that works with the Mac.

More Graphics en Route

Deneba Systems of Miami, Florida, creator of *MacLightning*, *Voila*, and *Memorandum* (all published by Target Software), is preparing to launch *Canvas*, a \$195 graphics program in the same vein as Silicon Beach's *SuperPaint*. The new program, due out this summer, integrates bit-map graphic tools like those of *MacPaint* and object-oriented tools like those of *MacDraw*. The product, which allows designers to embed PostScript commands, comes with a desk accessory version that will later be released separately.

Add-on Ethernet

An adapter board developed jointly by Apple and 3Com will let the Macintosh II connect directly to a 10-megabits-per-second Ethernet network that enables Mac and IBM PC users to share the same files on a single server. The board, due out by the end of the year, will be marketed by Apple as *EtherTalk* (\$899); 3Com will market it as *3+Mac* (under \$600). A version for the SE is also forthcoming. □

Expert Assistant

Enabling Technologies' newly introduced statistical analysis program, tentatively titled *SmartStat*, not only supports color (how about color coding for better window management?) and accepts files in SCII, 1-2-3, and SPSS formats, but it comes with a unique form of help. Rather than the typical window of text, *SmartStat*'s desk accessory called the Assistant aids you interactively. The Assistant helps you decide whether to choose nonlinear regression, crosstabs, or two-way ANOVA analysis by asking you questions in simple English and drawing upon a built-in knowledge base to offer you alternatives.

The Assistant could be paired with knowledge bases on subjects other than statistics. In fact, Enabling Technologies may offer its intelligent help system to other developers to include with their programs.

Upgrades for SE and Mac II

Rumors of incompatibilities between the new Mac SE and Mac II and some existing application programs have been followed by a spate of announcements of forthcoming software updates. Microsoft has announced version 1.04 of *Excel*, which is Mac II and *AppleShare* compatible and free to registered 1.03 users. West Corporation has upgraded to version 1.1 the *Publish Pac* software that accompanies its C Scan Plus desktop scanner, which works with the SE and with Adobe Systems' *Illus-*

trator. Software Ventures' *MicroPhone* was scheduled to go into version 1.1, with SE and Mac II compatibility as well as improved VT100 emulation. Expect many more upgrade announcements this summer as application software evolves to keep up with the new hardware.

Music Makers

Integrated Music Systems of San Carlos, California, has begun shipping the Dyaxis 16-bit audio-to-digital conversion system that "makes the Mac sound like a compact disk," according to company president Jerry Kearby. The SCSI device samples sounds at the professional standard rates of 48 and 44.1 kHz, but it also allows users to specify lower sampling rates to conserve space on the accompanying disk drive. The Dyaxis software, designed by Adrian Freed, a programmer who helped design the sound environment at internationally renowned IRCAM in Paris, allows mouse-driven editing of the sound waveforms and mixing of digitized sounds to create new sounds altogether.

Intended for a professional audience, the Dyaxis conversion device costs \$3000; the accompanying hard disk drive adds \$250 (80MB) to \$950 (380MB). Look for news about similar Mac II developments that will bring the price of the technology down to a point at which nonprofessionals can afford it.

Micah Drives Again

IDT of Newark, Delaware, a company that included Micah drives in its packages of hardware and software for dental offices, has taken over marketing the drives, which had been unavailable since the West Coast hard drive maker declared bankruptcy last November. The new supplier, calling itself Micah Storage Systems, acquired the assets of the ailing company and the license to the technology and now plans to reissue Micah's internal drives for the Mac 512K and the 512KE. The company also expects to introduce an internal drive for the Mac SE, 30MB and 45MB external drives, and a 45/45 drive/tape backup combination.

Additionally, the company will market video technology developed by IDT: the Micah Vision (\$450) and Micah DoubleVision (\$750) high-resolution monochrome video boards for the SE, originally intended to display, manipulate, and enhance X-ray images. The 32-bits-per-pixel monochrome video boards for the Mac II will debut at the Macworld Expo this month.

Micah Storage Systems plans to perform repairs at cost for people who bought drives from the original maker and will offer a program similar to a one-year warranty to those owners for a few hundred dollars.

Aldus to Go Public

Riding on the success of its *PageMaker* page-layout program, Seattle-based Aldus Corporation made a public offering

of 1.35 million shares of its stock. The stock was expected to open at \$14 to \$16 per share, which would raise up to \$21.6 million.

The desktop publishing field that *PageMaker* pioneered has become increasingly competitive, but Aldus has kept in step with a new Mac version as well as an IBM version of its program, which has been selected by IBM for distribution with its new hardware.

More SE Options

Last month we reported on internal hard disk drives for the Mac SE from Rodime and CMS Enhancements. Mirror Technologies of Hugo, Minnesota, is also offering 30MB (\$1095) and 45MB (\$1295) internal drives, bundled with Think Technologies' *Laser-Speed* laser printer spooler, Mirror's ImageWriter spooler, and Mirror's backup software.

Micrographic Images of Canoga Park, California, maker of the MegaScreen, is shipping the first large-screen monitors for the Macintosh SE. The 19½-inch MegaScreen SE and SE*M monitors (\$1995 each) come with a video interface board, a cable, and *MegaTalk*, an E-mail program that runs on the SE's internal monitor. The MegaScreen SE can accept an optional math coprocessor (\$349). The SE*M incorporates Micrographic Images' modular expansion interface card that allows users to add functional-

(continues)

If you already have a Macintosh™ and LaserWriter™, congratulations. You're using desktop publishing's two most productive tools. But if you really want to get serious, you need one more. The Radius Full Page Display.™

See the whole page.

Since the FPD lets you see a full 8½" x 11" page, it virtually eliminates scrolling within individual pages. By seeing the entire page on the screen, you know exactly how it will appear on paper. So, it dramatically reduces the need for printing. Now, documents are much easier to create, edit and layout.

Plus, the FPD lets your Macintosh screen remain active. You can work on the FPD screen while placing additional documents, tool palettes, or desk accessories on the Macintosh screen. Or, treat them both as a single, continuous display to view large, horizontal documents. Even drag text or graphics between the two.

The best by design.

The FPD was designed by six members of the original Macintosh design team. The same designer created the digital electronics for the original Macintosh, the LaserWriter and the FPD. With all of that experience

in common, you know you're getting the highest quality product available anywhere.

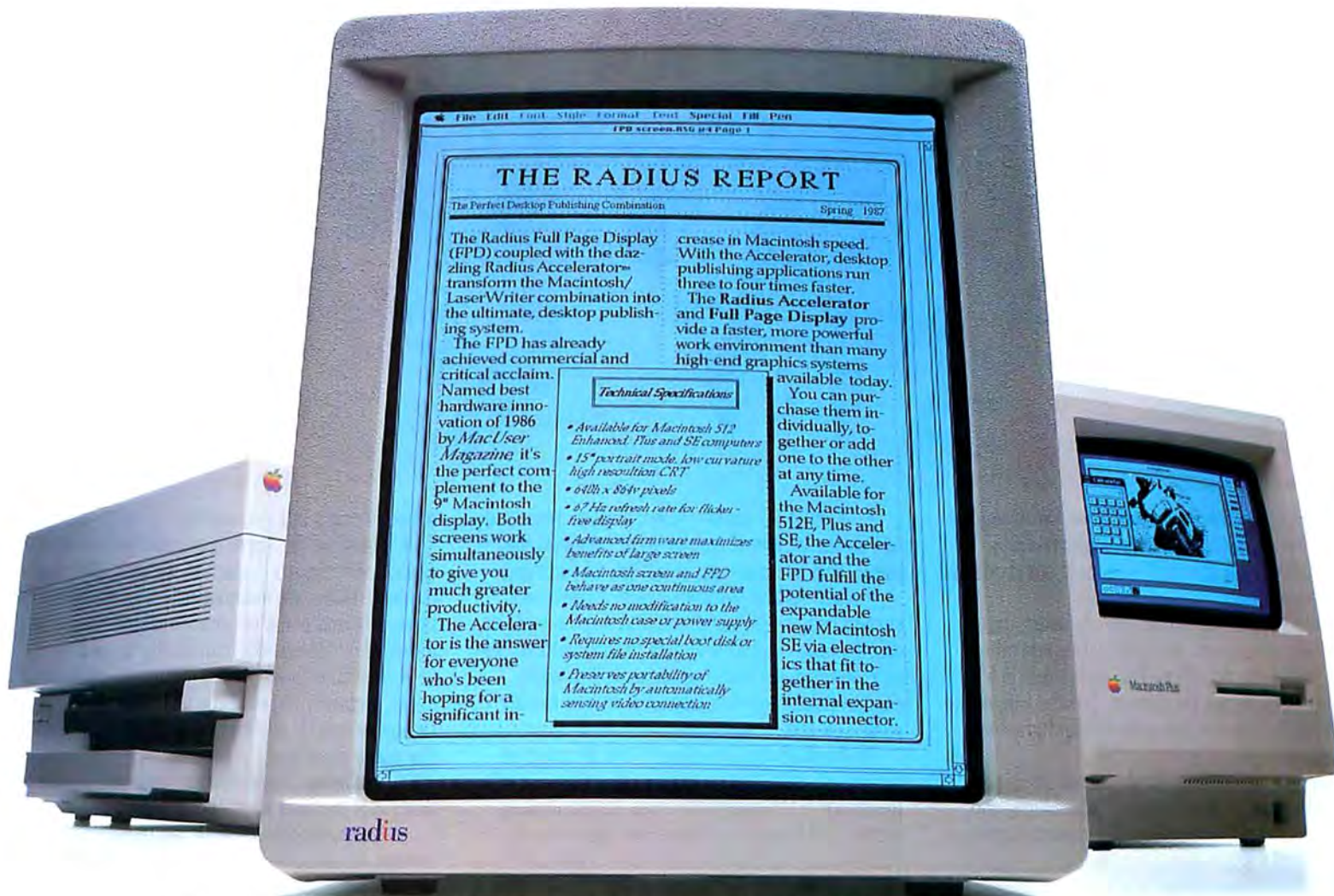
The Radius Full Page Display. Once you've put it through its paces in desktop publishing, you'll agree that it's the ultimate tool of the trade.

radius™

404 East Plumeria Drive
San Jose, California 95134
Circle 577 on reader service card

For more information, call us at
408-434-1010 for the name of the
Radius dealer nearest you.

The Ultimate Tool Of The Trade.



If you want to know why FullWrite



Within the next ten minutes, your entire concept word processing will be turned upside down.

FullWrite Professional™ sets new standards for word processing.

It lets you handle words better, faster, more effectively, with more versatility than any other word processing program. But competing in today's world requires even more. Now, documents add the persuasive power of text and graphics combined.

That's why FullWrite Professional easily turns your words into fully illustrated documents, and it generates the graphics. Chances are, you'll never need a page layout program.

FullWrite Professional is going to change word processing 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



standard 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; strikeouts; 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.

FULLWRITE PROFESSIONAL

ANN ARBOR SOFTWARES

2393 Teller Road • Suite 106 • Newbury Park, CA 91320
Phone: (805) 375-1467

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

Circle 204 on reader service



FileMaker Plus From Forethought

Now, the only Mac database ever to get both *MacUser's* and *InfoWorld's* highest ratings does even more, with even more ease.

Humble, ordinary-but-necessary forms like mailing labels, purchase orders, invoices, credit memos or packing lists. Pain-in-the-rear forms like expense reports and insurance inventories. Hard selling forms like proposals and quotations. Indispensable forms like phone messages, address books and sales contact records.

Filemaker™ Plus lets you do these any way you want, or does them *for you* if you want. An extradisk full of templates gives you a whole set of typical formats, so all you have to do is fill in the blanks.

And in addition to doing what a database is supposed to do — calculations, summary reports, sorting — FileMaker Plus does everything you *wish* a database would do. View multiple records on a

screen. Pull information from different files together. Include graphics in your fields and reports. Print mailing labels 3 or 4-up, or more.

Your information takes much more human form. It makes more than sense. It makes an *impression*.

With FileMaker Plus, you can put information *in* any way you want, without arbitrary limitations. It automatically indexes every word, number and date. You design your output right on the screen, so you can see exactly what you (and your clients, staff, suppliers, publishers, board of directors) are going to get.

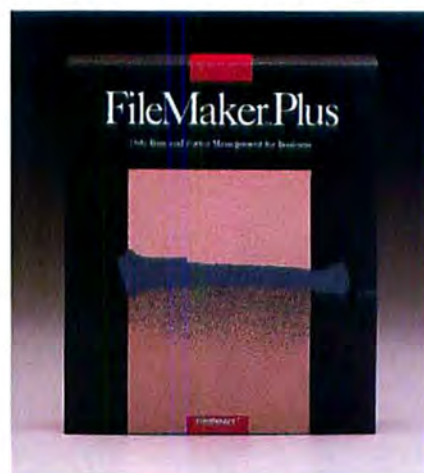
You can exchange information with other programs, like MacWrite™, MacPaint™, MacDraw™, Microsoft® Word and Microsoft Excel. You can share applications or formats you've created with other members of your team, or consolidate group efforts into one database. And FileMaker takes full advantage of the Macintosh™ family, including the Mac Plus, Mac 512, Imagewriter and LaserWriter.

So, for a mere \$295, you can watch as your data takes on all kinds of interest-

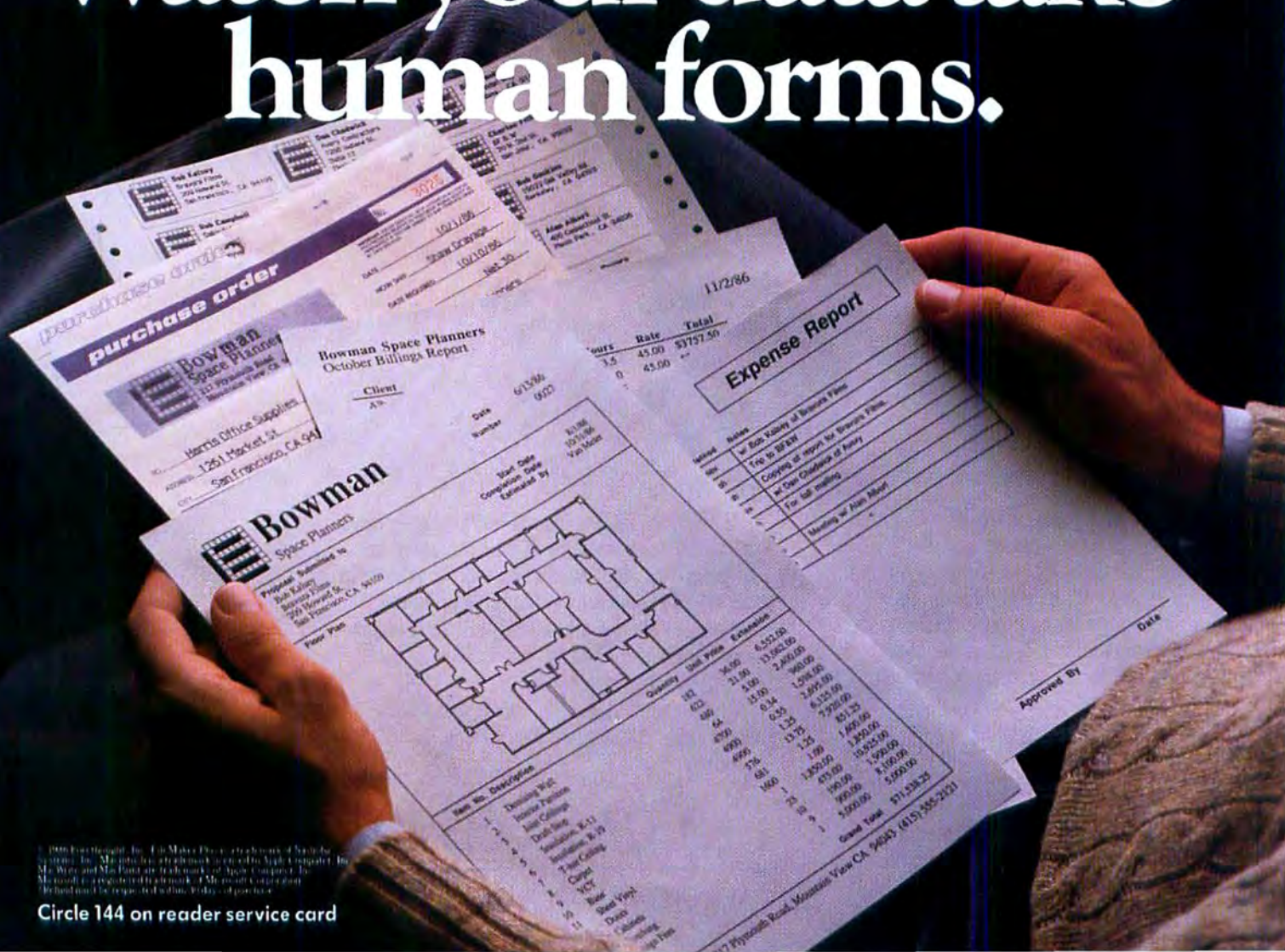
ing and profitable new forms. Call 1 800 MACWARE today for the name of your nearest dealer.

We guarantee it.

If FileMaker Plus doesn't completely fulfill your expectations, call 1 800 MACWARE and we'll solve your problem or arrange a refund.* From Forethought,® Inc.



Watch your data take human forms.



© 1986 Forethought, Inc. FileMaker Plus is a trademark of Forethought, Inc. Macintosh is a trademark of Apple Computer, Inc. MacWrite and MacPaint are trademarks of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation. *Refund must be requested within 30 days of purchase.

Circle 144 on reader service card

Campbell's Software



*No matter how
you slice it, an Apple is
an Apple is an Apple.
And so is its software.*

Apple Computer's brand-new software company, which is headed by its former vice president of sales, Bill Campbell, may be as yet unnamed. But no matter what label Apple decides to stick on that can of software, you can be sure of one thing. It's going to achieve instant recognition among Macintosh consumers.

In fact, this new firm is already the fourth-largest software company in the market—ranking right behind Microsoft, Lotus, and Ashton-Tate—just by virtue of its less than humble origins.

Of course, it helps to have a great catalog of existing software. Just a glance at the *Macworld Best-Sellers* list on the last page of this magazine shows some of the company's powerful initial offerings—*MacDraw*, *MacPaint*, *MacTerminal*, *AppleTalk*. Not too shabby for a start-up.

The firm's immediate task is to get out the software products that it has in-house. Reportedly, there are some new versions of *MacProject* and *MacDraw* as well as some other programs in the pipeline.

The charter of Apple's new software company is to find products that will fit into areas that Apple has not yet penetrated. Its mission, simply put, is to become the most profitable and most successful software company in the world.

With Apple's funding, Bill Campbell's ace marketing skills, and a crack team of Apple alumni on board (including Campbell's right-hand man, John Zeisler, and software evangelist Kyle Mishima), the company might just be able to pull it off.

Having the inside track on Apple's future product line will virtually guarantee the company's success—especially when you consider that it takes a year or two to develop programs for the market. That's a big edge to have over the competition.

Call it inside trading of ideas, or whatever you like. Such synchronicity is felicitous, and probably downright profitable.

The question is, what's going on? Is Apple in the software business or not?

You may recall Apple's decision to quit the software market. That was announced soon after its former software evangelist

Guy Kawasaki left in a huff and a puff to start his own company, Acius, and market the fabled Silver Surfer database—which Apple had originally intended to bring out.

That is, Apple was going to bring it out until a number of third-party software developers, including Microsoft and Ashton-Tate, ganged up and threatened to do terrible things like cry and gnash their teeth and pull out of the Macintosh software market if Apple persisted in releasing this whopper of a database that would compete with their own products.

As the saying goes, when faced with the Ayatollahs of software and their fundamentalist wrath, Apple blinked.

The entire sordid tale has yet to be told: all the machinations, gyrations, intrigues. Not to mention the secret trips to Paris to visit the brilliant young French programmer Laurent Ribardiére, who had created *Le Silver Surfer* under the watchful and shrewd eye of his software patron Marylène Delbourg Delphis.

It's a tale of broken promises, tarnished ideals, and business as usual. If John Le Carré wrote about software, he might have tackled that story. He could have called it *The Software that Came in from the Cold*.

Suffice it to say, Apple had to decide then and there whether to remain in the software business or not. The decision was crystal clear. It was "yes and no."

Apple couldn't risk alienating third-party developers by releasing *Silver Surfer*. After sacrificing that program to the wolves (it's now Acius's *4th Dimension*), Apple scrambled to reorganize itself so that such a lost opportunity would never haunt it again.

Actually, it was a wise move for Apple to cut a wedge out of itself. As an independent unit, the new software firm will probably be able to make decisions faster and make progress without all the political headaches and bureaucratic nightmares

(continues)

Jasmine intro With the

MegaDrive, the
best of both worlds



Macintosh Plus



MegaDrive

The MegaDrive™ with 10MB
MegaFloppy™ disks is here.

This small SCSI drive is creating a huge sensation. And little wonder. New MegaDrive from Jasmine gives you the power of a hard disk drive with the freedom of a floppy.

Even though it gives you the best of both worlds, MegaDrive is unlike any hard disk or floppy drive you've ever seen before.



The drive is virtually "crashless" and doesn't require head cleaning or maintenance. You can switch the 10 megabyte floppies between machines. Carry them in your pocket. Mail them. Throw them in a drawer. Each one is encased in 5¼" hard plastic more durable than standard diskettes. The media itself is hard-sectored so you can reinitialize without losing data.



ices the power. freedom.



Everyone wants it.

Our music friends love MegaDrive because it only takes one MegaFloppy to hold a dozen floppies' worth of electronic sampling. And MegaDrive performs many times faster than standard floppy drives, so you can experiment more easily with music and the Mac.

But hear this: MegaDrive is so quiet even those with sensitive ears can barely hear it.

If you do desktop publishing you'll definitely want a MegaDrive. Like a hard drive, it gives you the capacity you need for digitized images, artwork and whole projects. Unlike a hard drive, it keeps on growing, and growing and growing. Economically. And when it's time to take that 300-page manual to the typesetter or printer, you don't need a series of floppies. Just one MegaFloppy.

But let's get down to business.

Instead of mingling Smith with Jones on a hard drive, accountants can keep clients on separate MegaFloppy disks. Bankers can lock up the media at night without locking up drives.

In departments that share a single drive, MegaDrive gives everyone their own 10MB domain. Your disk, and the information it contains, is yours alone. The same is now possible in schools, hospitals and libraries where one drive serves many. With MegaDrive, to each his own.

Full SCSI speed and compatibility.

MegaDrive hooks up to the Macintosh Small Computer Interface (SCSI) port just like a hard drive or can be daisy chained to other SCSI devices such as a Jasmine Direct Drive hard disk. Macintosh 512 Enhanced owners can upgrade to SCSI with Jasmine's JasPort adapter for \$129 without internal modifications or soldering.

*Price includes 30 day trial/
money back guarantee and full
one year warranty.*

Before you buy MegaDrive, consider this. Others offer a much shorter standard warranty on drives and force you to pay extra for a one year warranty. At Jasmine we stand behind our drives. If for any reason you are not satisfied with the MegaDrive you may return it within 30 days for a *full money back refund.*

*Jasmine: Quality you can afford
To order call (415) 621-4339*

MegaDrive

- ☐ \$999 — Prepaid cash price
- ☐ \$1029 — Visa/MasterCard price

MegaFloppy Disks

- ☐ \$39.95 each — Prepaid cash price
- ☐ \$41.15 each — Visa/MasterCard price

MegaFloppy Three-Pack*

- ☐ \$109.95 for 3 — Prepaid cash price
- ☐ \$113.25 for 3 — Visa/MasterCard price

*Three-packs include handy Storage Case



Air Freight \$20.00. CA residents add 6.5% sales tax. C.O.D. orders add 5% + shipping. Same day/ rush shipments available at extra charge.

Call for dealer and developer pricing.



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

Circle 747 on reader service card

ANTHRO CART.™

Mobile... a key reason why people like the AnthroCart. Share your hardware. Move it around. Take it room to room or floor to floor.

AnthroCart. High-tech furniture for high-tech equipment. Space saver. Compact. Rugged.

The AnthroCart is designed to move. Designed so your workspace is as slick as your hardware.

Call us: 800-325-3841



*Supports up to 150 lbs.
All steel frame construction
5 1/2 square foot footprint*



**Anthro Corporation
Technology Furniture**
3221 N.W. Yeon St.
Portland, OR 97210
503-241-7114

Anthro Corporation is a wholly owned subsidiary of Tektronix, Inc. Anthro is a registered trademark of Anthro Corporation.

David Bunnell

that are so common at Apple. It will be able to focus on just one thing—developing software.

But despite all the corporate camouflage and declarations of independence, the new situation is still very confusing to most third-party developers. Is there or isn't there a conflict of interest?

First of all, remember that Apple has a group of evangelists whose job it is to work with third-party developers—to encourage them and to steer them in the right direction. Apple also has a venture fund to provide backing for outside product development. In this way, the company has backed Forethought, maker of the popular *PowerPoint* presentation graphics program—reportedly to the tune of about \$7 million. It has also assisted Touch Communications in bringing out its OSI (Open Systems Interconnect) communications program, expanding the Mac's connections with other computers. And Apple is looking at funding another half-dozen firms by the fall.

So what's the dilemma?

Apple's own software spin-off is supposed to be treated just like any other independent company, without any special privileges. Along with the rest of the crowd, it's expected to hustle and cajole Apple in order to obtain comarketing assistance and support. However, given the nature of its relationship to Apple, how can anyone believe that it's not enjoying a tremendous built-in advantage?

This is bound to create bad feelings among software developers. So, what is Apple really up to?

I'm going to do some theorizing, with my crystal ball.

Is the real conflict of interest here with third-party software developers? Is Apple setting itself up against itself? Or does it see something no one else sees yet?

Take this future scenario. Apple's software company is a big hit. It spins off and goes public. Let's say that people who own Apple shares will get ten for one, and the new shares can be bought and sold on the market just like shares of Apple Computer. Now, as a firm that is inherently responsive to its mother company, if Apple's software spin-off is only developing Macintosh-based software, won't it be limiting itself?

(continues)

Build color into your graphics with an HP plotter.

Whether you're building sales revenues or designing new kitchens, Hewlett-Packard's family of color plotters will make your overheads and CAD drawings more effective. How? With the powerful advantage of high-impact color. An HP graphics plotter will turn your Macintosh into a color graphics powerhouse.

Build enthusiasm at your next presentation with vivid, high-quality overhead transparencies. And highlight important management reports with crisp, professional-looking charts and graphs. All easily prepared by any of HP's business graphics color plotters.

If you're designing parts or building up the skyline, color-coded

drawings in sizes A through E will make your designs easier to understand and execute. An HP DraftPro or DraftMaster plotter will quickly produce sharp, precise drawings on paper, vellum, or polyester film.

And all HP plotters integrate easily with your Macintosh and popular graphics software such as Microsoft Excel, Cricketgraph and MacDraft.

For a sample plot, a brochure and name of your nearest HP dealer, call 1-800-367-4772, extension 688A.

Microsoft Excel is a registered trademark of Microsoft Corporation. Floorplan provided by Gruyè Associates, Palo Alto, California. ©1987 Hewlett-Packard Co.

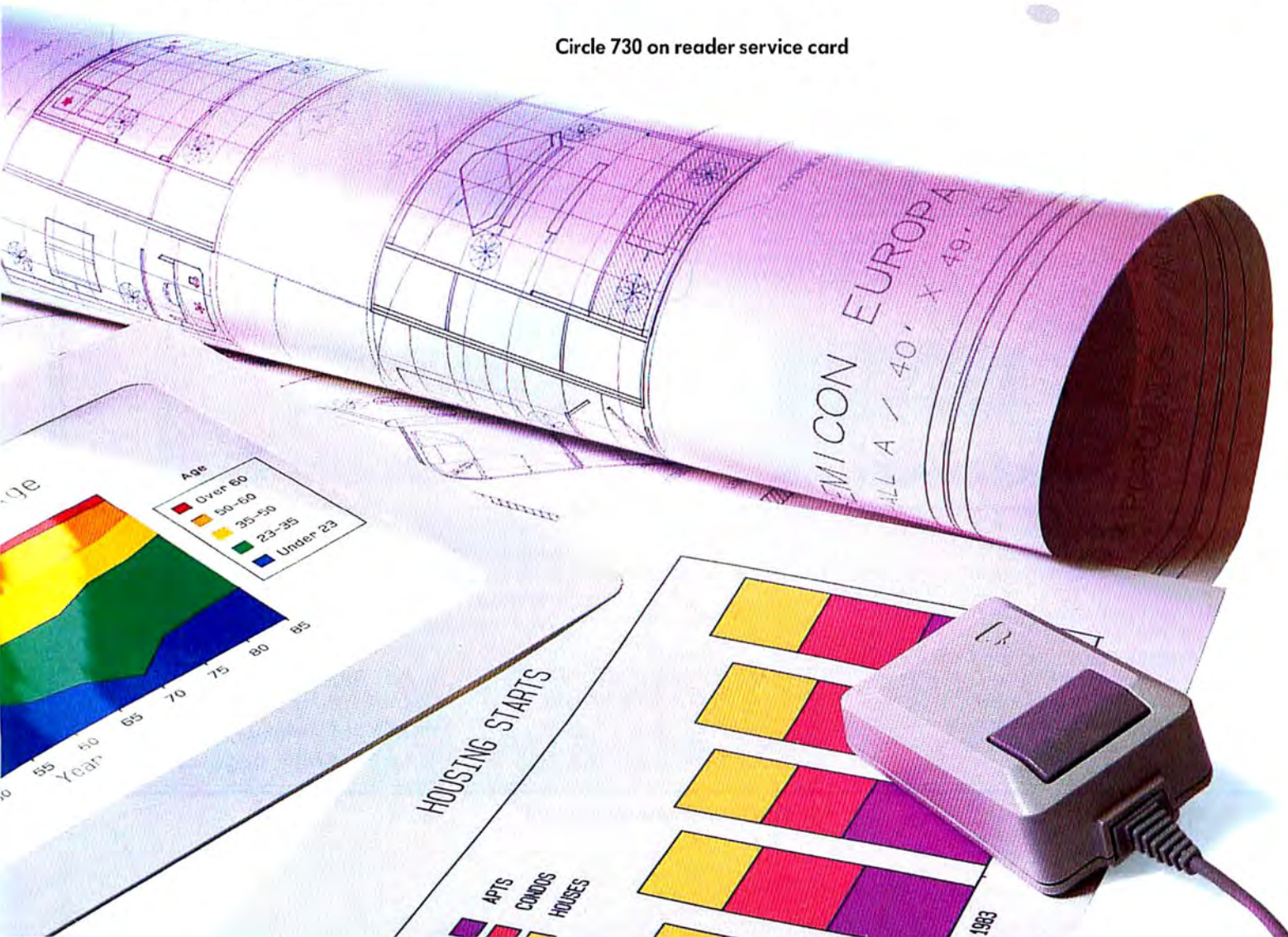


**HEWLETT
PACKARD**

Circle 730 on reader service card

*we never
stop
asking*

What if...



Shouldn't it be publishing software for any machine that's viable, as long as money is being generated?

After all, lots of products are developed for the Mac that could be ported to other systems.

Maybe that's exactly what Apple's game plan is for the future. Maybe it is planning to develop, say, UNIX-based products that can run on any platform. Maybe this is part of Apple's long-term strategy to take over the software world—and to knock Microsoft and the other big guys off their perch. Maybe it's even indirectly eyeing the IBM PC market. Who knows? After all, it has expressed no strong objection to Forethought's developing a PC version of the Apple-funded *PowerPoint* program.

Maybe Apple's super Cray has been working late at night, churning out scenarios for takeovers, buy-outs, and world conquest.

In case you haven't noticed, there's a massive power play brewing in the software market. We're talking cybernetic

World War III here. Not a shot is going to be fired, either. The whole campaign will be fought with software armies.

Apple's recent maneuver to set up its own software company is just a first step in this direction. I have to conclude that companies like Microsoft and Ashton-Tate are beginning to feel the heat. The competition is suddenly going to become much stiffer for them.

In the near future the software business could start resembling the airline industry with its mergers and alliances. As the cost of software development continues to skyrocket, it's going to become increasingly difficult for smaller companies to stay in business on their own.

Little software companies will be gobbled up by big ones. Established MS-DOS companies will be looking for entry into the already crowded Macintosh market. The major houses themselves will not be sacrosanct. Who knows, the firms on the hit list may well include such giants as Microsoft, Ashton-Tate, Borland International, Living Videotext—and, let's not be squeamish, even Apple itself.

We'll see a new breed of software venture capitalists emerging—the carpetbaggers of software, if you will. They'll be hedging their bets by investing in companies that they suspect—or (shades of Boesky) even know for certain—will be bought out.

All that early plotting behind the scenes to wrest control of Silver Surfer away from Apple was just a mild taste of things to come.

Fortunately, the end user will benefit from these Machiavellian contortions in the Macintosh marketplace. As the competition heats up, software prices will shoot down.

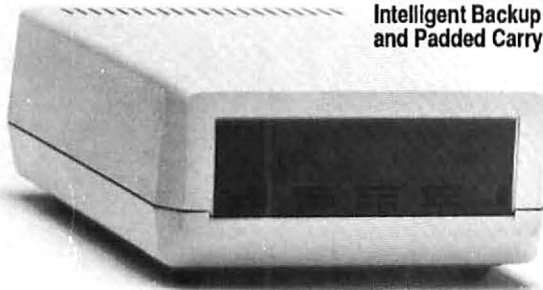
In the meantime, it's going to take several months for Apple's new software company to be up and solid under Bill Campbell's able direction. But once it gets going, look out, because it could quickly become the largest Macintosh software provider outside of Microsoft. That's just for starters.

Perhaps one day Campbell's Software will even introduce a delicious new flavor—Cream of Microsoft. □

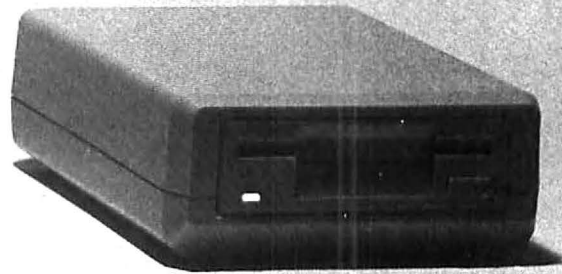
**30 MG SCSI
\$599.00**

**ORDER DIRECT
AND SAVE
IMMEDIATE
DELIVERY**

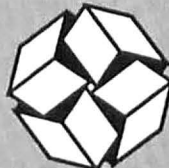
**800K DRIVE
\$185.00**



**Comes with FREE
Intelligent Backup Software
and Padded Carrying Case!**



- Lightning fast performance
- Daisy chain up to seven drives
- External SCSI address select switch — exclusive data-Y connector and external resistor terminator allow drive to be changed to any position on the SCSI chain within seconds
- 2.5" high x 5.5" wide x 8.5" long — twice as small as all other leading drives
- Fanless — unique conductive cooling system
- Ultra low power — extremely quiet
- Compact, rugged construction for easy portability — carrying case included
- Full one year warranty



CUTTING EDGE, INC.
11556 Fowler Drive, North Glenn, CO 80233

1-800-443-5199

- For 512, 512E, Mac Plus, Mac SE
- Whisper quiet
- State-of-the-art workhorse: MTBF rating over 11,000 hours
- Brushless D.C. spindle motor
- LED — Indicates when quiet drive is running

**10 day free examination period
on all Cutting Edge products
Immediate Delivery
VISA/MC/AMEX accepted**

Circle 710 on reader service card

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





PREPARE TO ENTER HYPERTEXT.

Everything you've heard is true. Hypertext is no longer a vision waiting to happen...Guide®, the first hypertext system for personal computers is available today. Now you can apply the most innovative principles of hypertext to your information management.

Guide is the first true hypertext system that lets you create "electronic documents" to manage information. It provides you with virtually limitless flexibility in creating, storing, retrieving and assembling text and graphics. Click the mouse on a "hot-spot" or button and Guide can open the document to show more detail, display your notes in a "pop-up" window or even take you to cross-referenced information in another document.

Guide uses the advanced features of the Macintosh® to allow you to view multiple documents at the same time. It frees you to structure your documents the way you like to work. To flow through information without the limits of rigid program formats.

Guide is as flexible as you are. Use it to cross reference related subjects like sales reports with client data. Manage your personal schedule by linking your appointments to background reports. Guide is also a writing tool for the creation of electronic mail messages, product specifications, research reports, contracts, technical documents, training materials, online manuals and much more.

What the press is saying about Guide

"Beyond word processing"—Byte

"Guide offers such interesting opportunities that there is almost too much that can be done"

—MacUser

"Guide points the way to the future"—Macworld

We invite you to experience Guide and discover how hypertext will eventually replace paper in the office, at home and in school.

See Guide at your local computer store or call OWL International at (206) 747-3203 ...and prepare to enter hypertext.

Guide for the Macintosh runs on a Macintosh 512K or greater.

Suggested Retail Price—\$134.95
Includes MiniGuide desk accessory



OWL
International
Inc.
14218 NE 21st Street
Bellevue, WA 98007

Circle 547 on reader service card

Macintosh is a registered trademark of Apple Computer, Inc.

The Guide Hypertext System is a registered trademark of OWL International, Inc.

Letters

A forum for Macworld readers

Moonlighting Detail

May's *Macworld News* shows a picture of Maddie Hayes from ABC's "Moonlighting" with her Mac. While it's nice to see the Mac dressing up the set, doesn't the harried detective know that she risks magnetic interference from the Mac's power supply and video circuitry? The external disk drive belongs on the right side.

*Duncan J. McKenzie
Niles, Illinois*

Right you are; data on the floppy disk can be damaged if you put the drive to the left of the Mac. Set designers and Mac users take note. —Ed.



Corrections

Stepping Out, mentioned in April's Mac Bulletin, is available from Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5536.

AutoSave DA (April Mac Bulletin) is available for \$24.95 from Magic Software, 121 W. Mission St., Bellevue, NE 68005, 402/291-0670 or 800/342-6243.

The correct address for Working Software, publisher of Spellswell, mentioned in May Updates, is 321 Alvarado St., Ste. H, Monterey, CA 94930, 408/375-2828.

Data Tailor's Trapeze (Where to Buy, May 1987) lists for \$295. For information about the product, call 817/332-8944.

MapMaker version 2.0 (Where to Buy, 1987) requires only 512K minimum memory.

High Hopes for a Laptop Mac

I believe there is a tremendous market for a fairly simple, portable Mac in the \$1000 to \$1500 price range. It ought to include an 800K internal drive plus a small EPROM slot (or two 800K internal drives), 1MB of memory, and an internal 1200-baud modem—all fitting into my briefcase. It should also be able to drive a small portable printer, such as the HP Thinkjet. Is the baby Mac afoot or am I just dreaming?

*John Eisner
Halifax, Nova Scotia
Canada*

You're not the only one dreaming of a small, affordable Mac portable, but so far nobody's made any product announcements. We'll be sure to let you know. —Ed.

Look and Feel

My compliments on David Bunnell's May editorial on the Lotus "look and feel" suit.

We cannot copyright fashions or jokes. That we continue to see new fashions and new jokes each year answers the people

who think that the failure to protect intellectual property will end innovation. Another answer is provided by Lotus itself, which, while pursuing its legal strategy, is also pursuing a creative marketing strategy that includes launching HAL and other add-ons that work only with 1-2-3. Looks to me like the cloning of 1-2-3 has stimulated Lotus's creativity.

*Sheldon L. Richman
Fairfax, Virginia*

Super Backups

Jim Heid's "Getting Started with Backups" in the February issue was well done. Here's my quick and simple system for backing up my SuperMac DataFrame 20XT.

Using the SuperBackup utility that comes with the disk drive, I copy all my application and system files onto floppies—it takes only about half a dozen floppy disks. I put those aside and hope I'll never need

(continues)

OUR OBJECTIVE IN LIFE IS TO CONNECT EVERYTHING

TOPS, TOPS for the PC, TOPS for the Macintosh and TOPS for UNIX are registered trademarks of Centram Systems West, Inc. Other products are trademarks of their respective owners.

TOPS

415-549-5980

HOW MUCH WORK COULD A NETWORK DO IF A NETWORK COULD DO WORK? WHILE YOU'VE BEEN STRUGGLING WITH NETWORKING, WE'VE BEEN STUDYING IT.

OUR MAJOR CONCLUSION IS THAT NETWORKS NEED TO TAKE THEIR CUES FROM PEOPLE. OUR THEORY IS THAT YOU CAN LEAD PEOPLE TO A NETWORK, BUT YOU CAN'T MAKE THEM USE IT.

WHAT MAKES THEM USE IT IS THAT IT LETS THEM BE THEMSELVES. LETS THEM WORK SPONTANEOUSLY.

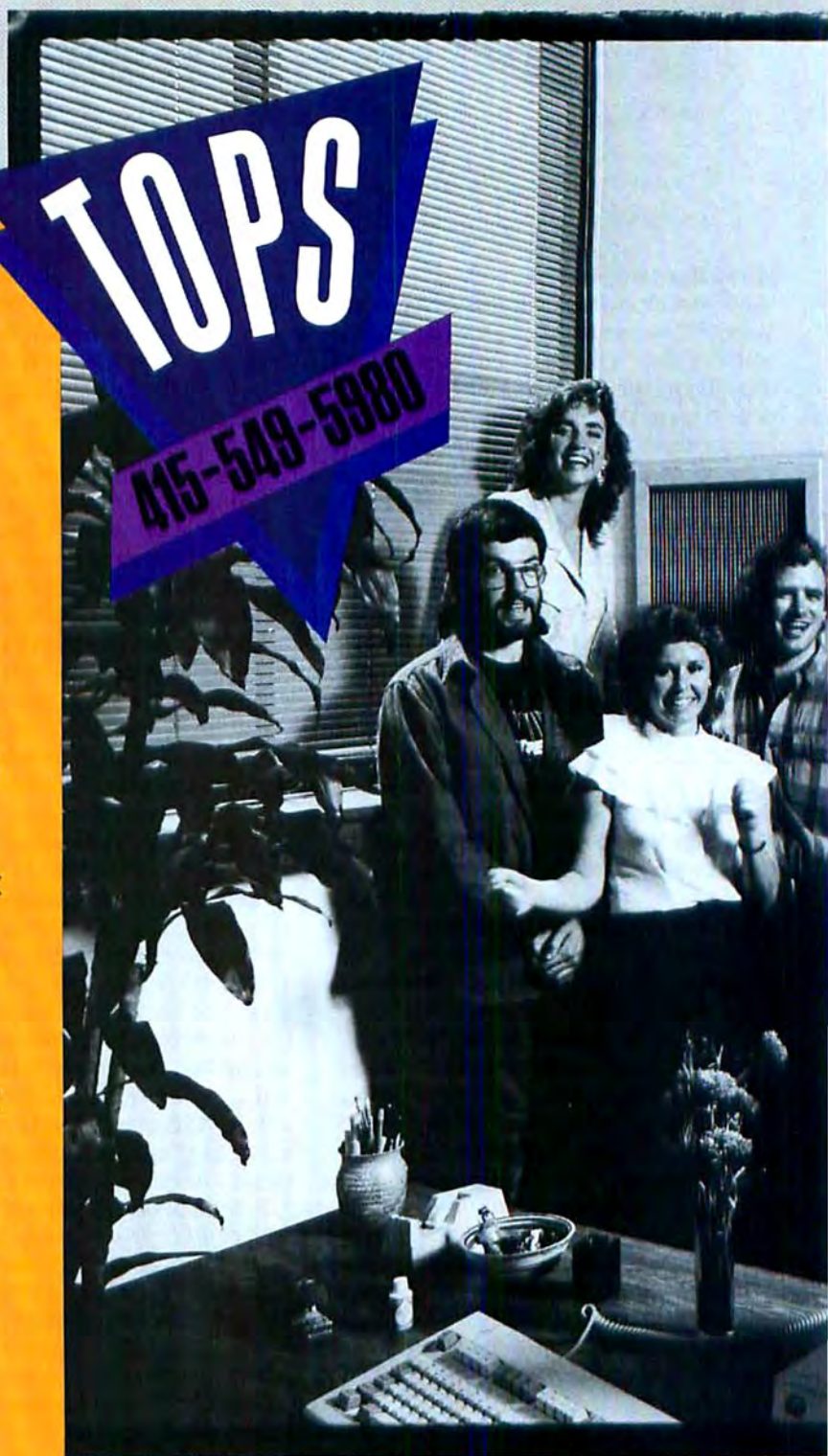
TREATS EVERYONE AS EQUALS. LETS THEM WORK ON THEIR COMPUTER OF CHOICE—PC TO MAC TO UNIX.

LETS PEOPLE SERVE THEMSELVES. PUBLISH THEIR OWN FILES. GO DIRECTLY TO THE SOURCE FOR WHAT THEY NEED.

SOME GOOD IDEAS NEVER MAKE IT OUT OF THE LAB. THIS ONE DID. IT'S CALLED TOPS. PC MAGAZINE PRODUCT OF THE YEAR FOR 1986. IT'S DESIGNED FOR A WORLD WHERE EVERYONE HAS THEIR OWN IDEAS.

CENTRAM, A DIVISION OF SUN MICROSYSTEMS, 2560 NINTH STREET, BERKELEY, CA 94710.

TOPS NETWORK: COME AS YOU ARE.



TO EVERYTHING."

trademarks of their manufacturers.

TOPS: the "Best of '86"

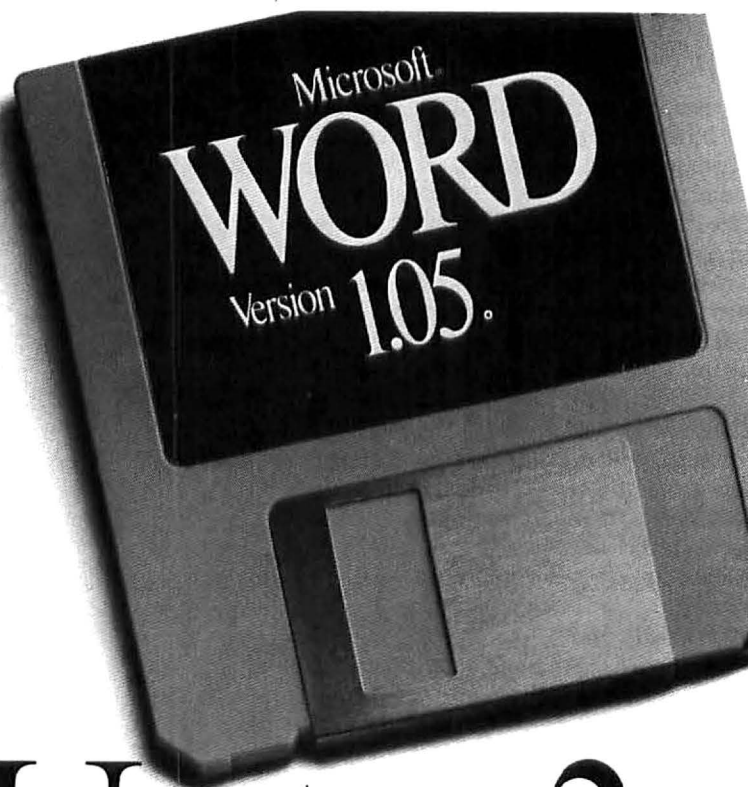


OUR OBJECTIVE IN LIFE IS TO CONNECT EVERYTHING TO EVERYTHING. THERE ARE A FEW INSTANCES WHERE WE'VE ACTUALLY DONE IT.

- | | | |
|---------------------|---------------------|--------------------|
| 1. GARY STROUD | 5. HEWITT JACKSON | 12. NAT GOLDBABER |
| 2. SHARON MCCORMICK | 6. IBM MODEL 3D | 13. LESLIE TERVIT |
| 3. SUE MINER | 7. ARAM ATTARIAN | 14. FLASH PFLAUMER |
| 4. JOHN HACK | 8. MIRAN CHOI | 15. KIM CRISWELL |
| | 9. MACINTOSH PLUS | |
| | 10. DAN KEMP | |
| | 11. MICHAEL O'BRIEN | |

Circle 524 on reader service card





Up to v.3. Down to \$99.

Microsoft® Word Version 3 for the Apple® Macintosh™ is the most powerful word processor available for any personal computer.

Complete with outlining, integrated style sheets and a spelling corrector, it's worth every cent of the \$395 suggested retail price.

But if you already have Word v.1.05 or earlier, we'll upgrade you to Version 3 for a mere \$99, or less*.

Call the number below for your information package. The offer ends on August 31st, 1987.

(800) 323-3577

*\$50 if you acquired Word after October 1st, 1986.

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.

Microsoft®

Letters

to see them again. I organize my documents in folders of less than 800K, and I keep a floppy disk with the same name as each of my document folders. Whenever I've worked on something in a folder I drag a copy of the document, or even the whole folder, onto my backup floppy before I shut down.

The system is so fast and easy that I actually use it. And after all, that's what any backup system is all about.

Seth L. Haber, M.D.

Palo Alto, California

Life of a Salesman

Am I the only salesman in the country with a Macintosh Plus rather than an IBM-PC compatible? For Big Blue there are *Prospector's Helper*, *Salesman's Helpers*, *Ex-Sell*, *Broker's Ally*, and more. Does someone provide a Mac equivalent for logging and tracking my sales leads?

Ted R. Swaneck

Dubuque, Iowa

Breakthrough Productions puts out Market Master, a \$295 application that tracks leads, prompts you to make calls and send letters at the right time, and handles the mail merge automatically. Judging only by how well the program managed Breakthrough's persistent calls to us, Market Master could make your follow-up as systematic as clockwork. Contact the publisher at 10659 Caminito Cascara, San Diego, CA 92108, 619/281-6174.

—Ed.

Getting Started

In the March 1987 *Macworld* there's a piece by Jim Heid, "Getting Started with Spooling," that does not go far enough. Why not run a competitive spool-off and actually give your readers the lowdown?

Hall Barwood

San Anselmo, California

Jim Heid's monthly Getting Started column is intended to provide background for readers who need basic information and to help them get up to speed. Look to the features or the Reviews section for evaluations of products, such as the June 1987 article, "Speaking of Spoolers."—Ed.

Fractal Fan

I couldn't find the *MacFractal* program by Mark Zimmer that Robert C. Eckhardt wrote about in the March 1987 *Macworld*

(continues)

A Crash Course in Accelerator Boards.



TurboMax has passed extensive crash testing.

Listen carefully to the hype surrounding 68020 performance options available for Macintosh computers today.

Faster this.
Quicker that.

Nice, simple, glittering generalities about how fast they run. Now, take a look at the fine print. *"May not run properly with some programs" or "certain programs may have to be revised to function correctly."*

In other words, many of the programs you work with everyday simply won't work with 68020 add-ons. They crash.

There is, however, an alternative. One that's 100% compatible with virtually every Macintosh program. **TurboMax**, a "clip-on" accelerator board for your Macintosh Plus or 512Ke.

TurboMax is more than your typical accelerator board. It's a multi-function hardware and software system designed to make you more productive—so you can finish your work sooner.

It consists of a 16MHz 68000 CPU (same as the one in the Macintosh Plus—but three times as fast), RAM expansion to 2Mbyte, a "super-speed" SCSI port, a "beefed-up" power supply and an "ultra-cool" fan.

You can also add a 68881 coprocessor (to speed up arithmetic computations—like spreadsheets—up to 60

times faster) and an internal 40Mbyte SCSI hard disk for fast, high-volume storage.

With TurboMax, you get pure speed—without sacrificing compatibility. Which means you can work faster—instead of worrying about whether or not your programs will work.

We've also included a couple of MacMemory standards with TurboMax. Like MaxSave, a recoverable RAM disk that prevents you from losing valuable data in the event of a system error. Plus our unsurpassed one-year warranty.

So if you'd like to get more performance out of your Macintosh Plus or 512Ke, call us today at (800) 862-2636 (in California, call (408) 922-0140) for the authorized dealer nearest you.

TurboMax from MacMemory. Where high performance and compatibility are simply a matter of course.

FULLY
APPROVED
COMPATIBLE

MacMemory Inc.

2480 North First Street, San Jose, CA 95131
MacMemory is an authorized Apple Developer

TurboMax is a trademark of MacMemory, Inc. Apple and Macintosh are trademarks of Apple Computer, Inc.

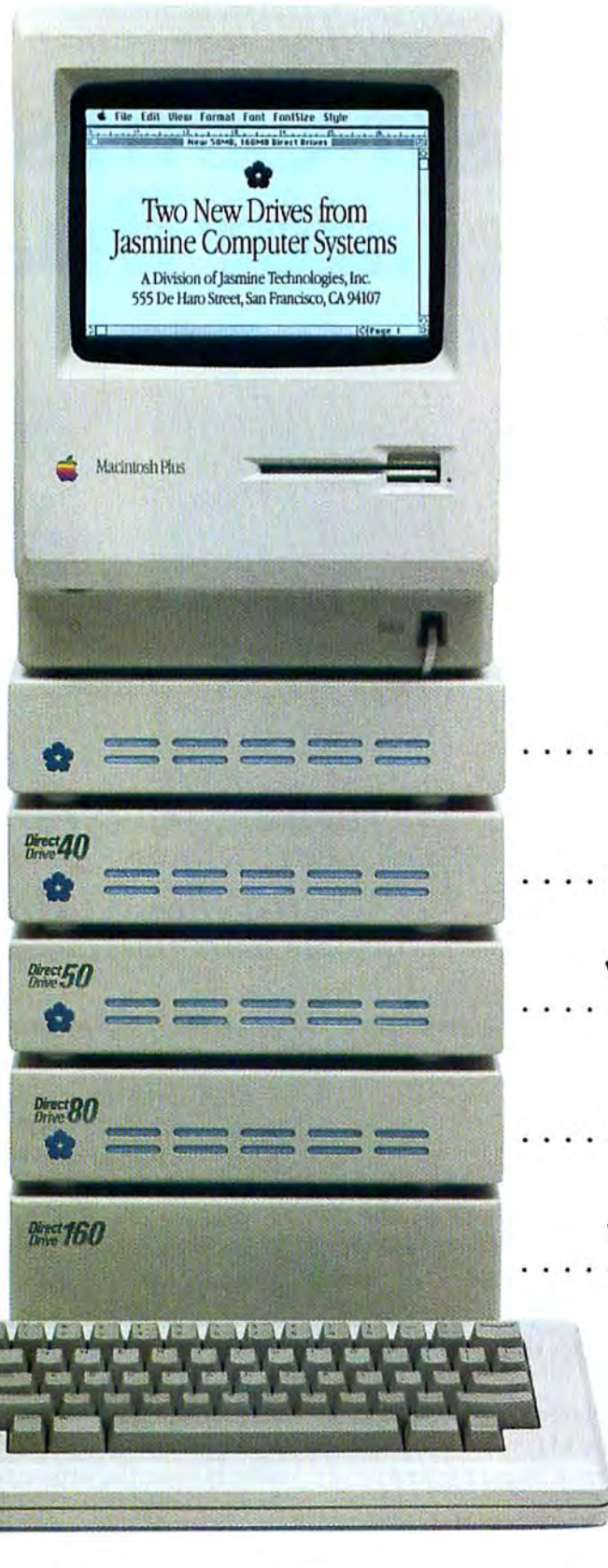
Only Jasmine offers you its unique combination of affordable pricing, powerful features and the highest quality construction.

Each drive is tested with real-time diagnostics and configured so that you never have to open the drive to daisy-chain SCSI devices. Included with every Direct Drive:

- Shock absorbers to protect your drive.
- Two switched AC outlets.
- Full 3 way electronic surge protection.
- The original SCSI select switch that allows you to add another drive or backup device with the push of a button.
- 2' SCSI cable. 6' cable available for additional cost.
- Full 9 megabyte public domain software shareware library.

How good is a Jasmine drive?

The Macintosh Journal (Dec. 1986/Jan. 1987) says: "Our technician indicated that high quality parts were used, and that the construction was excellent. From the significantly lower price tag on Jasmine, you might think that they have cut corners on construction. This does not appear to be the case."



"The Direct Drive 20 from Jasmine Computer Systems of San Francisco, California is the best value of all the drives we reviewed."

*— The Macintosh Journal
December 1986/January 1987*

... 20MB \$649
(\$669.00 Visa/Mastercard)

... 40MB \$999
(\$1029.00 Visa/Mastercard)

NEW
... 50MB \$1159
(\$1193.00 Visa/Mastercard)

... 80MB \$1399
(\$1441.00 Visa/Mastercard)

NEW
... 160MB \$3499
(\$3604.00 Visa/Mastercard)

Jasmine Direct Drives stack up better against the competition.

Remember that Jasmine saves you 40% or more. To order call (415) 621-4339.



* 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. Direct Drive 20, Direct Drive 40, Direct Drive 50, Direct Drive 80, Direct Drive 160, Jasmine, are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change. Prices effective June 15, 1987. Prices include 2' cable and PD software. Prices do not include shipping, CA sales tax (6.5%) or special rush handling.

Circle 570 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.

Come visit us
at Mac World Expo!
We'll be at booth #459.



**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

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 January 31, 1988.

MACWORLD

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 January 31, 1988.

MACWORLD



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



If you think all memory upgrades are created equal, let us make a few points of distinction

Before you buy a memory upgrade, it pays to really examine what you're getting for your money.

We can show you what to look for by making these points of distinction on Brainstorm,™ the complete memory expansion kit from Mac Doctor.

GUARANTEED EXPANDIBILITY

All memory upgrades are expandable, right? Wrong. Only Brainstorm guarantees full expandability up to 4 megabytes. When you try to expand the others, they require you to insert memory chips that they don't even provide! Or they tell you to remove the Mac's motherboard and wait 8 weeks to get your upgrade back.

Brainstorm lets you upgrade quickly and easily by simply exchanging a plug-in memory module. You can even do it yourself.

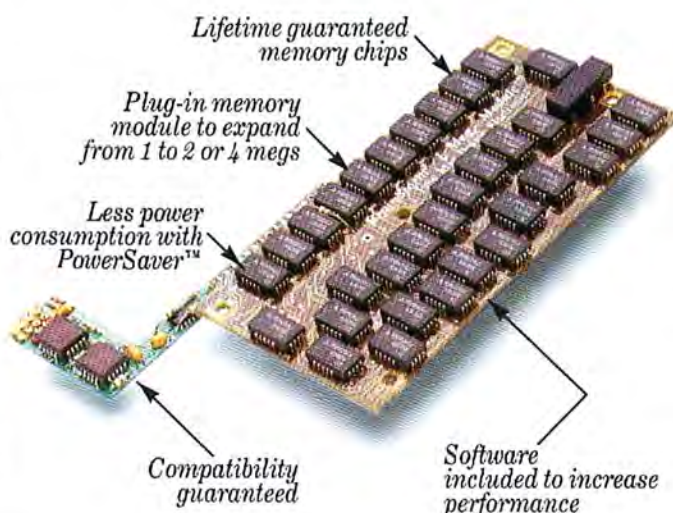
SOFTWARE THAT OUTPERFORMS THE REST

We're pointing out the fact that Brainstorm comes with a complete set of Performance Software™. Of course, most upgrades include utility software.

But what really sets us apart is our user's *Guide To Increased Mac Performance*.

This guide tells you in plain English how to squeeze every byte of usefulness out of your memory increase – and that's a definite distinction.

able motherboard space. In fact, it's so compact that even at 4 megabytes, Brainstorm accommodates both internal hard drives



NO FAN NEEDED

Brainstorm doesn't require a fan to keep its cool, because it uses special PowerSaver™ and CMOS memory chips that reduce memory energy consumption over 50%.

That's why you can increase memory size up to four times and run as cool as before! Just ask the others to do the same trick...

THE SMALLEST UPGRADE GIVES YOU MORE

The Brainstorm memory kit doesn't penalize you by taking all of your avail-

able motherboard space. In fact, it's so compact that even at 4 megabytes, Brainstorm accommodates both internal hard drives

GUARANTEES THE OTHERS CAN'T TOUCH

Mac Doctor guarantees that Brainstorm will function without defect or we will repair or replace it free for one year. The memory chips are guaranteed for a lifetime – free replacement for as long as you own your Macintosh. And, you get the special guarantees of both expandability and compatibility.

100% COMPATIBILITY WITHOUT FAIL

Use whatever Apple software and accessories you want with Brainstorm, because it's fully compatible with both old and new Apple ROMs, the 400K and 800K disk drives and all Mac and Mac Plus software.

FREE NEWSLETTER ON INCREASING MAC PRODUCTIVITY

Call today and get a free subscription to *Brainstorming*, the bimonthly newsletter that explains how memory upgrades work and gives you tips on getting the most from your Mac.

See how Brainstorm can improve your Mac's productivity at a price you can afford; only \$330 for a Brainstorm with a one megabyte module for a Mac 512E. Order Brainstorm now by calling (415) 964-2131.

And learn the distinction between a quality memory upgrade – and all the rest. Mac Doctor Electronics, 1145 Terra Bella Ave., Mountain View, CA 94043.



Williams & Macias
myDiskLabeler™

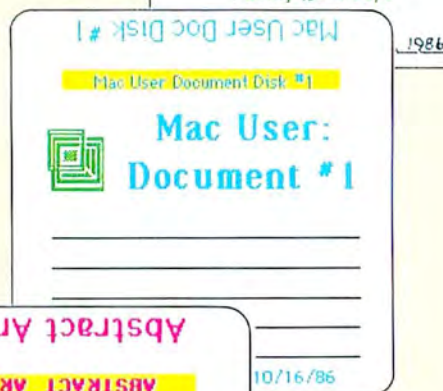
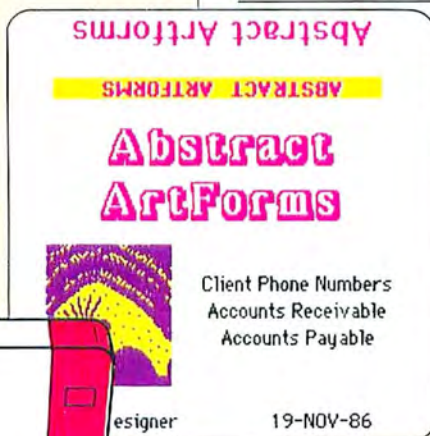
**Be as organized outside your Macintosh™
as you are inside**

- 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

Letters

News, even though I looked on Compu-Serve and asked around. Where should I try next?

John Cartwright
Alexandria, Virginia

You can find MacFractal on Educomp's disk number 3. Robert Eckhardt has unearthed another fractal program that's fast and fun: Robert P. Munafò's Super MandelZoom, available on Educomp's disk number 335 or on Public Domain Exchange's disk number 112. Public Domain Exchange's disk number 118 also contains other fractal programs. For the addresses of both these organizations, which distribute shareware and public domain software, look in the introduction of the Where to Buy section of Macworld. For evaluations of more programs of this ilk, see Eckhardt's 432-page book, Free (and Almost Free) Software for the Macintosh (\$19.95), due out this month from Crown.

Accounting for Taste

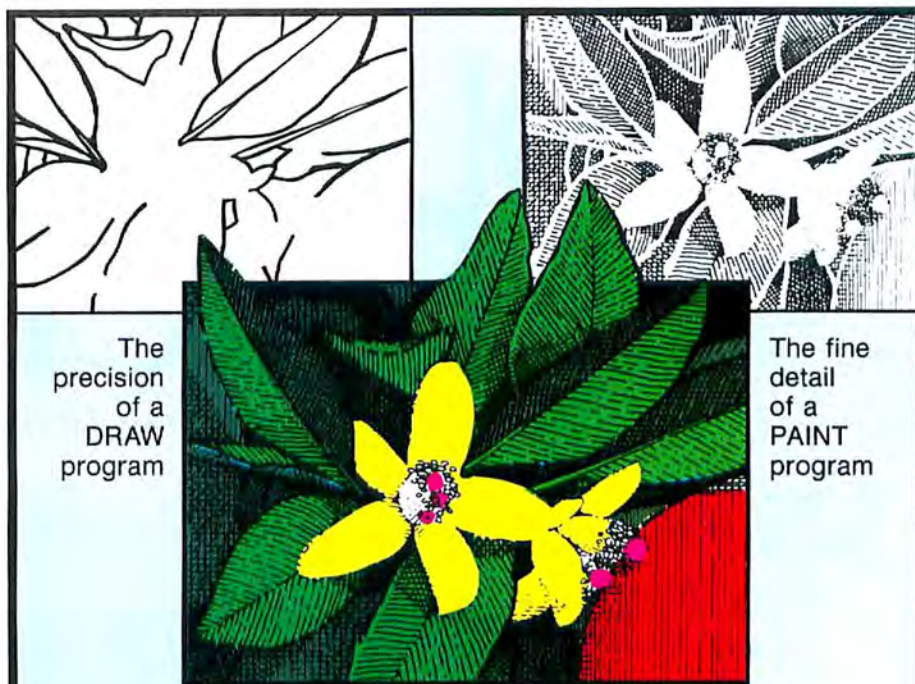
Steve Mann's review of the *Great Plains Accounting Series* [Reviews, Macworld, April 1987] was merely Mann's opinion of the Mac interface and the pricing of Great Plains' after-sale service and support. The reason Mann never once got through to the support people is that he failed to register the software. Not only do we provide the standard support services for our customers—three telephone support plans, updates, and a quarterly newsletter—we also offer other services, for example, on-site installation and customer training, chart-of-accounts proofing and setup services, workbook of frequently asked questions, data conversion services for new versions of the software, and so on.

Great Plains is the only Mac accounting software offering a complete retail solution with point-of-sale invoicing, including the capability to use cash drawers and bar-code readers. Mann's review gave only lip service to the extensive accounting functionality of the software.

Linda Bullert,
Product Marketing Manager
Great Plains Software
Fargo, North Dakota

A short review can't list every feature of a complex series of programs like the *Great Plains accounting software*; in fact, the review specified that only four modules could be covered in the space allotted.

(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: \$99.00

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, Inc.
P.O. Box 261430
San Diego, CA 92126
(619) 695-6956

Circle 266 on reader service card

QUALITY PRICE.

(Quality and price are inseparable at Warp Nine.)

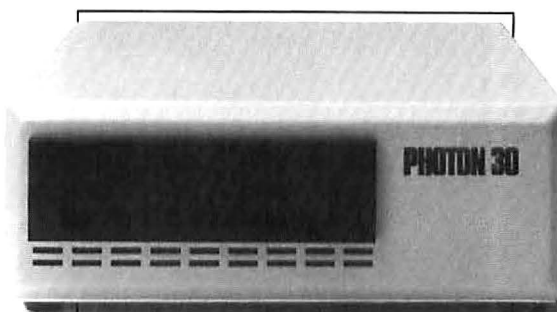
The Photon 20, 30 and 40.

Our best selling products. A 21, 31, or 41Mb external SCSI hard drive.

\$569.00

\$789.00

\$949.00



THE PHOTON 20, 30 AND 40
Hard Drives

Memory Upgrades.

WarpRam—512k to 1Mb—\$189.00

DataRam—2Mb upgrade—\$259.00

MonsterRam—2.5Mb upgrade. Uses
1 megabit chips—\$595.00

Software Products.

LaserSprint—Laser spooler—\$59.95

PrintSprint—ImageWriter™
spooler—\$29.95

FullBack—Hard disk Backup—\$39.95

Software Bundles

—LaserSprint/FullBack—\$79.95

—PrintSprint/FullBack—\$39.95



THE PHASER 800
Floppy Drive

Introducing Three New Internal Hard drives for the Mac SE.

Buy a Mac SE with two 800k
floppies. Then install our
internal hard drive in place of one of
the 800k floppies. Takes 15 minutes.
Gives you a hard drive and a floppy
drive for hundreds less than Apple.
Features that Apple doesn't offer:

- 4 shock mounts to absorb the bumps of everyday use
- Simple to change SCSI addressing

P20i (20 Mb)—**\$499.00***

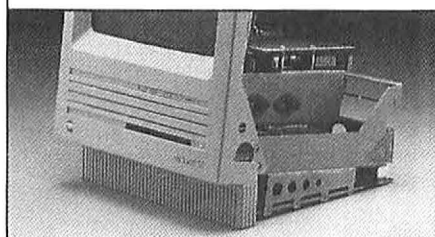
P30i (30Mb)—**\$649.00***

P45i (45Mb)—**\$899.00***

*This price includes a rebate of \$100.00 if you return the 800k floppy drive to us in our pre-supplied box. P20i, P30i, and P45i without rebate, \$599.00, \$749.00, \$999.00 respectively.



THE TRANSPORTER 20
AND THE PHOTON 2001
Tape Drive, Hard Drive/Tape Drive



MAC SE INTERNAL HARD DRIVES

For 512k Owners.

All our hard drives and tape drives
work with your 512k. Just add our easy
to install **Plusport** SCSI port
adapter. **\$140.00**

Mac Carrying Bags.

MacPlus or SE—\$79.00

ImageWriter I or II—\$64.00

Phaser 800.

MacWorld called it one of the quietest
800k floppy disk drives. (Nov. 86)—
Works with 128, 512, MacPlus, and SE.

\$189.00

Transporter 20 and Photon 2001.

Transporter is a stand alone 20Mb
tape drive. The 2001 is a combination
20Mb hard drive/20Mb tape drive.
Exceptional tape drives that backup
and restore volume, file-by-file and
incrementally.

\$799.00 \$1399.00

EASY ORDERING. FAST DELIVERY.

TOLL FREE numbers:

1-800-654-5294

1-800-328-6795 ext. 433.

In Minnesota: (612) 426-9769.

W⁹

WARP NINE ENGINEERING

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

Macintosh, Mac SE are trademarks of Apple
Computer, Inc. MacWorld
is a trademark of PCW
Communications, Inc.



Circle 439 on reader service card

Letters

The review did misstate the reviewer's evaluation of support: a sentence deleted in editing indicated that the Great Plains support people called back one to six hours later to answer his questions. Mann says, "Great Plains does provide a lot of support services that many other accounting software vendors don't, but you have to pay for all of them. The services may be useful for companies that can't rely on their CPAs, accounting personnel, or competent third parties, but all the services cost premium prices, averaging \$50 per hour."—Ed.

BASIC Chart Update

Though "BASIC Choices" in the May 1987 issue was well done and accurate, there are a couple of points covered by the comparison chart that I'd like to clarify. ZBASIC does, in fact, support long integer variables and user-defined functions (both DEF FN and LONG FN/END FN for multiline functions).

Michael A. Garipey, Chairman
Zedcor, Inc.
Tucson, Arizona

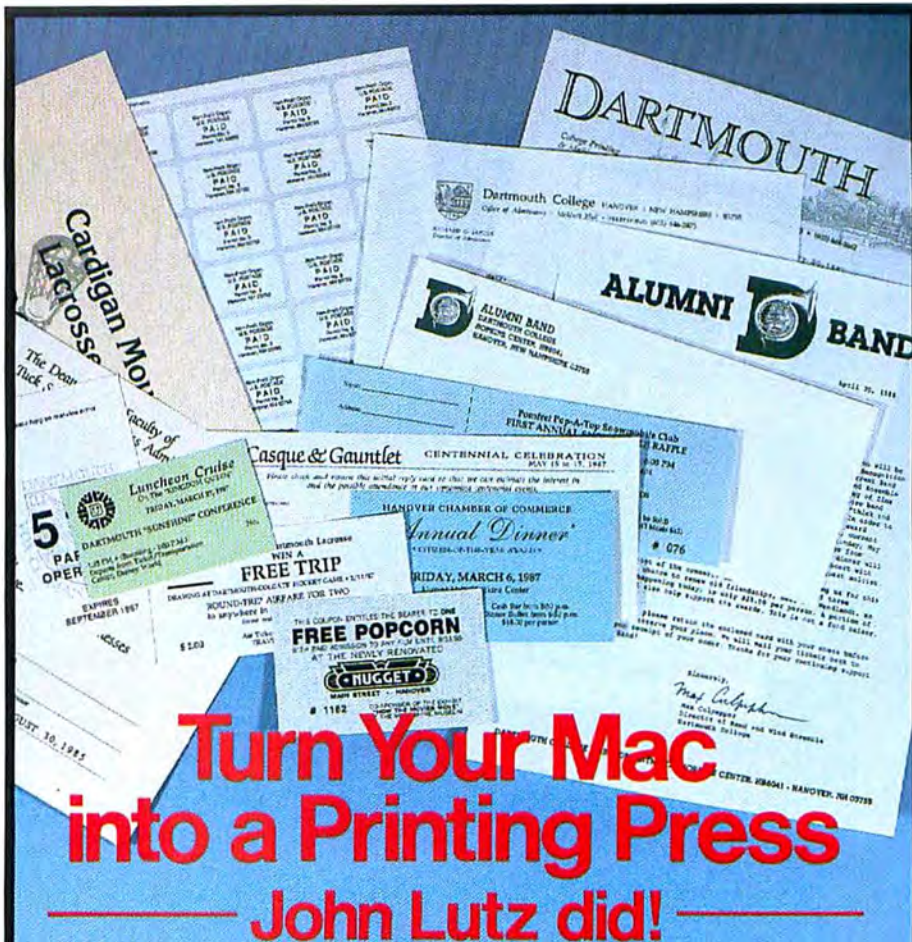
That Smarts

A year ago I ordered MacSmarts from Cognition Technology of Cambridge, Massachusetts. After many phone calls, I received only a prerelease version of the program, which lacked proper documentation.

L. Randall Crawford
Durham, North Carolina

We have received a number of similar complaints recently. Richard Mansfield, president of the firm, admits that customer service has been inadequate. The company had suspended shipments for several months at the beginning of the year while it upgraded the program. Mansfield says version 1.1 is now available for \$149.95 through dealers and mail-order suppliers such as Mac Connection and ComputerWare.—Ed.

Letters should be mailed to Letters, Macworld, 501 Second St., San Francisco, CA 94107, or sent electronically via MCI Mail or 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. □

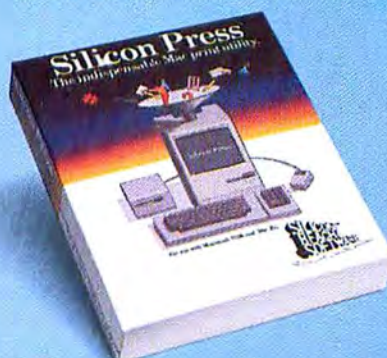


Turn Your Mac into a Printing Press

John Lutz did!

John Lutz, Director of Printing at Dartmouth College, uses Silicon Press to produce a world of print materials such as multiple format letters, forms, mailing labels, price labels, awards, football and theater tickets, parking permits, badges, desk placards, bin markers... you name it!

You too can easily generate a wealth of print material with Silicon Press.



Suggested Retail Price: \$79.95

System Requirements:
Macintosh 512K, Plus, XL

*Macintosh is a trademark licensed to Apple Computer, Inc.
Silicon Press is a trademark of Silicon Beach Software, Inc.

Silicon Press works equally well with LaserWriters and ImageWriters, and prints in color with the ImageWriter II.

"As a result of its (Silicon Press)' clean, bug-free design, it is very easy to work with, and the manual is a model of how good software manuals should be written."

C.J. Weigand, The MACazine,
Aug '86

"It took us just an hour after opening the box to create LaserWriter labels and ImageWriter card-type output."

MacInTouch, Apr '86



Silicon Beach Software, Inc.
P.O. Box 261430
San Diego, CA 92126
(619) 695-6956

Circle 266 on reader service card

File Edit **M.D.A.™**

General Ledger	#6
Accounts Receivable	#H
Accounts Payable	#J
Inventory Control	#B
Reps - Sales Activity	#S

Additional Menus	#*
------------------	----

Purchases - Receipts	#2
----------------------	----

Sales Orders - Quotes	#0
-----------------------	----

Invoicing	#1
-----------	----

Posting & Closing

File Maintenance

Internal Data

Select Other Company



Macintosh Plus





Your entire accounting staff can order from this menu.

Feast your eyes on the one menu that lets your entire accounting department share access to the most powerful, most complete multiuser accounting system ever developed for Macintosh.*

This is Multiuser Desktop Accounting™ (MDA™).

Using MDA, your staff can keep your company in order. Tracking projects and controlling every aspect of your company's financial operation. And they can do so for multiple companies.

Service for one or a party of 32.

Whether your accounting department is a single desk, or several offices, MDA will fit your needs. With plenty of room for growth.

The single-user version is upgradable to multiuser. And with the multiuser version, you can expand to up to 32 workstations.*

What's more, your entire staff can work at the same time. Even on the same datafile. While one person is recording accounts payable, another can update inventory, and someone else can process sales orders. The system uses record locking to safeguard against two people editing the same record. And to limit user access where necessary, MDA gives you eight user security password levels, plus a master user level.

An expandable selection of capabilities, courtesy of OMNIS 3 Plus™

MDA is a highly sophisticated accounting system. Written by accountants. For accountants. And best of all, it's written

on the OMNIS 3 Plus database.

In *MACWORLD*, OMNIS 3 Plus has been described as "...Powerful, Ultra Fast, Dependable, Flexible, and probably the most supported relational database management program there is for the Apple Macintosh computer!"

That means an accounting system with plenty of power and very few limitations. For example, MDA handles numbers up to \$9,999,999,999.99—per account. And the number of accounts is limited only by disk capacity.

All of MDA's accounting functions are fully integrated, so it's truly a single-entry system. And those functions include virtually every accounting procedure you could ask for. (Just look at the menu.)

If you don't see something you need, don't worry. With the purchase of our Coding Option—and the help of an OMNIS 3 developer—you can create your own formats and reports, then integrate them into the system.

In addition, a growing number of optional modules—including a complete payroll system—are available to meet specialized accounting requirements.

A single menu means singular ease of use.

With MDA, accountants can put the full power of computers to work, without having to learn complex commands and operating procedures.

You initiate every accounting and reporting operation from the MDA menu. There are no separate modules to load.

The entire system is menu-driven. So you can proceed from one operation to another with speed and confidence. Even switch from one company to another simply by selecting a command.

Full service, and expert technical support.

Should you have a question or a new requirement, you can rest assured you'll get the support you need.

MDA is supported by the nationwide network of OMNIS Support and Development Centers. In addition, training is available for you and your staff at any MDA Certified Training Center.

Now that we've whet your appetite with the multiuser capabilities of MDA, call 1-800-458-7466. And put the power of Multiuser Desktop Accounting to work in your office.

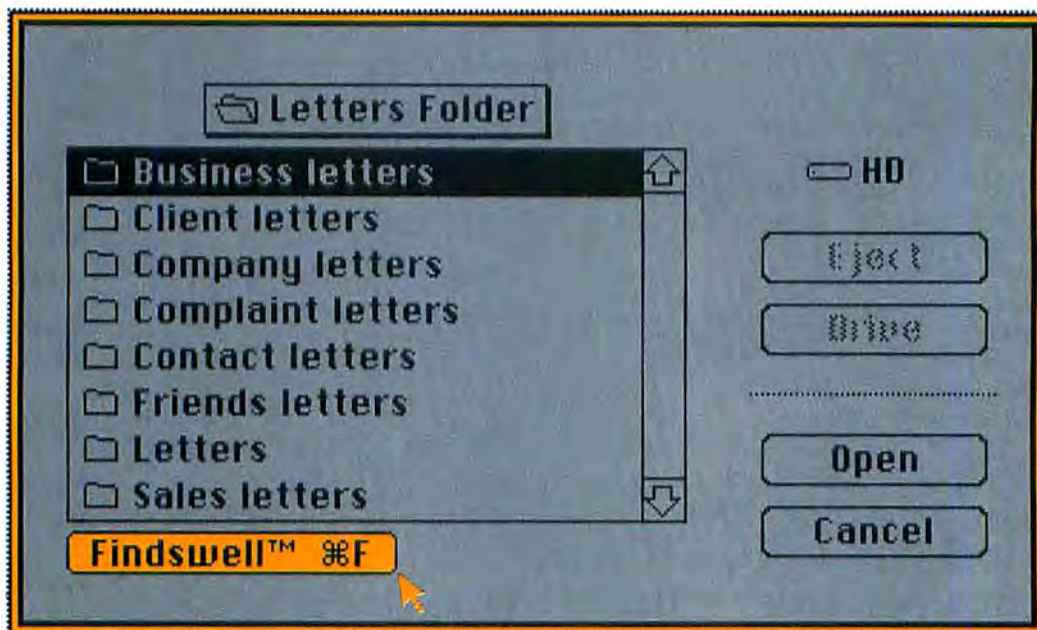


MDA Multiuser Desktop Accounting from CIRCO BUSINESS SOLUTIONS

1729-A Little Orchard Street, San Jose,
CA 95125 (800) 458-7466 (408) 998-1132
Look for us at Max Expo Boston Booth 726

Macintosh is a trademark licensed to Apple Computer, Inc.
OMNIS 3 Plus is a trademark of Blyth Software, Ltd.
*In its multiuser version MDA supports an accounting staff working
in the same or various areas simultaneously, limited only by the
database-hardware networking capabilities. © 1987 Circo
Business Solutions.

Circle 697 on reader service card



Finders keepers. Losers weepers.

You've searched and searched, from folder to folder. But that document you were working on last month is nowhere to be found. And you've wasted 10 minutes looking.

Read This. And Weep.

With Findswell Document Finder and Opener, you could have found your lost document—in seconds. From Findswell, type all or part of the name, and press the FIND button. That's all there is to it. Every matching document and folder is presented. And those that can't be accessed by the current application are dimmed. So there's never a need to cancel, run a desk accessory, find the document, and go back to the open box.

One-Touch Tracking.

When you've located the right document, one click tells you the date and time you last worked on it, as well as its size and the program that created it.

Double-click on the name or press OPEN and your document is opened and ready

for work. Double-click on the folder name and you go back to the Open Box, transferred into that folder.

Once You Find It, You Can Keep It.

Findswell remembers the documents and folders you use frequently. And gives you immediate access to them. You don't have to waste valuable time "traversing the tree" from folder to folder.

Use It. Or Lose It.

Never lose another document again.

- Findswell is easy to install—just place it in your System Folder.
- Findswell adds a new button to the Open Box of every Macintosh program.
- Findswell eliminates the annoying need to "traverse the tree" from folder to folder.

From The Company That Brought You Spellswell.

Findswell was developed by Working Software, Inc., the company that designed SPELLSWELL™, winner of the prestigious

MacUser Editor's Choice Award, Best Spelling Checker (standalone) and named one of the Most Important Products for the Macintosh by the Macintosh Buyer's Guide.

That means you'll be backed by a company known for its outstanding products and customer support.

It's Only \$49.95. So Buy It, For Cryin' Out Loud.

So there it is. The choice is yours. You can purchase Findswell and solve your "lost document" problems forever. Or you can just keep crying about it.

Findswell is available from your local dealer. For more information, call (408) 375-2828. To order direct, call (800) 331-4321. In California, call (800) 851-1986.



**WORKING
SOFTWARE
INC.** *Software that works well.*

321 Alvarado, Suite H, Monterey, California 93940

FINDSWELL and SPELLSWELL are trademarks of Working Software, Inc.

Circle 732 on reader service card



What's in a Face?

The Mac's famous interface has sold the computer to users. What's next, now that the competition has been sold on the idea?

Recently I heard an Apple spokesperson extolling the virtues of the Mac's graphical interface. The speaker was well into convincing his audience of the advantages of the windowing metaphor when it struck me that there may be people out there who aren't looking beyond the technology provided by Apple.

Windowing in a graphics environment has been around much longer than Apple Computer, but Apple succeeded wildly in popularizing windows, menus, and the mouse. Certain of its operating characteristics are innovations unique to Apple. Recognizing what came before and Apple's contribution to what has been since, we come to the present.

In the aftermath of IBM's announcement of its System 2 computers and OS/2 software (which will support windows), a pertinent question comes to mind: "So who *doesn't* use a graphical interface?" Many universities and Digital Equipment Corporation have endorsed *X-Windows*; Sun supports *News*; Apple and IBM . . . well, we know them. But let's be fair. Microsoft says it won't even be shipping development tools for OS/2 before the fall of 1987. Applications won't appear before 1988. So Apple has quite a lead time to continue with its own innovations to the windowing metaphor.

Or does it? Close study of the OS/2 specifications shows that OS/2 is intended to be a real multitasking operating system. In particular it has three key features. OS/2 has the ability to schedule CPU tasks so that different applications can share the CPU (preemptive scheduling), it has communications protocols that allow background tasks to intercede with other applications (interprocess communications protocols), and finally OS/2 allocates spe-



BOB SACHA

Jim Rafferty, president of Cricket Software, is the latest Mac developer to announce his intention to branch out into producing software for the new IBM machines.

cific memory locations to different applications and then protects these locations (hardware memory allocation).

OS/2 may still be a glimmer in Bill Gates's eyes, but it is an acute glimmer. Apple, on the other hand is merely taking steps toward these advances with its new System and Finder. In fact the new System, like Andy Hertzfeld's original *Switcher*, may crash when applications "borrow" memory from one another. However, Apple believes that a gradual move to a richer multitasking environment will allow time for third-party software developers to keep up with changes to the Apple System software.

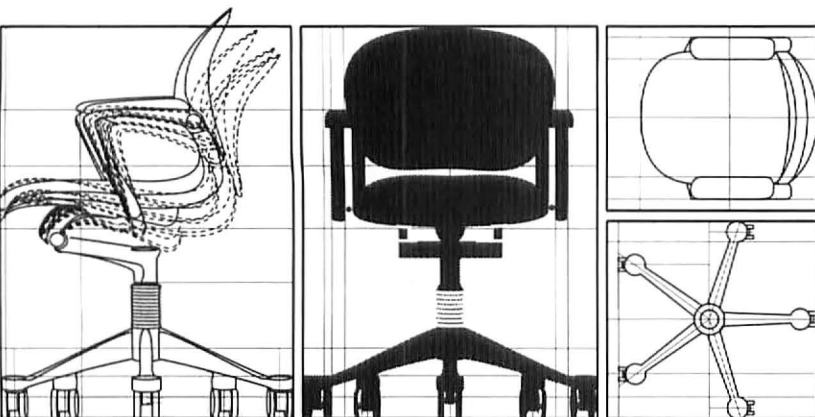
Well then, Apple has lots to do this year if it is to stay ahead of the Microsoft/IBM team. But what about applications? Surely Apple leads there? Yes, but many Apple stalwarts—Aldus, Adobe, and Cricket among them—have developed or will develop products for *Windows*. And they believe that adjusting their programs to fit OS/2 will not be a daunting task. So the applications lead may dwindle rapidly, at least for the best-selling products.

Then there's the interface itself. Earlier this year I praised the little touches—cleanup, the Trash Can, the watch hands, and so on—that changed with the SE and Mac II. But the interface is showing signs of age. There are those, including people within Apple, who believe that the interface, the company's most valuable asset, is being ignored. Some of the interface deficiencies and needed improvements are obvious: the development of a color picker, the incongruities of scroll bars for long documents, nonstandard features of different Toolbox functions (buttons, bars, and other details), the problem of stacking multiple windows, the still-primitive state of the text editor in the development tools.

Apple's crown jewels may go missing at this rate.

And there are even more troublesome interface issues that are less obvious. Some developers are implementing dialog boxes reminiscent of IBM-style programs because of the large number of file formats users

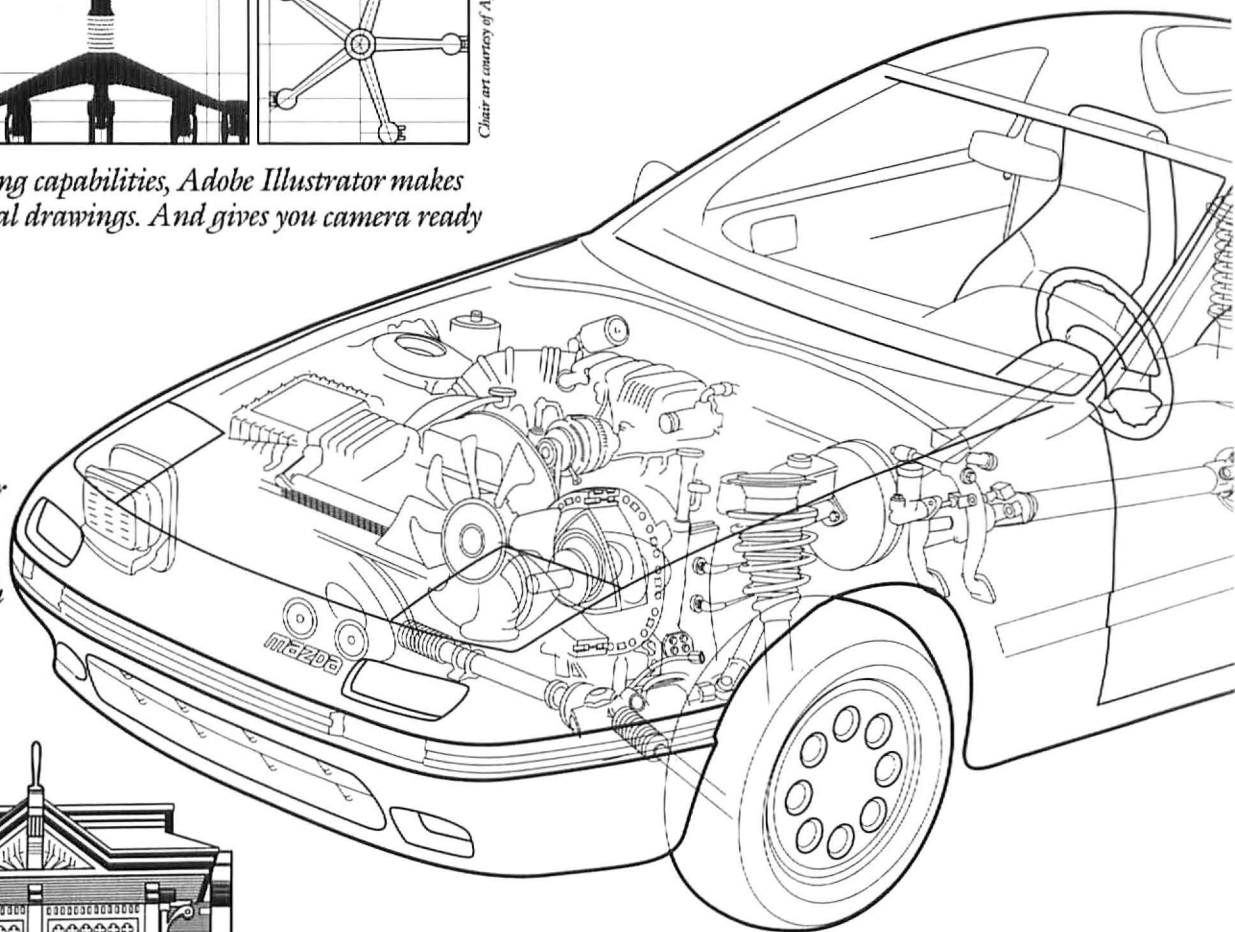
(continues)



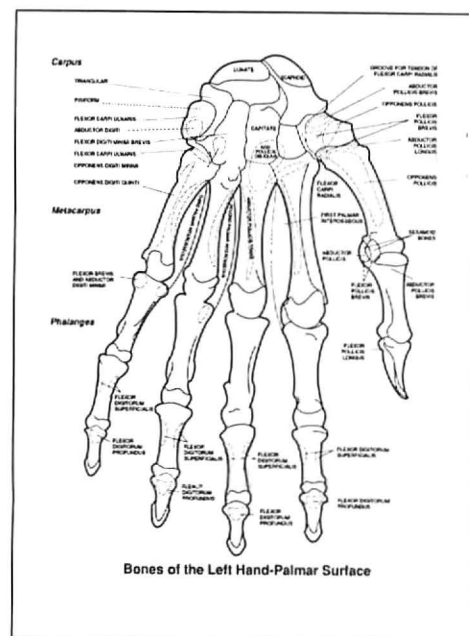
Other draw and paint programs also let you add captions. But none of them can put those captions next to the sharpest, cleanest lines and curves on the map.

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.

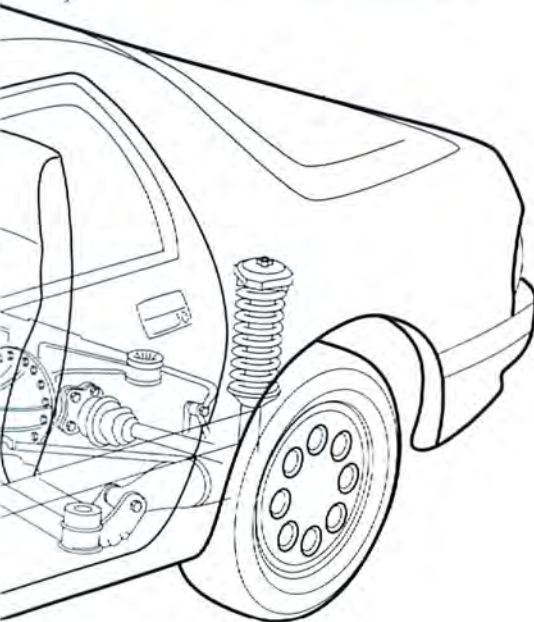
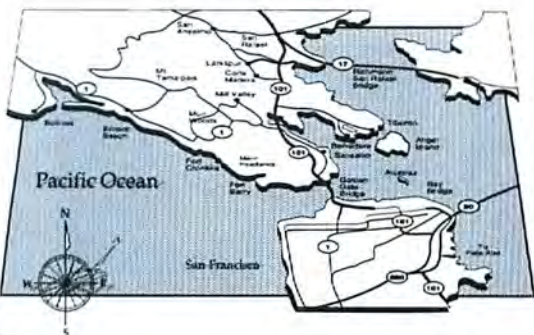
Share your drawing with other users. And if anyone wants to change it—no problem—the Adobe Illustrator can give you another perfect original. Fast.



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



*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 system.

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
SYSTEMS INCORPORATED

Circle 678 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™.

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.

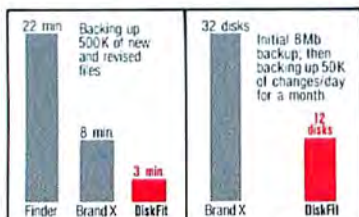
DiskFit is fast. A typical day's work is backed up to floppies in just about three minutes. Backing up from one hard disk to another is even faster.

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.



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.

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.



Commentary/Jerry Borrell



Bill Campbell, head of Apple's software spin-off, will keep Mac software a step ahead.

might require. QuickDraw, the set of built-in routines that produce graphics on the screen, is becoming the center of other controversy. QuickDraw has been an outstanding tool for programmers, but it is aging. Can QuickDraw provide a standard for interfacing with any peripheral or add-on card, so-called device independence, given the markets Apple is now addressing? Is it a robust enough model to cover forthcoming image processing and interactive graphics applications? If not, can it be upgraded soon enough to provide support for developers?

Already there's a challenger to QuickDraw; no doubt the first of many. Adobe has announced its intent to make PostScript both a page-description and a screen-display language. Should Apple be considering the same path for QuickDraw? There are developers, such as Aldus, that avoid QuickDraw and write data directly to PostScript. If many software designers follow this example, then Apple will surely lose control of technology direction, just as IBM did.

Last month in my column I asked if Apple should be in the software business. The message I hear from developers and others in the industry is yes, Apple must continue to innovate its system software. Apple has recently created a new company to market its application software. Bill Campbell, who leaves Apple to head the company, says that this is a clear statement that Apple wants to foment the growth of software for the Macintosh. Improving system software may not be as glorious a task as putting out new hardware or application software, but Apple should look twice at whether it is moving quickly enough in this area. □

Polish Up Your Mac



Programs Plus

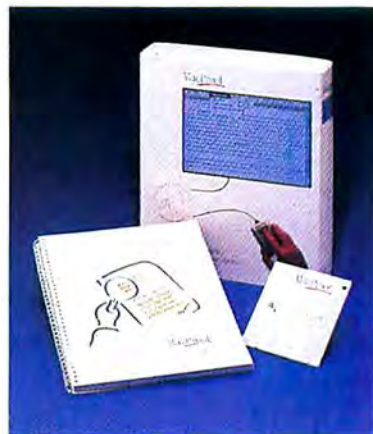
Picks of the Month with Special Pricing!

Specials Good Through August 31, 1987

MacProof by Automated Language Processing Systems

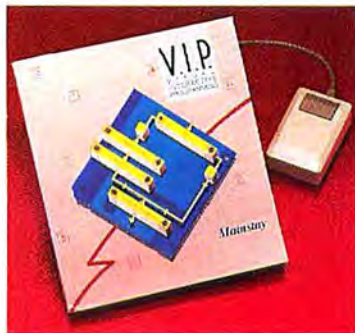
MacProof is a grammar, style and spelling checker that's like having your own personal copy editor. MacProof will work with Microsoft Word, MacWrite, or Jazz and will run in both a network and a stand-alone environment. MacProof checks for spelling, punctuation, and capitalization errors. It also checks for double words, be verbs, nominalizations, paragraph structure, sentence structure, sexist or racist words, vague and discouraged words. And, on top of all that, MacProof carries a 93,000 word dictionary that can be modified by the user. Avoid mistakes and learn to be a better writer with MacProof the most advanced electronic proofreader available!

MacProof 99.00



V.I.P. by Mainstay

Visual Interactive Programming or V.I.P. for short is a totally new type of language where a graphic interface replaces a text editor. Visual programming is done by pointing, clicking and entering expressions and arguments into elements of an on-screen flowchart. Creating a V.I.P. program is simply a matter of clicking on logic form icons and procedure class icons to choose desired procedures. A V.I.P. program is composed of graphic elements which can be cut, copied, or pasted and more than 180 pre-compiled toolbox procedures are provided to greatly simplify programming. Imagine the benefits of development in a friendly, interactive environment and with a few addi-



tional mouse clicks, having a ready to run, stand-alone application!

V.I.P. (Visual Interactive Programming) 85.00

Macinware SE Carry Case by I/O Design, Inc.

The Macinware SE carry case is designed to handle any configuration of Macintosh SE with external hard disk, external floppy disk, modem, and accessories. The inside design of the bag is broken up into padded compartments to protect each piece of equipment and a padded flap folds down over the Macintosh to accept a hard disk. This new bag's outer shell is constructed of cordura nylon with 1/2" of high density foam for protection and heavy duty nylon webbing is used throughout with all metal hardware to insure proper support. Order the Macinware SE carry case today - available in platinum color to match the Macintosh SE!



Macinware SE Carry Case 79.00

Ehman 800k Disk Drive by Ehman Engineering, Inc.

The Ehman 800k double-sided external drive features an LED (so you know the silent drive is running!), a manual eject button, and a compact case (available in beige or platinum) that matches Mac aesthetics. It's compatible with old and new Mac ROMs so you can use it on a standard Mac 512k, a MacPlus, or a Mac SE. The Ehman 800k also comes with a 12 month warranty (four times Apples!) and offers advanced power and elegant design at the price you've been waiting for!

Ehman 800k
External Drive 195.00



Peel Back
This Page
To See Our Long List
of Mac Products
At Great Prices
To Help Your Mac Shine!

Only TOLL-FREE

1-800-832-3201

Monday-Friday 9-9

Circle 194 on reader service card

Programs Plus, 75 Research Drive, Stratford, CT 06497

Programs, Peripherals,

Utility Software

Apple Computer		Personal Computer Peripherals Corp.	
Afterburner Construction Set	14.00	HFS Backup V2.0	34.00
Afterburner System Design		Eureka! (File Finding Accessory)	18.00
Afterburner Stepping Out (Macintosh Screen Extender)	58.00	Softstyle Printworks	42.00
Central Point Software		Laserstart	58.00
Copy II Mac (Includes MacTools)	20.00	SuperMac Software	
WB Software Hard Disk Util	56.00	SuperSpool (ImageWriter Print Spooler Utility)	39.00
Hard Disk Backup or Hard Disk Partition	38.00	Diskfit (Backup & Restore Utility)	49.00
Deform Mac Labeler (Version 2.2)	29.00	SuperLaserSpool	99.00
DiskQuick (Disk Librarian)	29.00	Multi-User SuperLaserSpool	259.00
InfoSphere		Think Technologies	
MacServe (Network Software)	165.00	LaserSpeed (Single User)	66.00
MacServe (LaserWriter Print Spooler)	65.00	Williams & Macias	
ComServe (Modem Sharing Software)	195.00	myDiskLabeler	24.00
MacMemory, Inc.		myDiskLabeler w/Color	33.00
MaxRam & MaxPrint	35.00	myDiskLabeler w/LaserWriter Option	35.00

Desk Accessory Programs

Affinity Microsystems Tempo	55.00	Imagine Software	
Batteries Included		Smart Alarms & Appointment Diary	38.00
Battery Pak (9 Desk Accessories)	34.00	Silicon Beach Software	
Forland		Accessory Pak #1	21.00
SideKick V2.0	59.00	Solutions, Inc.	
Sortland		SmartScrap & The Clipper	41.00
Top Desk (7 New Desk Accessories)	35.00	(New Scrapbook D4)	

Languages

Apple Computer MacPascal	99.00	Microsoft Basic Compiler 1.0	119.00
Forland Turbo Pascal	59.00	Microsoft Fortran Compiler 2.2	169.00
Consulair		Think Technologies	
Macintosh 68000 Development System	59.00	Lightspeed C	125.00
Mainstay		Lightspeed Pascal	85.00
V.I.P. (Visual Interactive Programming)	Special 85.00	TML Systems TML Pascal V2.0	68.00
Microsoft		TML Source Code Library	58.00
Microsoft Basic Interpreter 3.0	64.00	TML DataBase Toolkit	64.00
		Zedcor, Inc. ZBasic	65.00

Communications Software

Apple Computer MacTerminal	99.00	Software Ventures	
Compuserve		Microphone	58.00
Compuserve Starter Kit	24.00	Think Technologies, Inc.	
DataViz		InBox-Starter Kit V2.0	239.00
MacLink Plus with Cable	149.00	(3 Personal Connections)	89.00
Hayes Microcomputer Smartcom II	88.00	InBox-Additional Personal Connections	

DataBase Management

Ashton-Tate dBase Mac	299.00	Nantucket Corporation McMax	
Blythe Software Omnis 3 Plus	259.00	(Run dBase Programs on the Mac)	219.00
Omnis 3 Plus Multi-User		Odesta Double Helix	275.00
(MacServe, Tops Network, Corvus, or AppleShare Network)	499.00	ProVUE Development	149.00
Forland Reflex	59.00	OverVUE 2.1	149.00
Forethought FileMaker Plus	159.00	Software Discoveries	45.00
Microsoft		RecordHolder Plus	32.00
Microsoft File 1.04	110.00	MergeWrite	199.00
		Telus Software Business FileVision	

Business Software

Apple Computer		Cricket Software	
MacProject	159.00	Cricket Graph	125.00
Batteries Included		Data Tailor	
Isur Portfolio System	129.00	Trapeze (Spreadsheets) Color Report Generator	169.00
Time Link	34.00	Forethought PowerPoint	209.00
Bravo Technologies MacCalc	85.00		

Orders Only
1-800-832-3201

In Connecticut call 378-3662 or 378-8293
Customer Service (203) 378-3662
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 you 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 minimum 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.

Layered		Microsoft Chart 1.0	72.00
Notes For Excel, PageMaker, or Microsoft Works (each)	42.00	Microsoft Excel 1.04	224.00
Legissoft/Nolo Press		Satori Software	
WillWriter V2.0	32.00	Legal Billing	385.00
Lotus Jazz (Version 1.A)	179.00	Legal Billing II	519.00
Micro Planning Software		Project Billing	445.00
Micro Planner Plus	299.00	Bulk Mailer	74.00
Microsoft		Bulk Mailer Plus	225.00
Microsoft Works 1.0	189.00	Target Software Memorandum	
Microsoft Multiplan 1.11	110.00	(Attach Electronic Notes to Files)	62.00

Word & Outline Processors

Ann Arbor Softworks		OWI International	
Doug Clapp's Word Tools	169.00	Guide	79.00
Apple Computer MacWrite	99.00	Guide Envelope System	99.00
Firebird Licensees Laser Author	109.00	Symmetry Acta V1.2	38.00
Living Videotext More	149.00	Target Software Voila!	98.00
Microsoft Microsoft Word 3.0	239.00	T/Maker Company WriteNow	

Spelling & Grammar Checkers

Aegis Development		Target Software	
Doug Clapp's Word Tools	45.00	Mentor (Network Compatible Spelling Checker)	62.00
Aegis Speed Speller	29.00	Mentor Plus (Includes Definitions)	119.00
Word Tools Combo Pack	65.00	Merriam Webster Thesaurus for Microsoft Word 3.0	39.00
A.L.P. Systems MacProof V2.0 (Requires MacPlus)	Special 99.00	Working Software Inc.	
Batteries Included		Spellswell Spelling Checker & Proofreader V1.3	45.00
Thunder!		Medical Dictionary (35,000 Medical Terms)	65.00
(Interactive Spelling Checker)	34.00		
Lundeen & Associates			
WorksPlus Spell	39.00		

Desktop Publishing

Aldus Corporation PageMaker	499.00	Orange Micro, Inc. Ragtime V1.1	199.00
Boston Publishing Systems		(Integrated Page Processing)	
The MacPublisher III	199.00	Solutions, Inc.	41.00
Letraset Letra Hyphen	79.00	Glue (Adds "Print to Disk" Capability)	Call
Letra Index	79.00	Target Software	
Ready, Set, Go! 3	Call	Scoop (Creative Desktop Publishing)	Call

Accounting Packages

BPI		Monogram Dollars & Sense	81.00
BPI Entry Series-General Accounting	135.00	Business Sense (GL/AR/AP)	339.00
Chang Labs		Palantir General Ledger	49.00
New Enhanced Version III Modules!		or Accounts Receivable	
Rags to Riches GL, AR, or AP	125.00	Peachtree	
Rags to Riches Three Pack- (GL/AR/AP)	299.00	Back To Basics Three Pack (GL/AR/AP)	129.00
Inventory Control	243.00	Sierra On-Line	
Professional Billing	243.00	MacOneWrite Three Pack (GL/AR/CD)	59.00
Professional Three Pack- GL/Professional Billing/Payables	349.00	SoftSync Accountant, Inc.	179.00
Digital, Etc.		Survivor Software	
Turbo Macaccountant V2.0	259.00	MacMoney (Financial Planner)	42.00

Statistics Packages

BrainPower		Cricket Software Statworks	77.00
StatView S12 Plus	179.00	Systat Systat (Version 3.0)	459.00

Graphics Software

Altsys Corp. FONtastic	27.00	Miles Computing Mac The Knife	27.00
FONtastic Plus	49.00	Volume III, IV, V, or VI	48.00
Fontographer 2.2	245.00	Mindscape ComicWorks	64.00
Ann Arbor Softworks Full Paint	55.00	GraphicWorks I.I	
Apple Computer MacPaint	39.00	Silicon Beach Software	
Broderbund Print Shop	32.00	SuperPaint	54.00
Toy Shop	32.00	Silicon Press	41.00
Casadyware		Springboard Certificate Maker	35.00
Fluent Fonts (Two-Disk Set)	29.00	Certificate Maker Library #1	21.00
Fluent Laser Fonts Vol. 1-15 (ea)	48.00	Symmetry PictureBase V1.2	44.00
Dubi-Click Software		T/Maker	
World Class Fonts! Vol. 1 or Vol. 2	28.00	Click Art Letters or Personal Graphics	28.00
World Class Fonts! (Both Volumes)	49.00	Click Art Publications or Effects	28.00
WebPaint Vol. 1 or Vol. 2	28.00	Click Art Letters II or	
WebPaint (Both Volumes)	49.00	Click Art Holidays	28.00
Hayden VideoWorks	59.00	Click Art Business Image	28.00
LaserWare, Inc. LaserPaint	319.00	Click Art Laser Fonts: Plymouth, Bombay, or Seville (each)	46.00
LaserWorks	199.00		

CAD Products

Apple Computer MacDraw	159.00	Enabling Technologies Easy 3D	69.00
Challenger Software		Professional 3D	199.00
Mac 3D (Enhanced Version 2.0)	119.00	Innovative Data Design	
Cricket Software Cricket Draw	177.00	MacDraft (Updated Version 1.2)	159.00

Educational/Creative Software

Addison Wesley		Math Blaster or Word Attack!	28.00
Puppy Love	14.00	Electronic Arts	
Baudeville		Deluxe Music Construction Set V2.0	63.00
Ted Bear Discovers...Rainy Day Games	20.00	First Byte	
Guitar Wizard	20.00	Kid Talk, Speller Bee,	
Broderbund Sensei Geometry	64.00	First Shapes, or Math Talk	27.00
Davidson & Associates		MathTalk Fractions, First Letters & Words, or Smoothtalker	27.00
Speed Reader II	39.00		

Phenomenal Prices...

Great Wave Software		Rubicon Publishing	
KidsTime or TimeMasters	28.00	Dinner at Eight	32.00
Concertware 4.0	45.00	Silver Palate Collection	28.00
Concertware+ MIDI 4.0	95.00	Dinner at Eight-Silver Palate Bundle	54.00
Hayden MusicWorks		Simon & Schuster	
Score Improvement System for the SAT	59.00	Typing Tutor III	35.00
Kette Group Studio Session	69.00	Paper Airplane Construction Set	24.00
Micro: Maps		Spinnaker Typing Made Easy	32.00
MacAtlas U.S.A. or MacAtlas World	49.00	Springboard	
Mindscape Perfect Score SAT		Early Games for Young Children	28.00
w/ The Perfect College	46.00	Easy as ABC	28.00

Game Software

Accolade Hard Ball	25.00	Microsoft	
Activision Shanghai or Hacker II	25.00	Flight Simulator 1.0	32.00
Hacker	16.00	Miles Computing Inc.	
Portal	32.00	Downhill Racer or	
Tass Times In Tonetown	22.00	Harrier Strike Mission II	27.00
Artworx Bridge 4.0	20.00	Mindscape	
Avalon Hill Mac Pro Football	30.00	Balance of Power or Crossword Magic	32.00
Broderbund Ancient Art of War	27.00	Deja Vu: A Nightmare Comes True	32.00
Bulleye Software		King Of Chicago or Shadowgate	32.00
Fokker TriPlane Flight Simulator	34.00	Defender of The Crown,	
Ferrari Grand Prix	34.00	Sinbad, or S.D.I.	32.00
Electronic Arts Starfleet I	37.00	The Uninvited	32.00
ChessMaster 2000	30.00	Practical Computer Applications	
Pinball Construction Set	27.00	MacGolf 2.0 or MacRaguetball	36.00
Patton vs Rommel or One-On-One	27.00	MacCourses	34.00
Seven Cities of Gold	27.00	Psi-on	
SkyFox, Archon, or Scrabble	27.00	Psi-on Chess (3D & Multi-Lingual)	31.00
EPYX Winter Games		Sierra On-Line Space Quest	32.00
or Sub Battle Simulator	24.00	Black Cauldron	25.00
Firebird Pawn	27.00	King's Quest I, II, or III (each)	32.00
Hayden Software Sargon III	29.00	Silicon Beach Software	
Infinity Software, LTD.		Enchanted Scepters	21.00
Grand Slam Tennis	27.00	Dark Castle	28.00
Inform		World Builder	41.00
Ballyhoo, Bureaucracy, Hitchhiker's		Simon & Schuster	
Guide, Hollywood Hyjinx, Leather		Star Trek (The Kobayashi Adventure)	24.00
Goddesses of Phobos, Moon Mist,		Sir-Tech Mac Wizardry	35.00
Stationfall, The Lurking Horror,		Sphere, Inc. GATO	26.00
Trinity, or Zork I (each)	25.00	Orbiter or Falcon	26.00
Zork Trilogy	45.00	Sublogic JET	35.00
Intellereations		JET Scenery Disk #7	
Alternate Reality/ The City	29.00	(South East Region)	18.00

Disk Drives/Hard Disks/Upgrades

AST Research		ProAPP 30S Hard Disk Subsystem	
AST-2000	1399.00	(MacPlus SCSI)	789.00
20 MB External Hard Disk with		ProAPP 40S Hard Disk Subsystem	
20-MB Cartridge-Tape Backup		(Sub-30msec. Voice Coil	
for the Macintosh Plus.		Technology)	1239.00
AST-4000	3699.00	MacMemory, Inc.	
74 MB External Hard Disk with		All Mac Memory products carry	
60-MB Cartridge-Tape Backup		a full two year warranty!	
for the Macintosh Plus.		MacPlus	
Dove Computer Corporation		(2MB Upgrade w/ MacRam)	
MacSnap Model 524		MaxPrint/MaxChill)	329.00
(512K to 1MB Upgrade)	139.00	MacPlus 2x4	
MacSnap Model 548		(2.5MB Upgrade with 1MB	
(512K to 2MB Upgrade)	369.00	Chips-Hyperdrive Compatible)	519.00
MacSnap Model 548S (512K		MaxPack (MacPlus and	
to 2MB Upgrade w/ SCSI Port)	479.00	MaxSave Bundle)	379.00
MacSnap Plus 2		MaxPort ("SCSI" Port	
(Mac Plus to 2MB Upgrade)	249.00	for your Mac 512K)	139.00
MacSnap Plus 2H (Mac Plus		Mirror Technologies	
to 2MB Upgrade w/ 1MB Chips)	589.00	Magnum 800K External Drive	
MacSnap Toolkit (Wrench,		(Available in Beige or Platinum)	209.00
Case Cracker & Grounding Set)	14.00	Personal Computer Peripherals	
Ehman Engineering		Available in Beige or Platinum Color	
Available in Beige or Platinum		MacBottom HD-21	
Hard Disk Drive	Special 195.00	(20+ Mb SCSI Hard Disk)	865.00
Iumega Dual Cartridge Drives		MacBottom HD-32	
Bernoulli Box 2-10MB w/ SCSI	1419.00	(32Mb SCSI Hard Disk)	995.00
Bernoulli Box 2-20MB w/ SCSI	1849.00	MacBottom HD-45	
10MB Cartridges (3 Pack)	159.00	(45Mb SCSI Hard Disk)	1285.00
20MB Cartridges (3 Pack)	239.00	MacBottom 20 (20+ Mb	
Head Cleaning Kit	69.00	Serial Hard Disk for	
Logic Arrays/ProAPP		Mac 512k & MacPlus)	865.00
High Speed Drives with a One-Year Warranty!		Rodime Systems Rodime 20 Plus	
ProAPP 20S Hard Disk Subsystem		Hard Disk (MacPlus SCSI)	759.00
(MacPlus SCSI)	649.00	Western Automation Labs	
		Dasch External RAMdisk (2048KB)	429.00

Modems

AST Research		InterBridge	
High Quality Modems for the		(Connect Appletalk Networks)	599.00
MacPlus, Mac SE, & Mac II		Prometheus Promodem 1200	
AST-1200 (1200 Baud Modem)	349.00	(Hayes Compatible)	239.00
AST-2400 (2400 Baud Modem)	489.00	Promodem 2400	
Hayes Microcomputing		(Hayes Compatible)	309.00
Smartmodem 1200	369.00	Mac Pack w/ Procom M and Cable	49.00
Smartmodem 1200 Mac		(Specify Mac or MacPlus)	
w/ Smartcom II & Cable	425.00	U.S. Robotics Courier 1200	
Smartmodem 2400	569.00	(Hayes Compatible)	199.00
Transtet 1000-128K	269.00	Courier 2400 (Hayes Compatible)	359.00
Transtet 1000-512K	359.00	Courier 2400E (Hayes Compatible)	459.00
Transtet 1000 Mac Accessory Kit	29.00	Courier 9600 (Hayes Compatible)	729.00

Blank Media

Single Sided 3 1/2" Diskettes		Sony 3 1/2" SS/DD Disks (box of 10)	14.00
BASF 3 1/2" SS/DD Disks (box of 5)	9.00	Centech 3 1/2" SS/DD Color Disks	
Bulk (Sony) 3 1/2" SS/DD Disks (10)	13.00	(box of 10)	16.00

Fuji 3 1/2" SS/DD Disks (box of 10)	15.00	Centech 3 1/2" DS/DD Color Disks	
Maxell 3 1/2" SS/DD Disks (box of 10)	14.00	(box of 10)	23.00
Verbatim 3 1/2" SS/DD Disks (box of 10)	15.00	Sony 3 1/2" DS/DD Disks (box of 10)	21.00
3M 3 1/2" SS/DD Disks (box of 10)	16.00	Fuji 3 1/2" DS/DD Disks (box of 10)	21.00
C.Itoh Color Disks SS/DD (box of 10)	20.00	Maxell 3 1/2" DS/DD Disks (box of 10)	21.00
Double Sided 3 1/2" Diskettes		Verbatim 3 1/2" DS/DD Disks (box of 10)	23.00
BASF 3 1/2" DS/DD Disks (box of 5)	12.00	3M 3 1/2" DS/DD Disks (box of 10)	24.00
Bulk (Sony) 3 1/2" DS/DD (10)	19.00	C.Itoh Color Disks DS/DD (box of 10)	26.00

Digitizers

AST		New Image Technology	
TurboScan (Optically Scans &		Magic Digitizer (Mac 128/512k	
Digitizes at 300 Dots-Per-Inch)	1399.00	or MacPlus Version)	249.00
Kette Group		Summagraphics MacTablet 6x9 size	289.00
MacNifty Audio Digitizer		MacTablet 12x12 size	379.00
w/SoundCap	99.00	ThunderWare	
Koala Technologies Corp.		ThunderScan V4.0 with Power Port	
MacVision (Digitizer)	175.00	(Mac 512K, 512K Enhanced,	
		MacPlus, and Macintosh SE)	199.00

Accessories

A.M. Products		External Disk Drive Cover	8.00
3 1/2" Head & Computer Cleaning Kit	18.00	ImageWriter or ImageWriter II Cover	9.00
Beech-Tech Fanny Mac	69.00	Macintosh (Plus) Dust Cover	9.00
Cambridge Automation		Mouse Cleaning Kit w/ Pocket	17.00
Numeric Turbo	99.00	Mouse Pocket	8.00
Curtis Manufacturing		Mouseway (Mousepad)	8.00
Diamond-Surge Suppressor-SP1	29.00	Polarizing Filter (Beige or Platinum)	34.00
Emerald-Surge Suppressor-SP2	36.00	Starter Pack (includes Tilt/Swivel)	59.00
Ruby-Surge Suppressor-SPF-2	55.00	Surge Protector	34.00
Sapphire-Surge Suppressor-SPF-1	47.00	Tilt/Swivel (Beige or Platinum)	22.00
Ergotron		Control Center	64.00
MacTilt or MacTilt SE		Printer Stand	18.00
(Platinum Color)	74.00	Universal Copy Stand	24.00
Mouse Cleaner 360	15.00	Printer Muffler 80	40.00
MacBuffer 512K	329.00	Printer Muffler 132	55.00
MacBuffer 1024K	429.00	Kette Group	
Innovative Concepts		MacNifty Stereo Music System	
Flip 'n' File/Micro	9.00	MNS-300 (Dolby, Bass, Treble)	99.00
Flip 'n' File II/Micro	18.00	MacMemory, Inc.	
I/O Design		MaxChill	
Mac Luggage Available in Navy		(Internal Piezo-Electric Fan)	37.00
or Platinum Gray		Moustrak MousePad 7" x 9" Size	8.00
Macinware Plus Carrying Case	69.00	MousePad 9" x 11" Size	9.00
Macinware SE Carrying Case	Special 79.00	MPH Computer Products	
ImageWare II Carrying Case	49.00	MAC-B-COOL	89.00
Kalmar Designs		Ribbons Unlimited	
Teakwood Roll-Top Disk Cases:		Available in Black, Blue, Brown, Green,	
Micro Cabinet (holds 45 disks)	14.00	Orange, Purple, Red, Yellow, Silver & Gold	
Double Micro Cabinet (holds 60 disks)	21.00	ImageWriter Ribbon-Black	4.50
Jumbo Micro Cabinet (holds 135 disks)	31.00	ImageWriter Ribbon-Color	5.00
Kensington		ImageWriter Rainbow Pack (6 Colors)	25.00
System Saver Mac		ImageWriter II-Four Color Ribbon	12.00
(Beige or Platinum)	64.00	The Madison Line	
Turbo Mouse	85.00	Professional Series Carry	
A/B Box (MacPlus Only)	64.00	Cases In Black Ballistic Nylon	
Disk Case (holds 36 Mac disks)	19.00	Mac(Plus) Carry Case	79.00
Disk Drive Cleaning Kit	20.00	ImageWriter I (II) Carry Case	75.00

Positively A Plus!

PROGRAMS PLUS

75 Research Drive
Stratford, Conn. 06497

Telephone Hours: Monday-Friday 9-9
Saturday 10-6

Orders Only TOLL-FREE

1-800-832-3201

MacintoshToday

From the creators of
Macworld comes the
premier newsweekly for
the Macintosh community.

Macintosh Today is
happening — now!
Written for business users
who need up-to-date
information on Macintosh
products, applications, and
industry developments.
The hottest newsmagazine
in the Macintosh market
premieres August 11 at the
Macworld Expo in Boston.
Don't miss out!

Macintosh Today will feature:

- Industry news
- Trends and emerging markets
- Technical analysis and solutions
- Up-to-the-minute product reviews

**Macintosh
Today -
the ultimate
source for
Macintosh
news and
information**

- To become eligible to receive *Macintosh Today* regularly, complete the facing reader qualification card and return promptly.
- If you wish to receive extra reader qualification cards, call 800/351-1700 toll free.

*Send in your qualification
card today!*

MacintoshToday

Macintosh Today Qualified Subscription Card

Note: A complimentary subscription to *Macintosh Today* will be sent to those applicants who qualify. Please answer all questions completely. Incomplete forms will not be processed. For questions requesting quantities, use specific numbers. Please sign and date this form.

Please provide your business address below or affix your business card.

NAME	
TITLE	
COMPANY/DIVISION	
MAIL STOP	BUSINESS TELEPHONE
STREET	
CITY/STATE/ZIP	

Please accept my request for a free subscription to **MACINTOSH TODAY**.

☐ Yes ☐ No

Signature _____

Title _____

Date _____

Please provide your business address below or affix your business card.

1. Industry (check one only)

Non-computer related businesses

- ☐ 1. Aerospace
- ☐ 2. Agriculture, mining, construction, oil
- ☐ 3. Business consulting (non-computer related)
- ☐ 4. College/university
- ☐ 5. Elementary/high school
- ☐ 6. Engineering/architecture
- ☐ 7. Finance, banking, accounting, insurance, real estate
- ☐ 8. Government
- ☐ 9. Health/medical services
- ☐ 10. Legal services
- ☐ 11. Manufacturing
- ☐ 12. Military
- ☐ 13. Other business services
- ☐ 14. Publishing/advertising/public relations
- ☐ 15. Research & development
- ☐ 16. Retail/wholesale
- ☐ 17. Transportation, communications, utilities
- ☐ 99. Other (please specify) _____

Computer-related businesses

- ☐ 18. Computer consultants
- ☐ 19. Computer retail
- ☐ 20. Distributor/wholesalers
- ☐ 21. Manufacturer (computers, software, peripherals)
- ☐ 22. Service bureau
- ☐ 23. VAR/systems house/integrator
- ☐ 99. Other (please specify) _____

2. Title (check only one)

- ☐ 1. Chairman/president/owner/partner
- ☐ 2. Vice president
- ☐ 3. Controller/treasurer/accountant
- ☐ 4. Director/supervisor/manager
- ☐ 5. Project manager/chief/group leader
- ☐ 6. Art director/writer/creative head/technical writer
- ☐ 7. Engineer/scientist
- ☐ 8. Administrator
- ☐ 9. Consultant/advisor
- ☐ 10. Microcomputer specialist/manager/analyst
- ☐ 11. Programmer
- ☐ 12. Educator
- ☐ 13. Professional (lawyer, doctor, etc.)
- ☐ 99. Other (please specify) _____

3. Department or function (check only one)

- ☐ 1. Accounting/finance
- ☐ 2. Administration/management/personnel
- ☐ 3. Consulting
- ☐ 4. Education/training
- ☐ 5. Engineering/R&D
- ☐ 6. Manufacturing/production
- ☐ 7. Microcomputer center/office automation
- ☐ 8. MIS/DP
- ☐ 9. Purchasing
- ☐ 10. Sales/marketing/distribution
- ☐ 99. Other (please specify) _____

4a. Does your company own or lease any mainframe computers at this location?

☐ Yes ☐ No

	Existing (quantity)	Plan to buy (quantity)
<input type="checkbox"/> 1. IBM	_____	_____
<input type="checkbox"/> 99. Other (specify)	_____	_____

4b. Does your company own or lease any minicomputers at this location?

☐ Yes ☐ No

	Existing (quantity)	Plan to buy (quantity)
<input type="checkbox"/> 1. IBM	_____	_____
<input type="checkbox"/> 2. DEC	_____	_____
<input type="checkbox"/> 3. Sun/Apollo	_____	_____
<input type="checkbox"/> 99. Other (specify)	_____	_____

5. Does your firm have or plan to buy any of the following types of personal computers or microcomputer systems at your location?

☐ Yes (indicate quantity below) ☐ No

Manufacturer	Currently own (quantity)	Plan to buy within 1-12mos 13-24mos
<input type="checkbox"/> 1. Macintosh 128/512	_____	_____
<input type="checkbox"/> 2. Macintosh Plus	_____	_____
<input type="checkbox"/> 3. Macintosh SE	_____	_____
<input type="checkbox"/> 4. Macintosh II	_____	_____
<input type="checkbox"/> 5. Apple IIe/IIc/IIcx	_____	_____
<input type="checkbox"/> 6. IBM Compatible (Compaq, Tandy, etc.)	_____	_____
<input type="checkbox"/> 7. IBM PC/XT/AT/RT	_____	_____
<input type="checkbox"/> 8. IBM Personal System/2	_____	_____
<input type="checkbox"/> 9. Sun/Apollo workstation	_____	_____
<input type="checkbox"/> 99. Other scientific or engineering workstations (non-mini)	_____	_____

6a. Please indicate your involvement with each of the following types of personal computers or microcomputer systems (check all that apply):

	Macintosh	Micros	Software	Networks & Peripherals
<input type="checkbox"/> 1. Approve purchase	_____	_____	_____	_____
<input type="checkbox"/> 2. Develop/manufacture	_____	_____	_____	_____
<input type="checkbox"/> 3. Evaluate/select vendor	_____	_____	_____	_____
<input type="checkbox"/> 4. Own (at least one)	_____	_____	_____	_____
<input type="checkbox"/> 5. Own (two or more)	_____	_____	_____	_____
<input type="checkbox"/> 6. Purchase or acquire	_____	_____	_____	_____
<input type="checkbox"/> 7. Establish specifications	_____	_____	_____	_____
<input type="checkbox"/> 8. Recommend to others	_____	_____	_____	_____
<input type="checkbox"/> 9. Sell	_____	_____	_____	_____
<input type="checkbox"/> 10. Train people to use/ or provide support	_____	_____	_____	_____
<input type="checkbox"/> 11. Use	_____	_____	_____	_____
<input type="checkbox"/> 12. No involvement	_____	_____	_____	_____
<input type="checkbox"/> 99. Other (please describe by name and quantity)	_____	_____	_____	_____

If you have no involvement with any of the above, skip to question 8.

6b. For approximately how many total personal computers or microcomputer systems do you have the above involvement? (check only one)

☐ A. 1-3 ☐ B. 4-9 ☐ C. 10-19 ☐ D. 20-49
☐ E. 50-99 ☐ F. 100-499 ☐ G. 500 +

7. For approximately how many Macintosh personal computers do you have involvement described in question 6 above? (check only one)

☐ A. 1-3 ☐ B. 4-9 ☐ C. 10-19 ☐ D. 20-49
☐ E. 50-99 ☐ F. 100-499 ☐ G. 500 +

(Over please, additional questions on reverse side)

8a. How many people work at your location? (check only one)

- ☐ A. 1-9 ☐ F. 1000-2499
☐ B. 10-24 ☐ G. 2500-4999
☐ C. 25-99 ☐ H. 5000-9999
☐ D. 100-499 ☐ I. 10,000 or more
☐ E. 500-999

8b. How many people are employed by your entire company? (check only one)

- ☐ A. 1-9 ☐ F. 1000-2499
☐ B. 10-24 ☐ G. 2500-4999
☐ C. 25-99 ☐ H. 5000-9999
☐ D. 100-499 ☐ I. 10,000 or more
☐ E. 500-999

9. What percentage of people who work at your location actually use a personal computer (check only one)

- ☐ A. 1-24% ☐ D. 75%-100%
☐ B. 25%-49% ☐ E. None
☐ C. 50%-74%

10. The personal computer purchased for this location would be: (check all that apply):

- ☐ 1. for internal use ☐ 2. for resale
☐ 99. other (please specify)

11. How are personal computers normally obtained for this location? (check all that apply)

- ☐ 1. direct from manufacturer
☐ 2. manufacturer's representative
☐ 3. distributor or wholesaler
☐ 4. retail computer store
☐ 5. mail order
☐ 6. VAR/systems house
☐ 7. in-house (company or university store)
☐ 99. other (please specify)

12. Personal computers or microcomputer systems at your location are or soon will be used for the following communications activities: (check all that apply)

- ☐ 1. Communicate with internal company main-frame or mini
☐ 2. Communicate with other micros via modem
☐ 3. Communicate with outside mainframe or mini through service bureau, database or time-sharing service
☐ 4. Local area network
☐ 5. Voice/data
☐ 6. None of the above
☐ 99. Other (please describe)

13. Are you involved in any of the areas shown below?

- ☐ Yes (check all that apply) ☐ No
☐ A. Recommend ☐ B. Influence ☐ C. Specify ☐ D. Buy
(check all that define your involvement)

Software

- ☐ 1. spreadsheets
☐ 2. word processors/outline processors
☐ 3. database management
☐ 4. accounting
☐ 5. statistics
☐ 6. communications/networking
☐ 7. graphics
☐ 8. presentation
☐ 9. project management
☐ 10. desktop publishing
☐ 11. CAD/CAM
☐ 12. programming language
☐ 13. back-up systems
☐ 14. utilities
☐ 15. other _____

Peripherals

- ☐ 23. dot matrix printers
☐ 24. letter quality printers
☐ 25. plotter
☐ 26. laser printer
☐ 27. local area network
☐ 28. file server
☐ 29. optical disk
☐ 30. monochrome monitor
☐ 31. color monitor (standard)
☐ 32. hi-res color monitor
☐ 33. add-on board
☐ 34. external hard disk
☐ 35. internal hard disk
☐ 36. back-up systems
☐ 37. modem
☐ 38. other _____

Computers

- ☐ 16. personal computers
☐ 17. multiuser micro-computers
☐ 18. laptop microcomputers
☐ 19. portable microcomputers
☐ 20. engineering workstation
☐ 21. minicomputers
☐ 22. mainframe computers
☐ 23. others _____

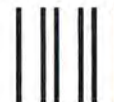
Outside services

- ☐ 39. on-line services
☐ 40. education/training
☐ 41. maintenance
☐ 42. custom application
☐ 43. service bureau
☐ 44. other _____

14. Over the course of one year, how would you quantify your level of involvement in total microcomputer systems products?

- ☐ A. Recommend ☐ B. Influence ☐ C. Specify ☐ D. Buy
(please check all that define your involvement)

- ☐ 1. less than \$10,000 ☐ 5. \$100,000-\$249,999
☐ 2. \$10,000-\$24,999 ☐ 6. \$250,000-\$499,999
☐ 3. \$25,000-\$49,999 ☐ 7. \$500,000 +
☐ 4. \$50,000-\$99,999 ☐ 8. None of the above
(check only one)



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL
First Class Permit No. 22094 San Francisco, CA

POSTAGE WILL BE PAID BY ADDRESSEE

MacintoshToday
Circulation Department
501 Second Street, Suite 600
San Francisco, CA 94107



Contributors Notes

Robert C. Eckhardt ("Insights on More") is a frequent Macworld contributor and author of the forthcoming books *Free* (and *Almost Free*) Software for the Macintosh, to be published by Crown, and *The Fully Powered Macintosh*, to be published by Brady.

Jim Heid ("Getting Started with Graphics") is a contributing editor of Macworld. He has been writing about the Macintosh since its introduction, and has recently completed his second Macintosh book, *dBase Mac in Business*, due out this year from Ashten-Tate Publishing. Each month he turns his attention to a different topic in his Macworld column on Mac fundamentals.

Rick LePage ("The Road to MS-DOS") has been writing about personal computers and telecommunications for six years. His interest in the Mac began with an Apple Lisa that landed on his desk for an extended trial. For almost two years he was an editor of the MacInTouch newsletter, which he cofounded.

Steven Levy ("Ask Dr. Upgrade"), whose column appears each month in Macworld, is the author of *Hackers: Heroes of the Computer Revolution*, now published in paperback by Dell.

Erfert Nielson ("A DA in the Life" and "MacGraphics Tools") was a founding member of the Macworld staff. When she's not pursuing her special interest in Macintosh graphics or hunting up an even wackier DA than Talking Moose, she may be chasing yetis in the Sierra foothills or riding the rails in the wilds of the American Midwest.

Lon Poole ("Safety Net for Storage") 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.

David Simerly ("A DA in the Life") is a desk accessory junkie and author of *Practical AppleWorks Uses* and *Advanced Excel Solutions*, both from Sybex Computer Books.

Suzanne Stefanac ("First Edition") is a San Francisco journalist who, as West Coast editor of the *East Village Eye*, associate editor of *Another Room Magazine*, and media liaison for the *No More Censorship Defense Fund*, has watched numerous desktop publications go to press.

Christopher Yavelow ("Top of the Charts") is a computer-assisted composer who has studied music at Boston University and Harvard—and abroad, at the Franz Liszt Academy, the Darius Milhaud Conservatory, and the American Conservatory at Fontainebleau. He has received dozens of awards and fellowships for composing. His current work includes music for film and video as well as opera. □

WOULD YOU PAY \$49 FOR A LIFETIME RIBBON SUPPLY?



Why Buy Expensive Ribbons When You Only Use The Ink? This Bede Tech Ribbon Inker Quickly Pays For Itself!

Re-Ink Your ImageWriter Ribbons Over and Over For Just Pennies Each Time!

The ribbon area struck by the pins of your printer head is very small compared to the total ribbon. On a freshly inked ribbon, ink migrates back into the area hit by the pins. As the ribbon dries out, however, print quality grows worse and worse.

With our motorized Ribbon Inker, your fabric ribbon is always freshly inked and print quality is always at its best.

Our customers love the quality, simplicity and savings. And so will you.

Bede Tech Bonus • FREE 4 oz. Bottle Black Ink —Lasts 50-100 Inkings! FREE Roller and Roller Cover

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

Epson Ribbon Inker Kit Call

FAST Same Day Shipment
30-Day Satisfaction Money-Back Guarantee

☐ Send Me a FREE Catalog

SEND RIBBON INKER	\$49.00
Shipping & Handling	\$ 1.50
(Canada, Hawaii, Alaska \$4.50 S&H)	
Ohio residents add 6.5 % Sales Tax	\$ _____
TOTAL ORDER	\$ _____

Send check, money order, or charge it.

☐ VISA ☐ MasterCard Exp. Date _____

Card No. _____

Signature _____

Name _____

Address _____

City _____

State _____ Zip _____



**bede
tech**

8327 Clinton Road
Cleveland, OH 44144
216/631-4214

Member, The Bede Companies, Est. 1976

Call Toll Free

800-772-4536

ImageWriter is a registered trademark of Apple Computer, Inc. Macintosh and MAC are trademarks licensed by Apple Computer, Inc. © 1987 Bede Tech

Circle 490 on reader service card



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. Or otherwise analyzing their business's financial situation.



Instead, In-House Accountant 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. They can also call up context-sensitive help windows anytime they need them.

Larry and Curt also like the fact that In-House Accountant, unlike other software designed merely to automate paper-based systems, was developed from scratch to take full advantage of their Macintosh's power.

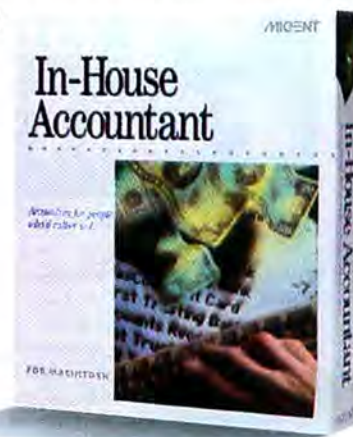
The result is that when they enter a transaction, all related items in other lists are updated immediately. So there's never a need for "posting." And to handle payables and receivables, the guys simply zip among their various accounts without ever having to change modules, or even close a window.

The program also lets them search for and change any entry in the current fiscal year, so they're not forced to close the books at the end of the month. It even lets them print balance sheets—or reports, with bar graphs and pie charts—anytime they want.

But mostly, In-House Accountant just lets the guys do what they do best.

Which is make the best chili in the whole doggone state.

In-House Accountant. Only \$149. See your nearest Migent dealer, or call 1-800-633-3444 if you'd like to receive a free demo disk.



MIGENT™ Trademarks: In-House Accountant, Migent, Macintosh, Apple Computer, Inc.

Circle 742 on reader service card

FLUENT LASER FONTS™

- Fifteen Volumes Sold Separately
- Most Typefaces Have Style Variations
- Automatically Downloadable
- Print Any Size Your Program Allows
- Use With Any PostScript Printer
- No Copy Protection
- CALL FOR PRINTED SAMPLES



CASADYWARE
P. O. BOX 223779 CARMEL, CA 93922

TRADEMARKS: Fluent Fonts, Fluent Laser Fonts—CasadyWare Inc.;
Macintosh, LaserWriter, ImageWriter—Apple Computer Inc.; PostScript—
Adobe Systems Inc.; Linotronic—Allied Unotype

PostScript® Typefaces for the Macintosh™ & LaserWriter®

- 1 BODONI
- 2 SANS SERIF
- 3 RITZ/RIGHT BANK
- 4 MONTEREY
- 5 Calligraphy/Regency Script
- 6 Prelude Script
- 7 Coventry Script/Zephyr Script
- 8 Gregorian/Dorovar
- 9 Кириллица Russian & Ukrainian
- 10 Bodoni ULTRA
- 11 SANS SERIF BOLD
- 12 Sans Serif Extra Bold
- 13 GATSBY LIGHT
- 14 MICRO Laser
- 15 MICRO Extended



FOR ORDERS CALL (800) 331-4321
OR IN CALIF. (800) 851-1986
FOR INFORMATION CALL (408) 646-4660

**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. 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

Ask Dr. Upgrade

Confused about how to keep your hardware current? Or why? Tune in to the doctor.

In the past, when readers have asked me about the costly and mysterious process of upgrading their Macintosh computers, I have deferred to the expert, who is of course the nationally renowned Dr. Upgrade. I simply suggested that they tune in her cable television show, "Ask Dr. Upgrade." However, some readers have pointed out that the show is not carried in all parts of the country. I do understand that in many of those deprived areas, enterprising local independent stations are negotiating for the air rights. Alas, it will be months before this vital public service is available to all. So in the spirit of edification and education, I have arranged to print a transcript of a recent program. The opinions expressed here, of course, are not those of *Macworld*, this columnist, or any persons living or dead, except coincidentally.

OPENING THEME: Sam Cooke's "A Change Is Gonna Come."

CREDITS: "Ask Dr. Upgrade" with DR. UPGRADE and her co-host STEVE JUBBS. Sponsored by Brainstorm, Dove, Levco, MacMemory, and SuperMac.

The set resembles a cozy living room, except for the litter of computer boxes and disassembled Macintoshes. Sitting on a Balans chair is DR. UPGRADE, a feisty-looking woman who seems a cross between Joyce Brothers, Linda Hunt, and Grace Hopper. The cohost is a trim young man with dark hair and a ready smile.

JUBBS: Well, Dr. Upgrade, we have a full hour coming up. Plenty of curiosity about the new Macintoshes, especially the SE, which lots of viewers want to upgrade to. They're in for a surprise. And we also have our usual assortment of upgrade questions from your fans. By the way, did you know that all SEs have fans?



DR. UPGRADE: Nowww, Steve, don't start with that! Fans are a verrrry important part of many upgrades! Sometimes when people upgrade, things can get hot. Very hot! And they need fans to, you know, cool off! Hee-hee!

JUBBS: Maybe we'd better go to the phones.

DR. UPGRADE: This is Doctor Upgrade! Go ahead!

VOICE ON PHONE: This is Phil from Petaluma, California. I have a Macintosh 512 and...

DR. UPGRADE: Before you go any farther, dear, tell me—is it a 512 or a 512 E? This is very important.

PHIL: Uh, I'm not sure.

DR. UPGRADE: Look at the label on the back. Does it say 512 E? It doesn't? Then you have a 512K, *unen*hanced. Now ask your upgrade question.

PHIL: I just want to know whether to upgrade.

(continues)

MAX SEABOUGH

Rendezvous™

A unified electronic day-timer

• 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:

PC Telesystems
P. O. Box 5127
Vancouver BC V6B 4A9
604 255 9949

Circle 754 on reader service card

Steven Levy

DR. UPGRADE: OK! Now listen carefully. There are two important upgrades you can get with a 512K Macintosh that is unenhanced. Steve, can you explain briefly what *unenanced* means?

JUBBS: That's any computer with the original 64K ROM. Before 1986. When I still was—

DR. UPGRADE: Thank you, Steve. Now, the first upgrade is called—this is very important—a *ROM upgrade*. This does two things. First, it gives you a chip with the newer ROMs—they are twice as big and make the computer go faster. Second, a ROM upgrade replaces your internal floppy disk drive with a new one that holds twice as much information on the disks. I rrrrr-recommend this upgrade! You will have 800K on a disk, which many new programs seem to require now, and you will see an improvement in speed. And it only costs \$300, plus a slight installation fee. So do this—go to your computer dealer and tell him to put in the *ROM upgrade*! OK?

PHIL: You mentioned a second upgrade?

DR. UPGRADE: Yes! First let me ask you, Phil. Are you a heavy-duty user?

PHIL: Mainly I do word processing and a little *Excel*.

DR. UPGRADE: I see. Well, Phil, maybe you do not need the second upgrade. This is the logic board upgrade to a Mac Plus. It doubles the memory of the computer and gives you what is called a SCSI port. If you do not want a hard disk drive, you do not need the SCSI port. And if you are happy with the programs you use, and do not need to load several at once, then say to yourself, "Who cares what other people do? I do not need this second upgrade."

But I know there are other people out there who want this second upgrade. They like to load two or three big programs into the *Switcher*, and they want a SCSI port for a hard disk drive. And this is what I tell them. Get the second upgrade! But remember, you do not have to go to Apple for this upgrade. Apple will charge you \$600, and the dealer charges more to install it. There are other companies that charge much less for the same thing.

For instance, if you want memory, you can upgrade from 512K to 1 megabyte for \$300 or under. Dove, MacMemory, Brainstorm, Levco, and SuperMac Technology all have these upgrades. The dealer will install it.

Also, for a couple hundred dollars or so more, you can upgrade to 2 megabytes. This sounds like a lot, but I guarantee that

in a year we will see bigger programs, and you will like having more memory. Just look at a copy of any of the computer magazines—have you heard of *Macworld*?—and there are *plenty* of companies that give you memory upgrades, cheaper than Apple. Make sure they are guaranteed, and you will not have a problem.

Apple also offers a keyboard upgrade, a simple purchase of the Macintosh Plus keyboard, for \$129. This is strictly optional! If you truly desire a numeric keypad and cursor keys, you might consider spending this money. But remember, the new keyboard will not fit in your present carrying case.

Now, as far as a SCSI port is concerned, Dr. Upgrade rrrrecommends it to those who are buying their first hard drive. SCSI drives are faster and often less expensive than serial drives. Again, you do not have to go to Apple for this upgrade. Did you know that many companies that sell hard drives will also sell you a SCSI port? For instance, SuperMac was recently selling SCSI ports for \$49 to people who bought SuperMac hard disk drives. But no matter where you buy, remember—you should not pay much more than \$100 for a SCSI port.

PHIL: Well, I do want a hard disk. But a friend told me that I couldn't get this SCSI port unless I went up to a megabyte of memory.

DR. UPGRADE: Well, I'm sure your friend meant well. But this is wrong. Having a SCSI port is OK even if you have only a 512K Mac. You do not need a megabyte of memory to install a SCSI port. So, you are going to get a ROM upgrade from Apple, and a SCSI port for under \$100 when you get your hard disk. And later, if you want more memory you can do that! OK?

I see we have another call.

VOICE: This is Diane from Wilmington, North Carolina. I did get the ROM upgrade. Now I can format a double-sided disk in my internal drive. But when I insert these disks in my old external drive, my Mac tells me that this isn't a Macintosh disk and asks me if I want it formatted. Once I pushed the wrong button and erased a whole disk! Can I upgrade my single-sided external drive to a double-sided one? Or do I have to buy a new one? And what should I do then with my old one?

DR. UPGRADE: Diane, do not feel bad about this problem. Many, many people have asked this question. And I am sorry to

(continues)

Which One(s) Fit(s)?

More Than 600 Titles

We offer all the most popular Mac programs...more than 600 titles, including games, productivity, page processing, spreadsheet, database, accounting, word processing and graphics, along with many specialty applications. And, every piece of software is available for trial, *before* you make a purchase decision.

Call Right Now for Prices and Catalog

No matter what program you're thinking of buying, it makes sense to try it out first, under *your* conditions. Not a demo disk, not sitting in a store, but on your machine, in your home or office. If it does what you want, keep it, and pay the balance to purchase. If it doesn't, send it back. Either way, you'll know for sure. And, either way, you'll buy *only* Software That Fits™.

Software That Fits™

1-800-972-3018

(713) 540-2300

Buy the Right Software at the Right Price

Thousands of software buyers have found they can make the *right* software purchase *every* time, and save money with our trial use plan.

Here's how it works. Pick the programs you wish to evaluate. Try them out, for a *fraction of the purchase price*. If they fit, keep them, and pay the balance. If they don't, send them back. *You* pick the winners, and you buy *only* the right stuff. (And, when you add up the trial and balance prices, you're still paying far less than retail!)

Side-by-Side-by-Side Comparisons

Maybe you're looking at the hot new word processors, or perhaps, an advanced database program, the slick new graphics packages, or several accounting programs.

But, in spite of all the reviews you've read, and all the "advice" you've gotten, you're still unsure which one fits *your* application, and which one will run best on *your* system.

We'll send you full working originals (manuals included), so you can make comparisons between competing programs. As a result, you'll probably never waste money, buying the "wrong" program again.



Save on Sony Disks!

SS (2 boxes) \$1.05 SS (100 bulk) \$.92
DS (2 boxes) \$1.50 DS (100 bulk) \$1.22

Why Pay More?

Save on disk drives and ribbons, too! Call us.



The brainstorming session became the

Want to check over the most recent revisions? They're marked for you.

Open many documents—in as many windows as your Mac's memory allows.

Keep this section under 1500 words with Automatic Word Count.

Outline entries are word processing paragraphs whenever you choose.

Insert MacWrite™ or ThinkTank™ files.

You accidentally cut this section? Don't worry. MindWrite's accumulating clipboard saved it—and your neck.

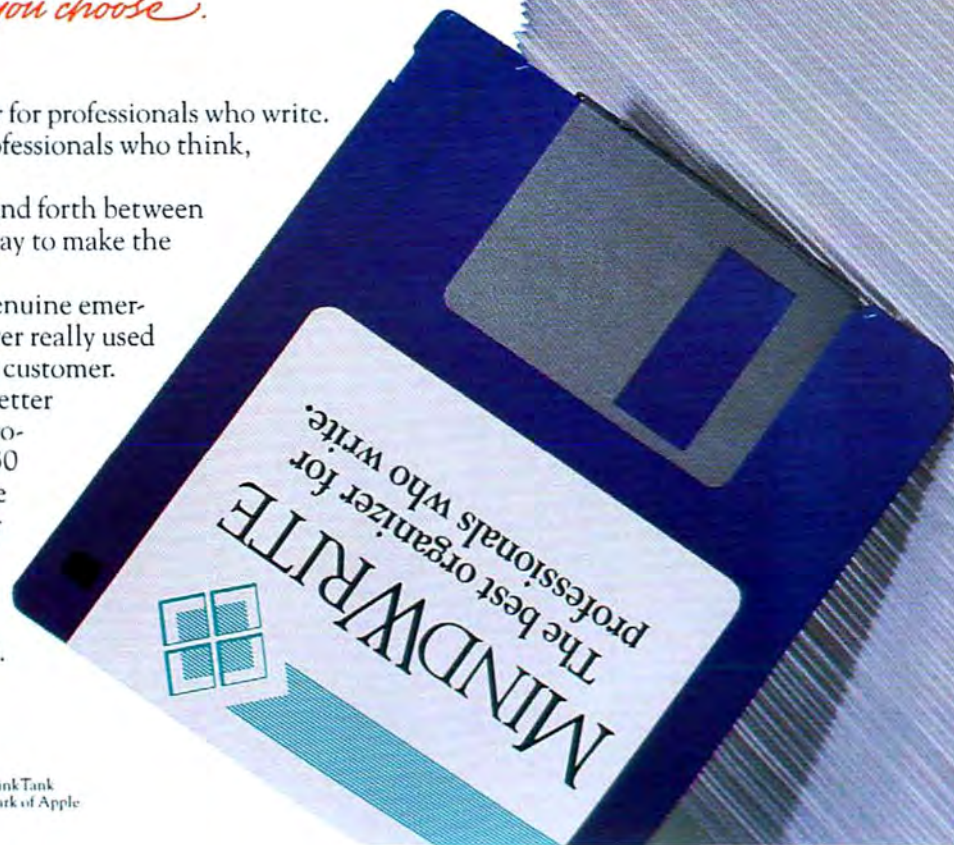
MindWrite. The best organizer for professionals who write. The best word processor for professionals who think, combine, reorganize and rewrite.

The easiest way to move back and forth between outlining and writing. The fastest way to make the most changes.

Yet "so easy to learn, I beat a genuine emergency deadline, even though I'd never really used it before," according to one satisfied customer.

And for \$295, you can't get a better integration of outlining and word processing. We guarantee it. If within 30 days of purchase you find MindWrite doesn't live up to our claims, call for a refund.

Ask for MindWrite at your dealer. Or call 800-367-4334 to order direct. VISA/MC accepted.



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:

Ancient Art of War	8.99	PowerMath 2.0	13.79
Aztec C	87.32	Profit Stalker II	39.60
Calendar Maker	8.99	Ragtime	53.72
ClickArt (all)	8.99	Quick & Dirty I or II	8.99
Dollars & Sense	19.79	SuperPaint	13.07
Filemaker +	38.94	Spellswell	9.89
FullPaint	13.19	Turbocharger	9.12
Guide	17.81	World Class Fonts I or II ..	8.99
HardBall!	8.99	Write Now	22.73
Lightspeed Pascal	18.75		
MS Basic Interpreter	19.75		
MS Works	38.35		
MacDraft	35.50		
Mac3D	33.62		
MacMoney	12.18		
MacLightning	14.86		
MicroPhone	13.11		
Mac Art Library	35.00		
Notes for Excel	11.85		

SUPER SALE

PowerMath 2.0	63.44
MacOpener (tool)	14.36
MacFlip (holds 80 disks) ..	14.40
Sony SS/DD	1.05
Sony DS/DD	1.58
Black Ribbons	2.65
Color Ribbons	2.99
55% Off All RealData Titles	

TRY IT FIRST

RENTAL APPLIES TO PURCHASE

Orders Only

Customer Service or In Texas

1-800-847-5775

(713) 529-1100



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



IBM Library Coming Soon!

Steven Levy

say that, no, Apple will not upgrade external drives. You have to buy a new drive to use those double-sided disks. This costs between \$200 and \$400. If you can get by without using the double-sided disks on your external drive, there is nothing wrong, but be careful. You read the dialog boxes, don't you?

DIANE: Always. Except that one time.

DR. UPGRADE: Good for you! But some people are not so careful, and they should get another double-sided drive right away. As to what you can then do with the single-sided one, this is a real problem. You can sell it, but the person you sell it to will soon learn about upgrades, and then they will be mad at you for selling them something they shouldn't have bought. I suggest this—pack up the disk drive, mail it to John Sculley, Chairman of the Board of Apple Computer, and tell him that his upgrade policy makes this piece of equipment obsolete. So he might as well take it back. Tell him nicely! OK?

This is Doctor Upgrade! Go ahead!

VOICE: Gerald, from Austin, Texas. I have a Macintosh 128K. And I'm having trouble getting an upgrade.

DR. UPGRADE: (*Sounding very concerned*) Yes. Now this is a real problem. People with these computers must get an upgrade! No one should have a computer with only 128K!

JUBBS: Well, there's a reason why the memory started out that way...

DR. UPGRADE: But there is no reason now. Most new Macintosh programs will not even run on these 128K computers! You see? But when owners of these computers go to the store to buy a third-party upgrade to 512K, no one will sell them one. Many of the companies that once offered upgrades from 128K to 512K do not sell these products anymore. The profit margin is too low. And these days, people have difficulty finding upgrades from 128K to any larger memory configuration. Even Apple, which used to sell 128K to 512K upgrades for \$449—too much to pay—has phased out those upgrades! Apple offers its 128K users an upgrade to the Mac Plus, but this is very, very expensive—almost as much as buying a new computer!

This is a verrrry serious problem. And it will not get better. So before you are totally ignored by the industry, you must find an upgrade! You must either spend a lot of money for the Apple upgrade, or you must

(continues)

WYWWYG

What You *Want* Is What You Get In One Program

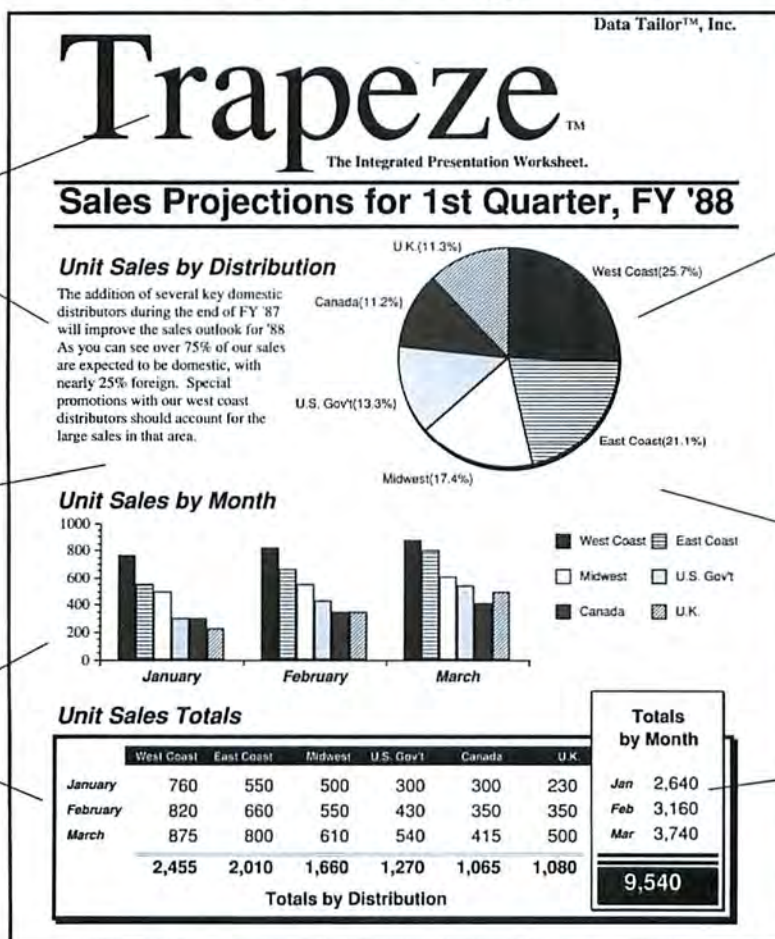
Desktop Publishing Quality
Trapeze lets you use any Macintosh™ font, style, size or color in any block of information, and mix them on a single worksheet. Combining graphics and layout capabilities with powerful data analysis adds a whole new dimension to desktop publishing.

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.

A lot of programs are promising that what you see on the screen is what you'll get in the output. The problem is that by the time you get all of your information on the screen, what you see may no longer be what you want. Perhaps you made a change in your spreadsheet and forgot to change a related chart. Or maybe the text doesn't reflect your most recent information. The only way to make changes is to return to the original program, make the changes, and then do a lot of cutting and pasting between programs to get it all on one worksheet again. Not exactly a quick and easy task.

Trapeze offers an alternative: 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.

We believe that 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. In fact, we'll refund your money if you return it within 30 days.

Visit your local dealer today for a demo or call us at 1-800-443-1022. Stop settling for what you see—get what you want with Trapeze.

Minimum system requirements—Macintosh 512K with external drive or enhanced Macintosh 512K. Runs on all Macintosh versions, including SE and Mac II (in color). Supports Laserwriter™ and Imagerwriter™ I and II.
© 1987 Data Tailor™, Inc. Data Tailor, Trapeze and the Trapeze logo are trademarks of Data Tailor, Inc. All rights reserved. Macintosh, Laserwriter and Imagerwriter are trademarks of Apple Computer, Inc.®

Trapeze™

The Integrated Presentation Worksheet.

Data Tailor™, Inc. 1300 S. University Drive Suite 409
Fort Worth, Texas 76107

Circle 662 on reader service card

Fast, Fit & Forty

Tecmar Introduces QT-Mac40™—the Very Fast, Very Small, 40MB Tape Backup for Macintosh.



It's up to twice as fast as many tape drives. It's so small it fits anywhere on your desk, or in your briefcase. And it stores a big 40 megabytes of data on a single, mini tape cartridge.

It's the QT-Mac40! And it's only from Tecmar, a world leader in tape backup for personal computers, with more than 70,000 satisfied customers.



QT-Mac40. Standalone tape backup for the Macintosh

- User-friendly, icon-interface software
- SCSI interface for speed and compatibility
- Compatible with all internal and external hard disks for the Macintosh
- Background backup operation—allows use of Mac while backup is being performed
- Automatic, unattended operation—for periodic backup of entire disk or just-modified files
- Backup modes—mirror image, file-by-file and desktop
- Data encryption—ensures security of sensitive information
- Apple Tape Backup 40SC™, AppleShare™ and A/UX™ compatible

You Need QT-Mac40...if you keep important data on a hard disk. Work in progress should be backed up periodically—daily or weekly. At up to 3MB/minute-backup speed it won't take long. And, if you're too busy, QT-Mac40 can back up by itself automatically and unattended.

You Need QT-Mac40...if you could use extra room on your hard disk. Seldom accessed files can be archived onto tape and shelved, giving you room to grow. And with QT-Mac40's unique Tape Library System you can quickly find the location of any archived file without installing a single tape.

You Need QT-Mac40...if you would like to share large amounts of data. A single, inexpensive Tecmar QualityTape™ Mini-Cartridge easily fits into a shirt pocket or overnight-mail pouch. And QIC-100 compatibility assures tape interchangeability between drives.

Guaranteed Quality. QT-Mac40's two-year warranty includes Tecmar's exclusive QuickTurn™ Quality Service. It guarantees that if you have any trouble with your QT-Mac40 in the first six months of operation, Tecmar will send a replacement within 48 hours. That's made-in-the-U.S.A. quality...guaranteed!

For more information on QT-Mac40 call (216) 349-1009. Or write Tecmar, Inc., 6225 Cochran Road, Solon, Ohio 44139-3377.

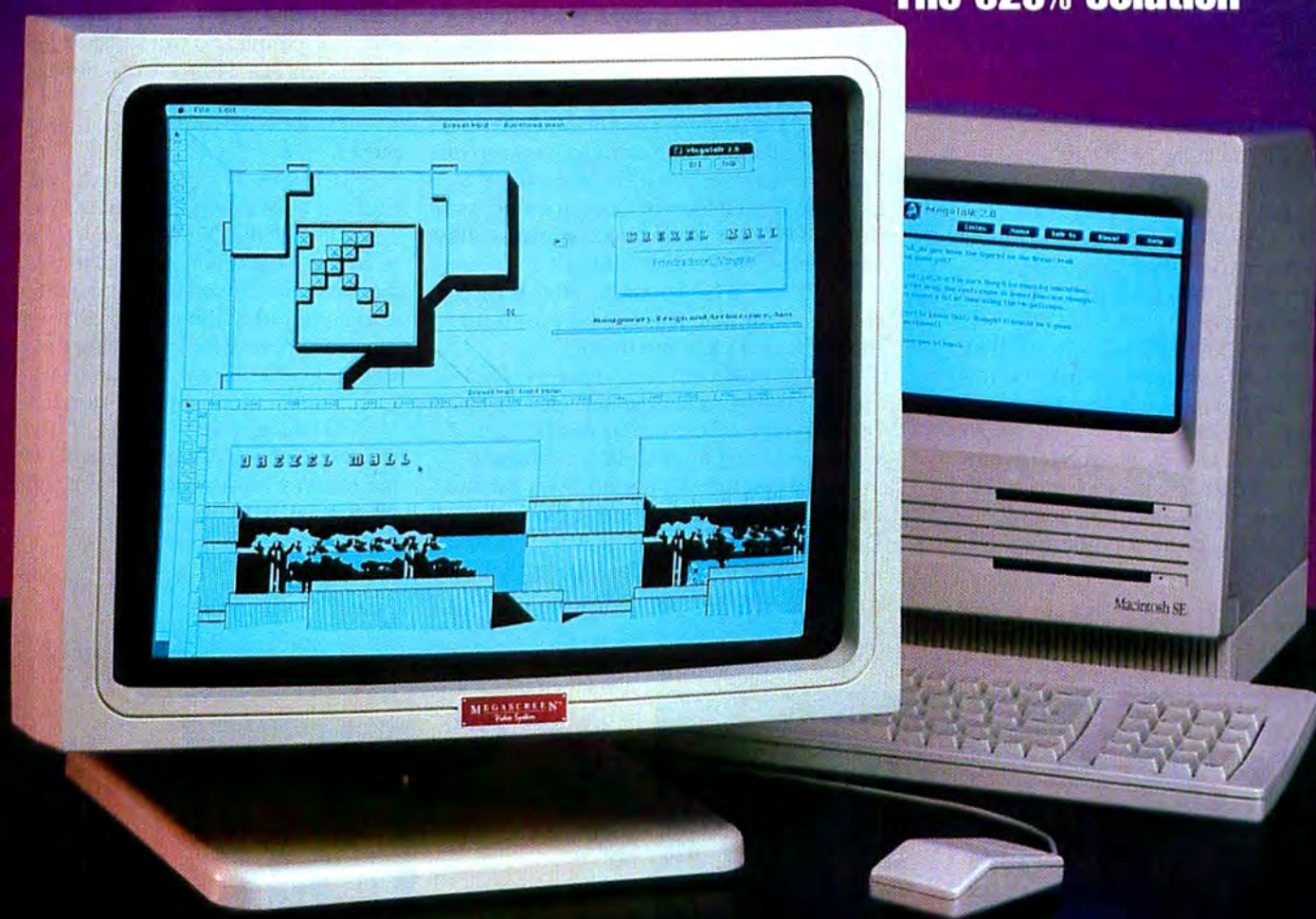


TECMAR
The Power Behind Your Mac

Tecmar products available under GSA Schedule. QT-Mac40, QualityTape and QuickTurn trademarks of Tecmar, Inc.; Macintosh trademark of McIntosh Laboratory, Inc., licensed to Apple Computer, Inc.; Tape Backup 40SC, AppleShare and A/UX trademarks of Apple Computer, Inc.
©Copyright Tecmar, Inc., a subsidiary of Rexion, Inc., 1987. All rights reserved.

MegaScreen™

The 526% Solution



MegaScreen's 19.5" monitor gives you 526% more design space than your Macintosh™ Computer. Compatible with all standard Macintosh software, MegaScreen lets you see drawings, designs, page spreads, spreadsheets, and just about everything you ever wanted to see larger. 526% larger.

MegaScreen's dual-screen features allow you to run MegaTalk Electronic Mail on your Macintosh screen — the same time. MegaScreen concentrates on your primary application while letting those important messages flow through to you.

MegaScreen is the most flexible, user-definable video device available. Your local Apple™ dealer can install MegaScreen for your Macintosh SE, Macintosh Plus or Macintosh 512kE — usually in less than 15 minutes. You might even add enhancement options, such as co-processors, speed cards and other video outputs.

Ask your dealer for a demonstration, or give us a call. You'll see why MegaScreen is still the best-selling Macintosh large screen system.

micrographic
IMAGES

20954 Osborne St., Canoga Park, CA 91304
818-407-0571 • TX: 650-288-0349 MC/MAIL

© 1987 MicroGraphic Images, Corp. All rights reserved. MegaScreen is a trademark of MicroGraphic Images, Corp.
Apple is a registered trademark, and Macintosh is a trademark of Apple Computer, Inc. MacDraw is a product of Apple Computer, Inc. and is being used with express permission.

Circle 235 on reader service card

use one of many little companies all over the country that do upgrades. Most are reliable, some are not. You must check them out! Go to your local user group and find out which ones do good work. Make sure you get a guarantee! Then go and get the upgrade. You should not pay much more than \$200 to upgrade your 128K to a 512K, and then you will be in the same spot as Phil, our caller with the unenhanced 512K Mac, when you want to do another upgrade.

So do that! OK? Next call!

VOICE: This is Lenny from Brooklyn. I'm the proud owner of a Mac Plus.

DR. UPGRADE: Very good, Lenny! Now what is your upgrade problem?

LENNY: Well, I want to know how to upgrade to an SE.

DR. UPGRADE: Well, you see, that cannot be done. But let me ask you this, Lenny—do you like your Mac Plus?

LENNY: I do, but...

JUBBS: It is insanely great, isn't it?

DR. UPGRADE: Insanely great! Ho ha ha ha. Steve, you are a funny young man! But let me tell Lenny—do not despair that

you cannot upgrade. Your Mac Plus can do everything an SE can! But maybe a bit slower. Understand? If you'd like a hard disk drive, you can have that! Even an internal one, like you can buy on an SE!

LENNY: And what about an SE keyboard?

DR. UPGRADE: I understand that while many people like the standard Plus keyboard, others may prefer a lower angle. It takes all kinds! While you cannot get either keyboard offered on the Macintosh SE, because of something called a Desktop Bus that the Plus does not have, you can get a keyboard much like the one provided with the IBM PC. It is made by a company called Datadesk. It will cost you \$170.

LENNY: What about the slot? Is there some way my Mac Plus can accept any of the cards that plug into the SE?

DR. UPGRADE: No. No one is offering an expansion box for the Mac Plus that accepts those cards. One day maybe they will. But, Lenny, let me ask you—are you asking about the slot because you want to expand to a 68020 coprocessor board? Don't be shy!

LENNY: Yes, Dr. Upgrade, that's it. I... I like speed.

DR. UPGRADE: That's nothing to be ashamed of! Let me tell you what you can do. You can upgrade your Plus with an expansion board, just like you can with the SE. For instance, Radius will sell you a 68020 board that goes in your Plus and accepts an optional coprocessor chip. It makes your Mac Plus run even faster than a Mac II! Hee-hee! So you see, just because you have a Mac Plus doesn't mean you cannot have speed.

Do we have time for another question, Steve?

JUBBS: Sorry, Dr. Upgrade, we won't find out what's next for at least a week.

DR. UPGRADE: We'll look forward to it. In the meantime, I want to thank my viewers who always have good questions about upgrades. But most of all, thanks to Apple Computer for improving the Macintosh at least once a year and raising these questions in the first place. Hee-hee!

CLOSING CREDITS AND THEME SONG: "Getting Better (All the Time)," by the Beatles. Fade to a Happy Macintosh screenshot. □

Shipping
Now!



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, its 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.



4730 SW Macadam Ave—Portland OR 97201

1-800-445-7085

Ask About
Rebate Offer!



Obsolete the 3½ Inch Frisbee

For only \$250, you can offer everyone on your AppleTalk® network access to common files and applications. Without long learning curves, high costs and dedicated Macs. That's why MacServe™ is still the best-selling solution, with over 30,000 installations.

- Eliminate dedicated Macs. MacServe runs in the background.
- Forget about data loss. MacServe is acclaimed "Bulletproof."
- Grow your network incrementally and transparently. Add Macs, PCs, hard disks, printers, and even E-mail, as you need them.

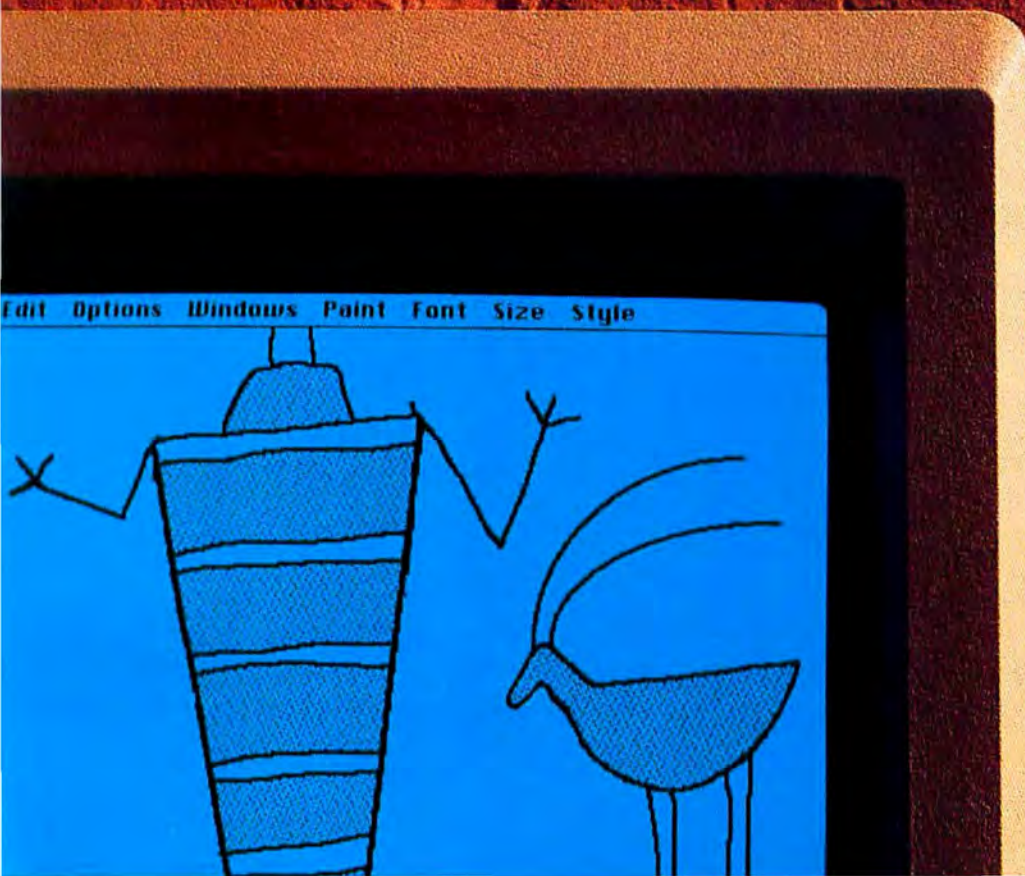
Call now or ask your dealer for MacServe. From Infosphere, the only full-family AppleTalk software vendor.



4730 SW Macadam Ave—Portland OR 97201

1-800-445-7085

**Introducing
DaynaFile.
The End Of
Primitive
Communication.**



IBM PC File Compatibility For The Macintosh.

**Finally.
A Simple,
Practical Tool
For IBM PC
File Compatibility.**



The language of DOS may not mean much to you or your Apple® Macintosh™ Computer. *It doesn't ever have to.*

DaynaFile is the perfect interpreter. It lets your Macintosh read from and write to a DOS formatted data disk, using nothing but Macintosh applications. Just point and click.

Anything else is primitive communication.

Now, an accountant, for instance, can use a Macintosh to tackle an audit of a client's IBM® PC-based financial records.

That's power.

An editor of a newsletter can pull together articles from writers who use PCs and roll it out graphically enhanced on a Mac and a LaserWriter™ printer.

That's simplicity.

The successful manager, committed to Macintosh, can now access thousands of IBM

data files, created by programs such as Lotus 1-2-3™, dBase III™, or WordPerfect™—without ever learning a single DOS command.

That's productivity.

DaynaFile is an external disk drive for the Macintosh. But that's where the resemblance to any other Macintosh drive ends.

DaynaFile works with all Macintosh computers from the Plus to the SE and Macintosh II without taking any of the coveted card slots. It connects to the Small Computer System Interface (SCSI) port.

That makes it very fast.

DaynaFile handles any IBM PC file format you have to deal with. All with the ease of Macintosh. Point and click.

That makes it very simple.

As a single drive or dual drive unit, DaynaFile accepts 5¼" disks from the PC XT™ and AT™ as well as the 3½" disks from

the IBM Personal System/2™ computers.

And that makes it very practical.

Macintosh has carved its niche. It's a serious business tool in a world once dominated by IBM.

The issue is no longer survival. It's communication.

There has never been a greater need for data sharing between Macintosh and IBM. There has never been a better solution to file compatibility than DaynaFile.

No one knows more about making Macintosh and IBM PCs work together than Dayna Communications. We pioneered that technology.

So you're getting solutions not from people who tinker with compatibility, but from the experts who invented it. People who know that in your profession you need all the power you can get.

DaynaFile.



Dayna
Power Tools For The Mind



Single drive units are easily upgraded to dual drive—just order the drive you want.



Mix and match dual disk drives to meet your exact needs.



Subdirectories on the DOS data disk appear as Macintosh folders. Data files become documents.

The Competition Barely Scratches The Surface.

	Dayna	Apple*
Finder level user interface	yes	no
Requires chassis card slot	no	yes
Accommodates multiple drives	yes	no
Supports PC XT™ drives	yes	yes
Supports PC AT™ drives	yes	no
Supports 3 1/2" IBM PS/2 drives	yes	no
SCSI port connection	yes	no

*As of July, 1987.



DaynaFile suggested retail prices start at \$595.
To order or to locate an authorized dealer, call (801) 531-0203.


Dayna Communications®

50 South Main Street, Fifth Floor
Salt Lake City, Utah 84144

Verbatim

*An interview with Guy Kawasaki,
president of Acius*



Until his resignation in April, Guy Kawasaki was one of Apple's best-known representatives. Like a politician on the stump, he attended some 30 user group meetings in the last year alone. In his talks he made points—and friends—by poking fun at Apple's foibles.

An ex-jeweler, Kawasaki joined the Mac team while the computer was under development. He went on to head up software development for all of Apple, developing Apple's own software and watching over the team of Apple evangelists who recruit the third-party software publishers that create the vast array of Mac applications. Kawasaki has left Apple on the crest of the wave of the more than 2000 Mac applications he fostered. His next assignment: start up the American branch of the French software company that produced the database manager everyone's been talking about (see "Into the 4th Dimension," July 1987).

In this interview, conducted just at the time of his departure from Apple, Guy Kawasaki reflects on his days at Apple and, with his characteristic humor, puts forward his philosophy of software development.

What did you do at Apple?

I had responsibility for two areas: the product development of Apple-labeled software and the overall relationship between Apple and third-party developers.

What is the role of Apple as a software publisher?

Apple's role is threefold. First, to develop software that shows off Apple hardware. *MacPaint* is an example of that. Second, to set the standard for applications—*MacWrite*, for example, set the standard for Macintosh word processors. Third, to fill gaps in the marketplace when developers do not. *AppleWorks* filled the gap for Apple II integrated software at a time when developers were not creating Apple II productivity programs.

There has been quite a debate about what the continuing role should be.

It's a very difficult problem. While there are good reasons for Apple to publish software, should it compete with the third-party developers who are making Apple's hardware worth buying?

What about the software spin-off?

I think it's a smart move for Apple. It can accomplish all of the above and reduce the conflict with developers. I'd rather compete against Apple-labeled software that doesn't have the word Apple on the label.

Apple isn't half pregnant anymore. It has given birth. But with birth comes considerable responsibility—like revisions, end-user support, and training.

In your comments about Apple software versus third-party developers, you have singled out Microsoft. Why?

Microsoft is an awesome company because it has both great engineering and great marketing. Bill Gates is an absolute genius and a great businessman. But Microsoft's goal is to do what's right for Microsoft.

Sometimes that's in conflict with Mac. A case in point: *Windows* for the IBM PC. I love the Mac, and I get emotional about it. I also oppose domination of the Mac software market by one company.

What's your favorite Microsoft story?

When I asked them about the literature for the *Microsoft Windows* conference that said "Windows—The Future Starts Here," and "Windows—The Foundation of Desktop Publishing." They told me the Operating Systems group is autonomous and that it creates its own promotional materials, and that I shouldn't judge that as being the position of the entire company.

You were just made a director at Apple, so why are you leaving?

Because my job is done, and because the opportunity to create a great Macintosh software-publishing company is too attractive.

The best thing that I can do for Apple now is to start a Mac software company to show off the Mac and to bring software to market that makes people buy the Mac. Someday maybe I'll return to Apple. "Sugar Ray Kawasaki" has a nice ring to it.

Is anyone at Apple leaving with you?

Yes. Scott Knaster, who was Manager of Developer Technical Support at Apple. Having Scott in the company is like having Doctor

(continues)

While other manufacturers are making the claims... Microtech delivers the facts!



\$849

A lot of manufacturers are out there claiming to be the first, the fastest, the smallest, the quietest, etc. . . . Microtech, as one of the "first" drive manufacturers in the Macintosh market, when only a handful existed, could prove many of these claims false, but rather than make claims, we prefer to devote our time and expertise to delivering our customers the facts.

● MICRO MAC 30 A 30 megabyte SCSI hard drive equipped with dual ports for daisy-chaining along with an external dip switch for quick and easy address changes. **Coming soon: Micro MAC 45.**

SPEED Few drives in its class can match or beat the Micro MAC 30's speed: none for the price.

SUBTLETY Fitting snugly beside your Mac Plus, measuring only 3½" x 5½" x 8", the Micro MAC 30's unique subtle profile will not overstep your Mac boundaries. Sound sensitive Mac enthusiasts will appreciate Micro MAC 30's quiet subtlety as well.

SECURITY A special "Micro Lock" feature auto parks and locks the Micro MAC 30's heads in an area not used for data storage, securing your data from loss or damage.



\$189

● MICRO MAC 800 You saw it first, as the Mac535, at the Boston '85 Macworld Expo, in the pre-Mac Plus days.

SATISFACTION The Micro MAC 800 floppy disk drive, soon to enter its "3rd" year of production has long been satisfying Mac users of all sizes—128k, 512k, and Mac Plus—with its versatility and reliability. Now even quieter than ever, at a new low price.

● NOVA 20, 30 or 50 The Nova series SCSI drives offer the same extra features as the Micro MAC 30 including "Micro Lock", daisy-chaining and external dip switch - all with an added bonus . . .

SAVINGS Compare and Save . . .

NOVA 20	\$569
NOVA 30	\$689
NOVA 50	\$999



*Microtech delivers
more for less!*

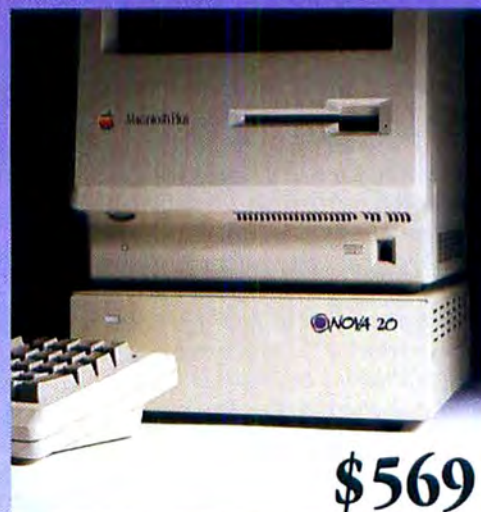
● MICROTECH EXTRAS All Microtech drives are **AVAILABLE NOW** for shipping, come complete and ready to use, with these extras:

ONE YEAR WARRANTY on all drives

TECHNICAL SUPPORT call TOLL FREE

FREE SHIPPING UPS ground in Continental U.S.

  at no inflated cost



\$569

ASK ABOUT OUR MEMORY EXPANSION KITS

**Ask for our independent benchmark test results.*

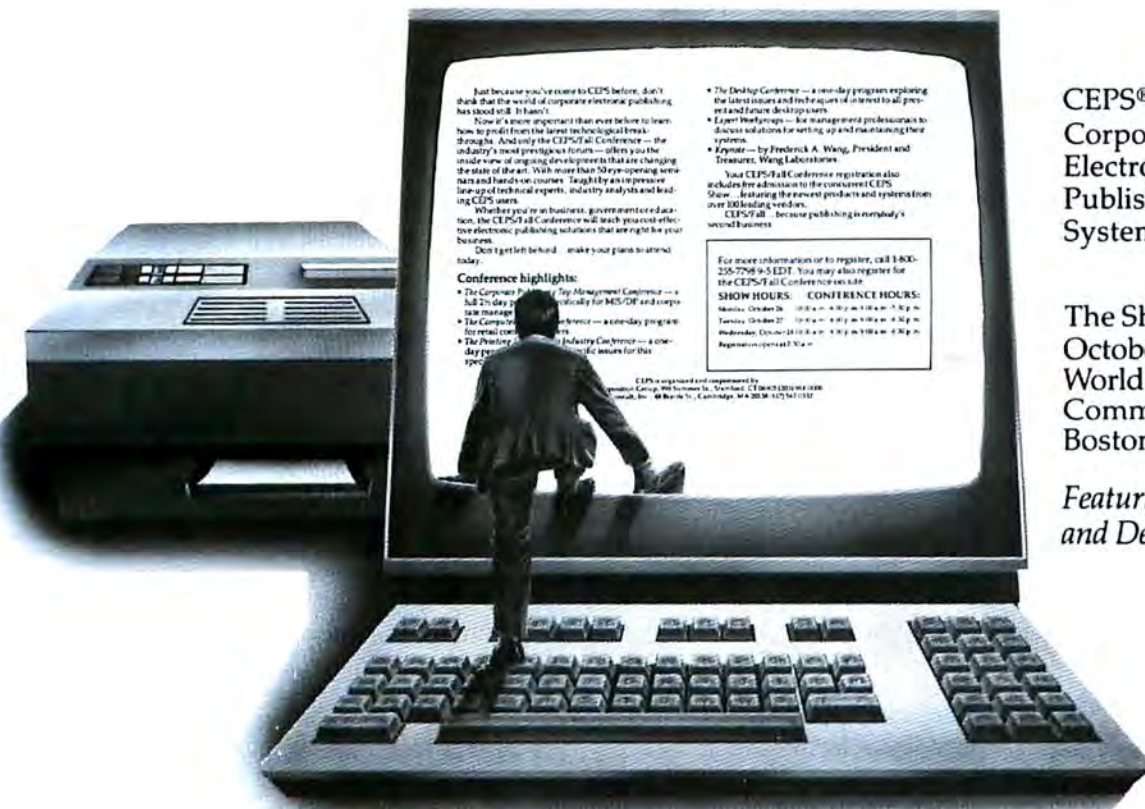
MICROTECH
PERIPHERALS, INC.

29 Business Park Drive/Branford, CT USA 06405

Now that you've got the FACTS, we'll let you be the judge... Microtech invites you to **TEST** and **COMPARE**...ask for details on our 30 day Money Back Guarantee. Call now and take advantage of Microtech's years of experience in the Macintosh market and our ability to deliver quality products at the lowest possible price.

800-325-1895 In CT call 203-488-8993

Dealer inquiries call Microtech International, Inc. 800-626-4276



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 learn how to profit from the latest technological breakthroughs. And only the CEPS/Fall Conference — the industry's most prestigious forum — offers you the inside view of ongoing developments that are changing the state of the art. With more than 50 eye-opening seminars and hands-on courses. Taught by an impressive line-up of technical experts, industry analysts and leading CEPS users.

Whether you're in business, government or education, the CEPS/Fall Conference will teach you cost-effective electronic publishing solutions that are right for your business.

Don't get left behind... make your plans to attend today.

Conference highlights:

- **The Corporate Publishing Top Management Conference** — a full 2½ day program specifically for MIS/DP and corporate management.
- **The Computer Resellers Conference** — a one-day program for retail computer dealers.
- **The Printing & Publishing Industry Conference** — a one-day program focusing on specific issues for this specialized industry.

- **The Desktop Conference** — a one-day program exploring the latest issues and techniques of interest to all present and future desktop users.
- **Expert Workgroups** — for management professionals to discuss solutions for setting up and maintaining their systems.
- **Keynote** — by Frederick A. Wang, President and Treasurer, Wang Laboratories.

Your CEPS/Fall Conference registration also includes *free* admission to the concurrent CEPS Show... featuring the newest products and systems from over 100 leading vendors.

CEPS/Fall... because publishing is *everybody's* second business.

For more information or to register, call 1-800-255-7798 9-5 EDT. You may also register for the CEPS/Fall Conference on site.

	SHOW HOURS:	CONFERENCE HOURS:
Monday, October 26	10 - 6:00	9 - 5:30
Tuesday, October 27	10 - 6:00	9 - 6:30
Wednesday, October 28	10 - 4:00	9 - 6:30

Registration opens at 7:30 a.m.

XP

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 02138 (617) 547-0332.

GN8-3

Circle 770 on reader service card

FREE SONY VHS* TAPE!!!

with every 50 boxed or 100 bulk
SONY diskettes purchased.
*VHS tape only, BETA not available.

SONY

MAC-PAC

Packaged in fifties

Boxed in tens

3 1/2" SS



each
1.02

100 +

3 1/2" SS

each

.92

400 +

1.00 100+ **1.06** 50+

3 1/2" DS



3 1/2" DS

each
1.17

400 +

1.24 100+ **1.29** 50+

SONY Labels 4¢ ea., min. 50

DATA TECH

3 1/2" SS

each, 100 +

.96

3 1/2" DS

each, 100 +

1.19



Boxed in tens

GENUINE TEAK

3 1/2" Disk Storage

Holds 50 3 1/2" Disks



15.95

TONER CARTRIDGES

For Hewlett Packard LaserJet, LaserJet 500,
LaserJet 500 Plus, Canon LaserPrinter and
Apple LaserWriter.

\$84



HARD DISK DRIVE

Its fast, compact,
complete, and reliable!

Includes a print spooler, a floppy
disk duplicator and highly acclaimed
HFS BACKUP!

HD21 **\$865**

HD45 ... **\$1289**

MINI CONTROL CENTER

with built-in surge suppressor

49.95

COPY II MAC

from Central Point Software

29.95

APPLE IMAGEWRITER RIBBONS

SOLD IN SIXES

Black **2.45**

Color **3.05**

(Color & packs include one each: red,
green, yellow, blue, purple & brown)

NEW! 12.95

4 color for
Imagewriter II

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

ORDERING INFORMATION: Shipping/handling additional. Minimum order \$100. Visa,
MasterCard and Prepaid orders accepted. Corporations need 302 or better and 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 Illinois. All returns must have prior authorization from our
Customer Service Dept. (1-312 351-9700). Unauthorized returns and refused shipments are
subject to a 20% restocking charge.

USA-FLEX

135 N. Brandon Drive, Glendale Heights, IL 60139

Circle 134 on reader service card

Verbatim



*Competition is the wine of life,
and Acius has some competitive
advantages over the big boys.*

J. teach you basketball, Mozart teach you
music, or Jean-Louis Gassée teach you
French metaphors.

Tell us about Acius.

It's located in Cupertino, physically and
philosophically close to Apple. Acius is a
philosophy, not just a company. Our goal is
to improve the personal productivity of
customers and to turn our customers into
fans.

We'll do that four ways: by publishing
deep products, providing full service to
our customers, hiring people who are
product zealots, and developing a long-
term relationship with our authors.

What's your first product?

Our first product is a relational database
manager called *4th Dimension*. It used to
be an Apple product code-named Silver
Surfer. It's a relational database with a pro-
gramming language and *MacDraw*-like
graphics, plus multiuser, run-time, and
menu-customization capabilities.

Customers should not be saddled with
off-the-shelf software. They should be able
to tailor products to their needs. *4th Di-
mension* enables buyers to control the Mac
and their information.

But *dBase Mac* will be out any day now.

If I wanted a nice, comfortable existence, I
would have stayed at Apple. Competition is
the wine of life, and Acius has some com-
petitive advantages over the big boys. The
most important advantage is that we love
the Macintosh. We don't see it as an alter-
nate income stream to supplement MS-
DOS products. When we look at Macin-
tosh, we see our blood and sweat, four
years of our lives, and our future.

Because we love the Macintosh, other
advantages fall into place. We truly under-
stand the Macintosh way. Technically. Philo-
sophically. And emotionally.

What about Blyth's *Omnis 3* and Odesta's
Helix?

They're fine products, but we have a very
powerful product. The key to *4th Dimen-
sion* is evangelism, not sales. We have to
make *4th Dimension* the Macintosh data-
base standard, just as we evangelized the
Macintosh in 1984.

Will Apple help comarket the product?

I think so. I know a few people there.

Other developers will probably feel un-
easy about that.

You mean the MS-DOS companies? I rec-
ommend air sickness bags.

Your situation with Acius and Apple
sounds a little like the government em-
ployees who leave federal employment
through the revolving door and use their
contact with private industry to personal
advantage.

I don't look at it that way at all. We won't be
deriving our income from Apple. I think
we'll be helping Apple in the best way we
can. I will always bleed six colors.

What accomplishments are you most
proud of?

My proudest accomplishments are building
a great group of people, creating the best
developer program in the industry, ensur-
ing that the Mac has the best software of
any personal computer, and preserving the
Macintosh spirit.

Why did you come to Apple?

The Mac division had hypnotic and charis-
matic attraction for me. It was managed by

(continues)

GENERAL COMPUTER EXPANDS THE OUTERMOST LIMITS OF THE MACINTOSH.



When the Macintosh was first introduced, it was heralded as the computer "for the rest of us."

Now it's expanded the definition of "us"—to include corporate users, professionals and others who need a powerful personal computer at work.

If you recognize yourself in that definition, we'd like to introduce you to a family of peripherals from General Computer.

Because each was created not simply to tap the Macintosh's resources as a tool for business, but dramatically enlarge them in the process.

HYPERDRIVE LENGTHENS ITS LEAD OVER THE LATECOMERS.

HyperDrive was the first hard disk to be installed inside the Macintosh—and it gave the Mac unprecedented increases in speed and capacity.

Now General Computer extends these increases to the Macintosh SE with a new internal hard disk—HyperDrive FI/40.

Given its heritage, it should come as no surprise that HyperDrive FI/40 is extremely fast. Once installed, an FI/40 will speed power-up time by 57%. Load Microsoft's Excel two times faster. And Aldus' PageMaker three times faster.

These and other reductions in work time are matched by a correspondingly vast increase in the capacity for work. An FI/40 will enable the Macintosh to store the data that would otherwise occupy an astonishing 14,000 pages.

But all this isn't to say that HyperDrive's elevated performance is denied those who prefer an external hard disk.

HyperDrive FX/20 and FX/40 provide the same speed and capacity to any Macintosh with an SCSI port. And like all internal HyperDrives—which is to say unlike any other hard disk—the FX drives come with a complete array of software.

Including a back-up program that makes quick copies of your data onto diskettes. LaserWriter and ImageWriter print spoolers that queue up documents for your printer, while you go on to other jobs. And a security program that protects your files from unauthorized entry.

NETWORKING SOFTWARE THAT OUTWORKS THE OTHERS.

If networks exist to promote the free exchange of information, it follows that the freer the exchange, the better. By that standard, HyperNet 2.0 creates new possibilities for desktop communications.

HyperNet enables up to 32 Macintoshes to read, edit or transfer files from any hard disk in an AppleTalk network. Even if everyone wants to refer to the same information at once.

Unlike other networking software, HyperNet works without need of a dedicated Macintosh to run the network. Or a network administrator to maintain it.

In fact, HyperNet doesn't even require Hyper-

*In Canada call (800) 263-1405. © 1987 General Computer. HyperDrive, HyperNet, HyperTape, HyperCharger 020, and the General Computer logo are trademarks of General Computer. PageMaker is a trademark of Macintosh are trademarks of Apple Computer, Inc.

Macintosh Plus,
HyperDrive FX/20



Macintosh SE,
HyperCharger 020



Drive. It works with any Macintosh and any hard disk made for the Mac. Not to mention all the software compatible with AppleTalk.

Which means you can take full advantage of multi-user programs for electronic mail such as Think Technologies' InBox. Or powerful database managers such as Blyth's Omnis 3.

The resulting network provides a fully compatible complement for people who use AppleShare. And for people who don't, HyperNet provides a fast, easy-to-use network on its own.

INTRODUCING TWO NEW EXPANSIONS OF THE OUTERMOST LIMITS.

If you bought the Macintosh because it delivers "the power to be your best," then more power should make you even better.

That's the mission of the two newest additions to the General Computer family—HyperTape 40 and HyperCharger 020.

HyperTape 40 may not make diskettes obsolete, but it can decrease your dependence on them.

Plugged into any Macintosh with an SCSI port, HyperTape allows you to back up the equivalent of 50 diskettes of data onto one compact 40-mega-byte cartridge. HyperTape can be programmed to back up automatically—even when you're away from your Macintosh. And you have the peace of mind that comes with knowing your documents are stored using the most reliable method for

protecting data from accidental loss.

Even greater economies of time and effort are available through HyperCharger 020—a powerful enhancement board which, installed inside the Macintosh SE, delivers the processing prowess of the Macintosh II.

A Macintosh SE thus equipped not only runs most software up to an incredible four times faster. HyperCharger's optional floating point co-processor also allows it to handle financial modeling, statistical analysis, and other tasks which ordinarily would require a much larger, more complex and more expensive computer. And since HyperCharger is internally installed, the SE remains as compact and portable as before.

In sum, no other family of peripherals leaves the Macintosh so thoroughly equipped for superior performance. Or so thoroughly qualified for a career in business.

For a detailed review of those qualifications, stop by an authorized General Computer dealer. And for the name of one near you, call (800) 634-9737. In Illinois, (800) 854-9737.*

Aldus Corp. Microsoft and Excel are trademarks of Microsoft Corp. InBox is a trademark of Think Technologies, Inc. Omnis 3 is a trademark of Blyth Software, Inc. AppleTalk, AppleShare, LaserWriter, ImageWriter and

Macintosh Plus,
HyperDrive FX/40



Macintosh SE,
HyperTape 40





The Mac division was an elite part of an elite company in an elite industry.

Steve Jobs, it had the hottest technology, and it was an elite part of an elite company in an elite industry. I had as much chance as a moth.

What was it like, working on the Macintosh, in the Macintosh division?

There was free, fresh-squeezed orange juice, a grand piano, two video games, a great stereo, Jobs's BMW motorcycle, and we could fly first class. We had a pirate flag flying over our building for months. We considered putting a washer and dryer in the building because none of us had time to go to the laundry. We also considered putting a sushi bar in the building so that we wouldn't have to go out to eat.

Have you enjoyed working at Apple?

I've truly loved it. Everybody in their life should work at least once for a company like Apple. The technology is exciting and the freedom is great. Plenty of freedom to soar like an eagle. Where else could an ex-jeweler like me become a software czar?

What is the most enjoyable thing you recall about being at Apple?

Two things. Working with the user groups and seeing the excitement of developers when you show them a new computer.

What's fun about working with the user groups?

Speaking to a user group is equivalent to playing in the Super Bowl. It's a rush to speak to a user-group meeting. It's like going to a spa—when you come out you feel better about yourself.

Take the Pentagon Mac User Group, for example. There are Macs all over the place, and they have screen blankers like the bouncing Trash Can or *Stars*, the one that makes it look like you're flying through the universe. There is *More* output everywhere. It's kind of scary to think that Dave

and Peter Winer run our country's security.

The Air Force asked me about a personal LaserWriter so I asked them about the Stealth. The Army asked me about the Lisa so I countered with the Bradley. The Navy asked me about a laptop Macintosh so I asked them how true *The Hunt for Red October* was. I offered them an Open Mac prototype for a ride in an F-16. They offered me a ride in a Huey so I gave them a 128K Mac instead.

What has been the hardest thing about Apple?

For me it was making the transition from a product division (Macintosh) to a functional organization. As a product division we had responsibility for most aspects of a product: marketing, development, and evangelism all in the Mac division.

A functional organization means that other parts of the company are responsible for the marketing, telling us who to evangelize and how to enhance the product. It was a difficult transition.

Did you make the transition?

Some people think so, some people don't.

Have you ever had any doubts about Apple Computer?

Never.

Who has done the most for Apple computer in terms of an overall contribution?

There is no way to answer that question. Apple computer is like a big pot of stew. What's *in* the stew is what makes the stew. All the people in engineering, sales, marketing, support, finance, manufacturing, and research make Apple. Maybe bouillabaisse instead of stew.

(continues)

AUTHORIZED RAGTIME DEALERS

- AL Montgomery, Computerland, Mike Chapel, 206/284-8107
- AR Fayetteville, Megabyte, Marie Riley, 501/443-0007
- CT Hartford, American Printing Corp., Harold Gran, 203/625-4841
- New London, Computer Lab, Doreen Bond, 203/447-1079
- Weathersfield, Computers Resources, Irene Perry, 203/563-9000
- FL Clearwater, Ray's Computer Center, Jerry Lettre, 813/535-1414
- Clewiston, Computer Electronics, Gregg Esser, 813/983-8484
- Ft. Lauderdale, Software Cellar, Michael Silverman, 305/563-0333
- Ft. Lauderdale, Byte Shop, Mike France, 305/486-2883
- Merrit Island, Creative Computer Service, Bill Madison, 305/453-5353
- Miami, Computer Village, Marilyn Lovse, 305/255-2000
- Miami, Softcity, Charlie Carlon, 305/233-0001
- Tampa, Micro Computer Systems, Thomas Viviano, 813/876-0406
- GA Atlanta, AC3 Computer Products, Carl Roberts, 404/998-2335
- Savannah, AC3 Computer Products, Rebecca Owens, 912/927-6802
- HI Honolulu, Software Library, Torod Holst, 808/533-1123
- IL Belleville, Kappel's Computer Store, Mike Kappel, 618/277-2354
- Downers Grove, Heath-Zenith/Downers Gve., Steve Hart, 312/852-1304
- IN Evansville, Computerland, Tom Ubelhor, 812/423-6869
- Evansville, Computerland, Jack Klemeyer, 812/473-3303
- Fort Wayne, Graham Computer Center, Phil Swihart, 219/423-3422
- Indianapolis, Graham Computer Center, Mike Hall, 317/634-8202
- Indianapolis, Graham Computer Center, Mike Raper, 317/844-1255
- Terre Haute, Hoosier Electronics, Tim Garrett, 812/232-8508
- IA Davenport, Cinarco/Elliott, Trish Mayo, 319/324-0639
- KS Overland Park, Personal Computer Center, Sharon Shastaw, 913/649-5942
- KY Louisville, Graham Computer Center, Jim Bechtold, 502/423-7120
- Louisville, Heath-Zenith, Steve Merce, 502/245-7811
- Owensboro, Computerland, Tim Hicks, 502/926-8225
- LA Metairie, Computer Shoppe, Frank Bonilewski, 504/454-6600
- ME Portland, Harper Electronics, Caroline Seavby, 207/772-1156
- MD Bethesda, Bethesda Computers, Tina Patterson, 301/657-1992
- MA Braintree, Hammett Family Comp. Ctr., Jack Ridge, 617/848-0560
- Norwell, PCR, Bob Olson, 617/871-5396
- Peabody, Computers Etc., Howard Gilpe, 617/535-5252
- MI Ann Arbor, Learning Center, Shannon Coombs, 313/996-1616
- Grand Rapids, AMS-Advanced Mgmt Sys., Erol Piskin, 616/956-6686
- Lansing, Computer Consignment, Dick McCarrick, 617/394-4408
- MN Brookdale Park, B. Dalton Software, Keith O'Mally, 612/561-6421
- Brooklyn Center, FirstTech, Andrew Colwell, 612/561-0900
- Duluth, Team Electronics, Tony Kelekovich, 218/727-4900
- Edina, Moore Business Center, Gary Phillips, 612/929-4334
- Minneapolis, B. Dalton Bookseller, Dan Gutilla, 612/332-9008
- Minneapolis, FirstTech, Paul Gutoski, 612/377-9300
- Minneapolis, Saylor Software First, Scott Litman, 612/829-0344
- Minnetonka, B. Dalton Software, Scott Kimball, 612/542-3108
- St. Paul, TopTech, Dick Baack, 612/450-1845
- MO St. Louis, Software City, Larry Malashok, 314/434-3311
- NB Bellevue, The Computer Works, Rick Turks, 402/291-7809
- NH Nashua, Computer Town, Ted Woodson, 603/889-1212
- Salem, Computer Town, Jack Welch, 603/893-8812
- NJ Englishtown, CMI Computers, Dorothy Jablonka, 201/462-9696
- Ocean, Heath-Zenith, Ted Bongiovanni, 201/775-1231
- Ocean, Transnet Computer, Kate Greenwald, 201/531-7020
- Union, Transnet Computer, Gary McHugh, 201/688-7800
- NY Mt. Kisco, Computer Edge, Carol Epstein, 914/666-6337
- New York, I. D. S., Dawn Kroll, 212/557-0180
- New York, McGraw Hill Computer, John Eng, 212/512-4300
- Vail's Gate, Computer Emporium, Mark Fried, 914/562-3131
- Williamsville, Amherst Comp. Exchange, Michael Rosen, 716/626-5111
- NC Hickory, Computer Alternatives, Steve Baker, 704/324-2040
- Wilmington, Solutions Inc., Bill Block, 810/395-0233
- OH Akron, BasiComputer, Andy Hanzel, 216/745-3100
- Cincinnati, Graham Computer Center, Keith Callahan, 513/772-7753
- OK Tulsa, Computerland/Tulsa, Dan Switzer, 918/592-3444
- Tulsa, KB Company, Gene Caves, 918/446-0713
- PA Doylestown, Solutions Computer, Pete Choute, 215/345-4411
- King of Prussia, Computer Campus, Pat Reither, 215/266-6311
- Philadelphia, Bundy Computer, Jeff Miers, 215/922-0500
- TN Memphis, Opus 2, Ron Gilbrech, 901/683-0117
- VA Fairfax, Family Computers, Claudia Vaughn, 703/385-2758
- Norfolk, MicroAge Computers, Russ Pond, 804/461-6460
- Richmond, First Step Computers, Jim Eagle, 804/320-6496
- Springfield, Family Computers, Rick Santistezan, 703/866-9122
- Virginia Beach, Memory Bank, John Crowe, 804/460-2644
- WV Charleston, CBM Computer Center, Alan Dean, 304/344-1001
- WI Madison, CBM Computer Center, Dan Hurd, 608/274-5580
- Milwaukee, Northshore Computers, Dave Rourke, 414/963-9700

For Western States locations, call Robert Lassiter at Orange Micro (714) 779-2772

RAGTIMETM
Document Processing

Ragtime has already found wide acceptance in business environments. A Big-8 accounting firm, a major aerospace company and the California State Controller's office are just three examples in



Apple's biggest challenge now is providing end-user support in an increasingly complex world.

What is the biggest challenge for Apple Computer?

I think it's providing end-user support in an increasingly complex world. The company is selling complex products to demanding consumers. No more one person, one computer.

What has been Apple's best achievement?

Bringing computers to more people and having the chutzpah to take on IBM.

How has it done that?

Guts. Hard work. Luck.

So what do you think of the new IBM PC, rather PS, recently announced?

IBM announced the Mac 128K—about three years too late. It's as if they called up Apple and asked, What should we do to help you for the next three years? There's no system software, existing PC add-on cards aren't compatible with the new PC, IBM didn't bundle in the mouse, and *did* bundle a desktop publishing application program. That will make all the other developers really happy, as the *MacWrite* bundling did.

Who are or were the characters at Apple?

Jobs, Alain Rossmann, Mike Boich, and Mike Murray. Jobs because he is a genius and the most electrifying speaker I've ever

heard. Rossmann because he has the best combination of marketing and technical expertise. Mike Boich because he is the smartest person I know, and Murray because he took a chance on me.

Where did the term *evangelism* come from?

Murray made it up. He decided that we shouldn't just go and meet with developers. We should change their lives, change their blood, even, from blue to Apple's six colors.

What advice would you give to new people at Apple?

Break all the rules. I did. We had rules for selling equipment, providing technical support, distributing documentation. I broke them all. It was a point of pride for me. I think I was maybe second only to Steve Jobs in that. He made the rules, though, so it was all right if he broke them.

(continues)

Summer Sale - Part Two

Summer Specials

512K Upgrade	99.00	2400 Baud Modem	199.00
SCSI Upgrade	69.00	1200 Baud Modem	99.00
68020 Upgrade	495.00	Magic 800K Drive	199.00

Hardware

Hard Disk Drives:	
Magic20	599.00
Magic30	799.00
MacBottom 40Meg	1239.00
Tape Backup Units:	
Magic20 Speed Tape	699.00
Magic60 Speed Tape	899.00
MagicModem 1200	149.00
Numeric Turbo	109.00
Turbo Mouse	95.00
MacFan	95.00
Thunderscan	175.00
Radius 19" Screen	1795.000
Panasonic Printer	249.00
Vision Upgrade	
512K to 1024K	159.00
128K to 1024K	249.00
Dove Upgrades	
MacPlus 2MB	249.00
512K to 1024K	139.00
512K to 2048K	379.00

Software

Cricket Draw	177.00
Cricket Graph	139.00
Dark Castle	36.00
Dinner at Eight	35.00
Double Helix	285.00
FileMaker Plus	159.00
FullWrite	call
GraphicWorks	52.00
Hard Disk Utilities	59.00
LaserServe	69.00
Laserspeed	69.000
MacDraft 1.2	154.00
MacGolf	32.00
MacLightning 2.0	50.00
MacMoney	54.00
Microsoft Excel	229.00
Microsoft Word 3.0	229.00
Microsoft Works	185.00
MindWrite	169.00
MORE	159.00
Omnis3+	280.00
PowerPoint	229.00

Ragtime	259.00
Reflex	59.00
Scoop	call
SuperPaint	55.00
Thunder	37.00
Trapeze	189.00

Science/Education

MacEqn	39.00
MS Basic	149.00
Lightspeed Pascal	99.00
StatView	280.00
KidsTime	39.00
Math Blaster	35.00

Disks/Accessories

Sony SS Boxed	10.60
Sony DS Boxed	15.80
Sony Bulk	call
MacPlus Bag	59.00
Mac SE Bag	79.00
Black Ribbons	2.95
Colored Ribbons	4.50
Multicolored Rib.	9.00/8.50

Call

1-800-MAC-DISK Vision Technologies

Software Rentals

Try a software product before you buy it. Rentals are only 1/5 of the purchase price.

Hardware Repairs

Free estimates, and 24-hour turnaround service available.

Ordering Information

Call 1-800-MAC-DISK or 1-800-2MAC-TEX if you are a Texas resident. Vision Technologies' hours are 7:30am-7:30pm CDT. \$40 minimum on all orders. We accept Visa, MasterCard, C.O.D., Company and Institution Purchase Orders and Checks. Texas residents please add 7 1/4% sales tax. Please note that prices are subject to change and items are subject to availability. Returns may be subject to a restocking fee.

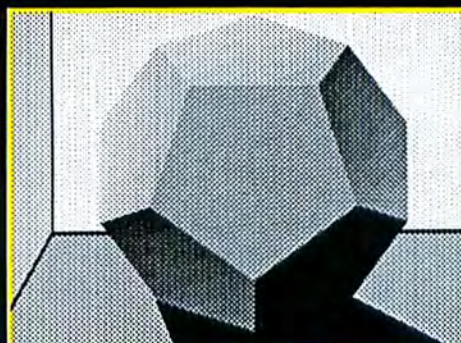
Shipping Information

There is \$3 minimum charge for shipping. Please call our 800 number to verify shipping rates. Vision Technologies offers UPS Next Day Air and 2nd Day Air, Federal Express and United States Mail for product delivery. Please add 5% for US Mail.

Vision Technologies
9709 Brown Lane, Ste. E
Austin, TX 78754

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 WYGITWYS (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



Verbatim



The pundits always try to make marketing more than what it is. It's mostly empathy for customers.

You're known for your anecdotes. What are some favorite Apple anecdotes?

Once the president of KnowWare came to Apple. He used to be the head of an AT&T division. Steve Jobs came walking down a hall with him and asked me what I thought of his software. Not knowing who this guy was, I said that his software didn't have a place in the Mac market because it was too simplistic. Jobs turned to me and said, "I want to introduce you to the President of KnowWare." He set me up good.

I also remember when we did the rollout of the Mac for dealers in Dallas. There was a speaker, John Rizzo, who had on a wireless microphone. After he finished speaking he walked offstage without taking the mike off. You could hear

every footstep. He went to the bathroom, washed his hands, and everything. The entire audience could hear him.

You are often very cynical about the marketing aspect of personal computers. Why?

Perhaps because I am a marketer stuck in an evangelist's body. I'm cynical because the pundits always try to make marketing more than what it is. For me it's mostly empathy for customers.

You've brought much of yourself to Apple, personalized your role with users and developers. Why?

The key to my position is empathy, and people empathize—not organizations. I

learned that from my old boss in the jewelry business, Marty Gruber. The jewelry business is a very tough, personal business where styles, prices, and terms change but relationships are the key.

Some people might say that you've promoted some developers at the cost of others.

That's part of being a real person. We could have run evangelism like a rationalized bureaucracy. In most cases my best developer friends are the same companies that did the most for Macintosh. Like Living Vid-eotext, Silicon Beach Software, and Challenger. So hang me.

What is the process for software development at Apple?

There are two theories. The comic view goes like this:

- Order T-shirts (for the development team).
- Announce availability.
- Write software.

(continues)

The MacGolf™ Challenge.

Sit down, boot up and find yourself surrounded by the sights and sounds of the fairway – with MacGolf, the premier simulation golf game for Macintosh™ users.

MacGolf challenges beginners and experts with 3-dimensional animated

golfers and graphics, realistic (digitized) sound effects, and two 18 hole golf courses. Up to four people can play.

MacGolf works on a 512K or Macintosh Plus and costs only \$59.95. Get MacGolf at your nearest dealer

Circle 211 on reader service card

today. Or call Practical Computer Applications at (612) 427-4789.

MacGolf™

Macintosh is a trademark licensed to Apple Computers, Inc. MacGolf is a trademark of Practical Computer Applications, Inc.

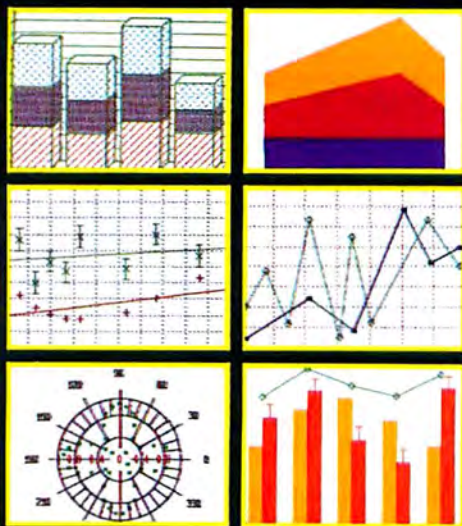


ACHIEVE THE ULTIMATE.

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 III!

Only Cricket Graph gives you the ability 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

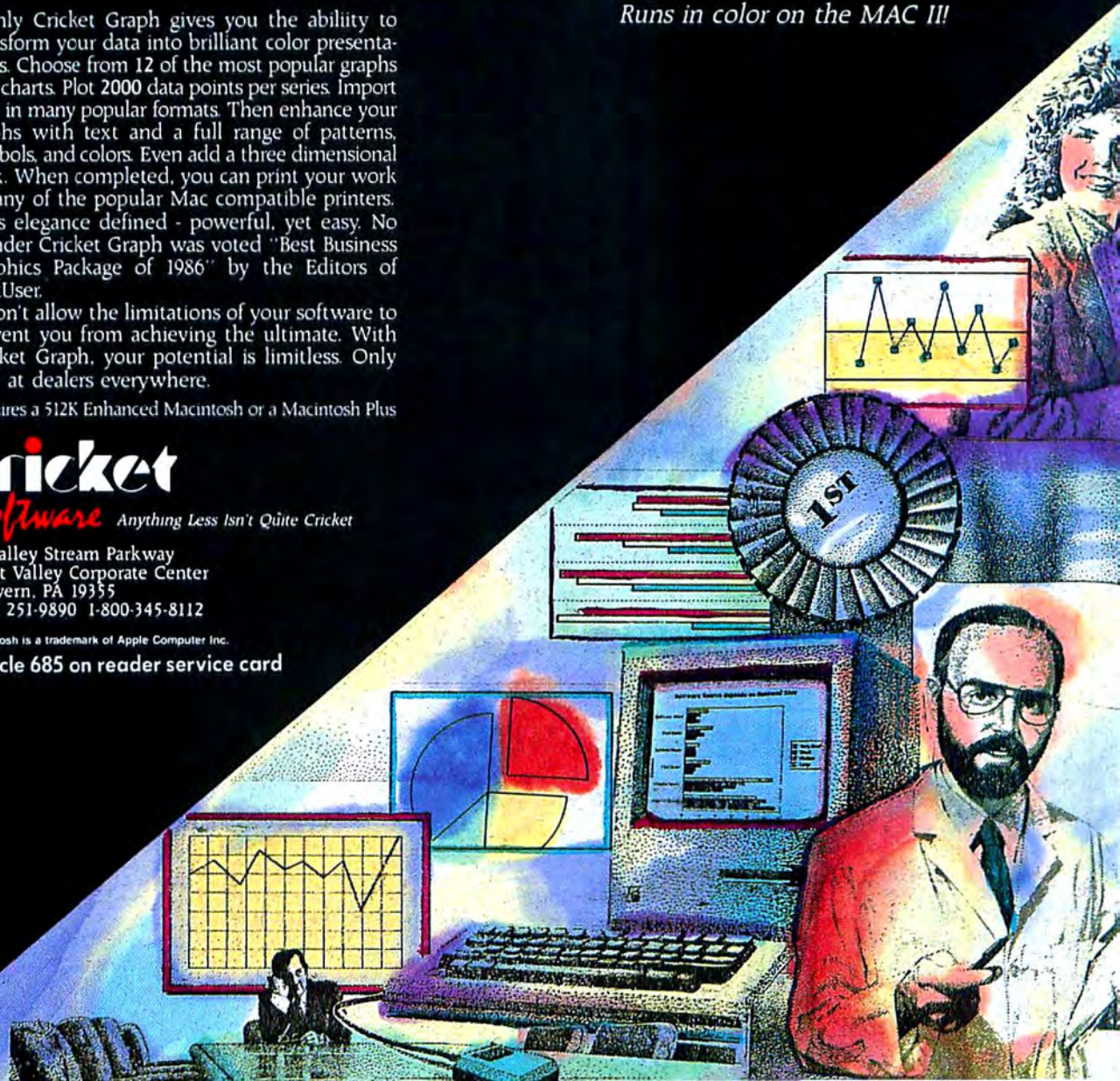
cricket

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



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** Competitively 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

Verbatim

- Write manual.
- Hire product manager.
- Spec software. (Drawing up the specifications after writing the software ensures that it meets specifications.)
- Ship.
- Test. (The consumers are a big help here.)
- Announce upgrade program.

For the serious side there are two primary paths: history and serendipity. History means that we converted from one CPU to another, like *LisaProject* to *MacProject*, *LisaDraw* to *MacDraw*.

The other way products are developed at Apple is when two people have a great product and are trying to find a publisher. If they can't find someone and it's a strategically strong product, then it's acquired. That's what happened with *4th Dimension*.

Does the Mac cost too much?

No. Does your magazine? *Macworld* probably costs \$1.50 to produce, but on the newsstand it costs more than twice that much. It's Lon Poole, Dan Farber, you, and the other writers and editors that make the magazine. It's the intellectual property that makes your magazine. There is more to a product than RAM, drives, and monitors. I don't complain about the cost of *Macworld*; don't complain about the cost of Macintosh.

What is the best hardware peripheral for the Mac?

LaserWriter, although Alain Rossman and Mike Boich [now at Radius] may have a different opinion.

It was a tough decision for Apple to bring a \$7000 peripheral to the market. Will Apple ever do that again?

I hope so. A lot of people bought Macintosh to run the LaserWriter in 1985 and 1986. It was Steve's vision. I don't know what the next product might be, maybe a color LaserWriter.

What about complaints about all the System and Finder changes?

They are legitimate. I wish it weren't so, but it is. We try to make the system software perfect, but being on the Mac bandwagon

(continues)

Looking for Something New?



We know,

you've heard it all before. Every computer game is "something new." We've been publishing Macintosh software since the beginning, and believe us, we've heard it all before too. So when Cliff Johnson gave us a call and said he'd written a game that was "really something new," we thought "yeah, sure."

Well, **the fool's errand™** really is something new. It's a fantasy puzzle, full of enchanting, and enchanted, scenes: It's got hands-on visual puzzles that spark your imagination, mind-boggling brain teasers and curious wordplay; a cryptic story that ties the thread that binds; light-hearted tricks to catch you by surprise; and the Fool, whom, in his search for wisdom, must rebuild the Sun's Map to regain that which has been lost. Each task, from the simple to the

challenging, can be explored at will: stopped, continued, restarted. But we really don't expect you to believe all this yet. Ask around. See your dealer. Try it.



Miles Computing, Inc.
Entertainment Software Division
7741 Alabama Avenue, Suite #2
Canoga Park, CA 91304 (818) 341-1411

The ARCANUM Series™

Shop Icon Review: Save 300 Ways!

Hot New Laser Printers



ScriptTEN Laser Printers

From Qume Corp.

We're excited! We've finally found a PostScript printer that can compete with the Apple LaserWriter. These ScriptTEN 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.

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

ScriptTEN Laser 2MB Printer \$3,895
1996 • Supports 10 downloadable fonts

ScriptTEN Plus 3MB Laser Printer \$4,295
1997 • Supports 20 downloadable fonts

Inside

More
New
Products

Your Resource for Select Macintosh Products

Many Macintosh owners already know us; but if we are a new name to you, let us introduce ourselves. Icon Review is a consumer-direct marketing company that specializes in quality hardware, software, and accessories for the Apple Macintosh. We have built our reputation as a

reliable and friendly supplier of the latest and best Mac-related products.

Put Icon Review to work for you and take advantage of our extensive research of the Mac marketplace. Each and every product we carry is evaluated for quality and value, then offered at the lowest possible discount price. Pick up the phone and order today. You'll be glad you did!

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.



**Icon
Review**

800/228-8910

Good anywhere in U.S.

Stepping Out

From Berkeley System Design

Stepping Out

The Macintosh Screen Extender



Berkeley System Design

This unique software gives you the advantages of a large-screen display — at a fraction of the cost. Simply select any screen size, then move your cursor to the edge of the screen and watch the image "slide" to reveal the entire document. No need to hassle with scroll bars to see the big picture! And, convenient keystrokes let you magnify and reduce images or work simultaneously within two views. Especially good for creating enlarged screen shots or working with page-layout and graphics programs.

1937 • Works w/512K, 512E, Plus & SE

\$59

Turbo Mouse

From Kensington



Kensington has turned mouse technology upside down by putting the trackball on top — so you move only the ball, not the whole mouse. This makes Turbo Mouse easier to use — especially on a desk full of papers. And, it's more responsive than a mouse. Flick the ball and accurately speed the cursor to the far reaches of your document, or roll slowly with pin-point precision.

Turbo Mouse even has a pass-through connector, so you can easily switch between your mouse and trackball. Mouse buttons on either side let you work in comfort whether you're right- or left-handed. Get moving with Turbo Mouse.

1888 • Not compatible w/Mac SE & II

\$79

MacCalc

From Bravo Technologies, Inc.



MacCalc, the spreadsheet you've been waiting for! It's fast, powerful, easy to learn, and inexpensive — perfect for novice and expert alike. Setting up a worksheet has never been easier! Access all commands directly from the menus; add explaining from other Mac programs without losing formatting particulars (it even reads/writes Lotus 1-2-3 files and SYLK data); then assign each cell its own font and format for impact. Buy MacCalc — MacUser's "Best New Spreadsheet" — at a price that's too good to miss!

\$85

1995 • Works w/512K, 512E & Mac Plus

Special minimal recalculation technology makes it possible for MacCalc to calculate even your most complex spreadsheets in record time.

FREE Catalog

To receive yours and advance notice of special sales, call

800/228-8910



Orders

Icon Review

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** Charges are calculated by weight. 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 & handling charge or 21% of the total purchase price, whichever is greater. We also serve Africa, Australia, Spain, Portugal, Mexico, South America, Philippines, etc. — write or phone for rates.

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

1207	MacVision	\$ 175
1866	MinuteMan 250	\$ 289
1867	MinuteMan 300SS	\$ 439
ScriptTEN Laser Printers NEW		
1996	• 2MB PostScript Printer	\$3895
1997	• 3MB PostScript Printer	\$4295
2009	• Adjustable Paper Tray	\$ 84
1999	• Toner/2 Pack	\$ 149
2007	• Toner/6 Pack	\$ 339
1871	Seikosha Printer	\$ 229
1935	• Ribbon for Seikosha	\$ 8
1881	Stretch Screen	\$1699
1852	• Baby Stretch FPD	\$1599
1054	ThunderScan	\$ Call
<i>New version works w/512K, Mac Plus & SE; call for details</i>		

DISK DRIVES

Bering Totem Drives		
1903	• 20-meg Cartridge Drive	\$1399
1906	• 20-20 Dual Cartridge	\$2149
1909	• 40-meg Fixed 20-meg Cart	\$2799
1904	• 20-meg Cartridge	EACH\$ 85
1907	• Head Cleaning Kit	\$ 75
1983	• Starter Acces'ry Kit	NEW\$ 195
1984	• Deluxe Acces'ry Kit	NEW\$ 265



These attractive and durable **Printer Mufflers** are lined with sound-absorbing foam to keep noise in and dust out!

From Kensington
1978 • Print Muffler 80 \$39
Fits std IW I & II and Seikosha
1979 • Print Muffler 132 \$52
Fits wide-carriage IW II

Bernoulli Boxes		
1701	• 5-meg Serial Drive	\$ 499
1637	• 10+10 SCSI Dual Drive	\$1649
1639	• 20+20 SCSI Dual Drive	\$1895
1759	• 5-meg Cartridges	3 Pk\$ 99
1646	• 10-meg Cartridges	3 Pk\$ 189
1645	• 20-meg Cartridges	3 Pk\$ 275
1640	• Cleaning Kit/5-meg	\$ 70
1647	• Cleaning Kit/large	\$ 75
1607	Ehman 800K Drive	\$ 189

MacBottom Drives		
1323	• HD 20 Serial	\$ 869
1653	• HD 21 SCSI	\$ 869
1842	• HD 45 SCSI	\$1299

Mirror Tech		
1660	• MagNet 30x	\$ 949
1632	• MagNet 40/40	\$2395
1788	• MagNet 85x	\$3995
1359	• Magnum 800K Drive	\$ 229
1458	• Magnum Tape Backup	\$ 899

Zap Hard Drives		
1892	• SS-10	\$ 459
1939	• SS-40	\$1059
1940	• SS-70	\$1499



EasyNet is an inexpensive, easy way to plug AppleTalk devices into existing phone jacks. From NuvoTech
1975 • Mac Plus, SE & II \$29
1976 • 128K, 512K & 512E \$29

ACCESSORIES

Backup Cassettes \$18-28
We carry cartridges to fit most tape backup systems; call to order

Books		
1905	• <i>How to Write Software</i>	\$ 24
1908	• <i>MacAccess</i>	\$ 19
1690	• <i>Macintosh Advisor</i>	\$ 15
1893	• <i>Macintosh Bible</i>	\$ 16
1910	• <i>Personal Publishing</i>	\$ 21

Cables \$15-40
We have a full line of quality cables

1631	• For ImageWriter I & II	\$ 69
1644	• For Mac & Mac Plus	\$ 89
Computer Accessories		

Computer Accessories		
1834	• Power Director	\$ 66
1813	• PowerLine One	\$ 9
1814	• PowerLine Six	\$ 33
1498	• PowerLine Strip	\$ 39

Copy Holders		
1882	• Desktop	\$ 12
1883	• Desktop/Wide	\$ 19
1884	• SpaceSaver	\$ 28

Curtis Surge Suppressors		
1508	• Diamond	\$ 29
1509	• Emerald	\$ 36
1507	• Ruby	\$ 55
1510	• Sapphire	\$ 47
1769	Data Switch/128 & 512K	\$ 29
1820	Data Switch/Mac Plus	\$ 39



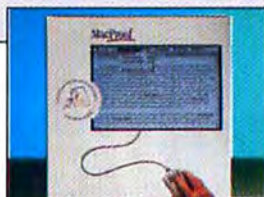
Anyone who needs to create outlines, manage schedules, or transform ideas into presentation graphics will benefit from **MORE**. Works w/512K or Mac Plus & 2nd drive, or SE
1641 • From Living Videotext \$159

Disk Holders

1704	• ACCO Disk Holder	\$ 16
1387	• disk•book-10	\$ 11
1399	• disk•book-32	\$ 22
1572	• disk•book-Plus	\$ 22
1736	• Disk Pak	\$ 3
1032	• Fellowes Disk Holder	\$ 16
1033	• Fellowes w/Lock	\$ 18
1597	• Mahogany Disk Holder	\$ 28
1815	• Rolltop Cabinet/45	\$ 15
1816	• Rolltop Cabinet/90	\$ 22
1781	• Traveller-4	\$ 5
1780	• Traveller-8	\$ 7
1779	• Traveller-12	\$ 9
Dust Covers		\$7-20

We carry quality anti-static nylon covers for your Mac & peripherals

1296	Fanny Mac	\$ 59
1919	Fire Extinguisher	\$ 39
1402	Head & Screen Cleaner	\$ 15
ImageWriter Ribbons		
1876	• Black	EACH\$ 4
1643B	• 4-Color (IW II)	EACH\$ 12
<i>Single ribbons also available in blue, green, red, or yellow; call to order</i>		



MacProof checks all your written documents for spelling, punctuation, confusing word usage, weak constructions, and more.
Requires Mac Plus
1710 • From ALP Systems \$109

Kensington

1758	• AppleTalk Cable Clip	\$ 1
1748	• AppleTalk Conn Clip	\$ 1
1140	• Control Center	\$ 62
1706	• Mouse Pocket	\$ 8
1389	• Polarizing Filter	\$ 34
1978	• Printer Muffler 80	NEW\$ 39
<i>Fits std IW I & II and Seikosha printers</i>		
1979	• Printer Muffler 132	NEW\$ 52
<i>Fits wide-carriage IW II printer</i>		
1201	• Surge Suppressor	\$ 35
1627	• System Saver Mac	\$ 65
1888	• Turbo Mouse	SPECIAL\$ 79
<i>Please specify Platinum or Beige when ordering Kensington products</i>		

Laser Cartridges

1853	• Black/New	SPECIAL\$ 89
1859	• Black/Reconditioned	\$ 69
1854	• Blue/New	SPECIAL\$ 135
1858	• Blue/Reconditioned	\$ 79
1283	MacCracker	\$ 20
MacHELP Cards		\$ 12
<i>For Excel, Jazz, MacWrite/MacPaint, MultiPlan, Word; specify program & style (keyboard or Mac) when ordering</i>		
1527	MacInker (IW I & II)	\$ 44
• Ink (Specify Colors)		\$ 3
1315	• Ink Roller	\$ 4
1650	Mac 'N' Frost	SPECIAL\$ 59
1966	Mac 101 Keyboard	NEW\$ 169



With **Mac 101's Keyboard** and its macro-creating desk accessory, you can assign single-keystroke operations to 15 function keys. The keyboard standard in the computer industry. Upgrade today!
Works w/all Macs except SE & II
1966 • From DataDesk International \$149

1029	MacTilt	\$ 75
1832	• MacTilt for Large Screen	\$ 80
1943	• MacTilt for Mac SE	\$ 75
1143	Mouspad (7 x 9)	\$ 8
1525	Mouspad (9 x 11)	\$ 9
1806	Neos Mouse	\$ 49
1718	PC MacKey	\$ 119
1724	quadLYNX Trackball	\$ 99
1835	QuickStick	\$ 49

DISKETTES

1344	Diskettes DS/DD	\$ 23
1144	Diskettes SS/DD	\$ 15

NOTE: These prices do not include shipping/handling charges; please call for rates.



The **Ehman 800K External Drive** is an inexpensive way to expand your data storage needs. It's quiet and dependable, reads 400K and 800K disks, and works with any Mac — even the SE.
1607 • From Ehman Engineering \$189

Icon Review

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

STOCK # PRODUCT NAME PRICE

SOFTWARE

1630	Acta	\$ 39
1812	BPI Entry Series	\$ 145
1090	Bulk Mailer	\$ 99
1817	CalendarMaker	SPECIAL \$ 21
1911	C.A.T.	\$ 199
1889	Certificate Maker	\$ 42
ClickArt		
<i>We carry all T/Maker ClickArt & LaserLetter Packages; call to order</i>		
1523	Colormate	\$ 49
1503	Colormate Art	\$ 29
1444	ColorPrint	\$ 25
1012	Copy II Mac	\$ 20
1696	Cricket Draw	\$ 179
1335	Cricket Graph 1.1	\$ 129
1856	Disk Express	\$ 29
1912	DiskFit	\$ 49
1913	Disk Quick	\$ 27
1072	Dollars & Sense	\$ 81



Create customized, quality maps with **MapMaker**. Add demographics (included for each state and country), or import data of your own. Works w/512K, Plus, SE & II 1986 • From Select Micro Systems
\$169

1558	Draw Art/Vol. I	\$ 29
1808	Draw Art/Vol. II	\$ 43
1158	DrawForms	\$ 30
1346	Easy3D	\$ 89
1013	Electric Checkbook	\$ 29
1737	FactFinder	\$ 49
1691	Fedit Plus	\$ 39
1664	FileMaker Plus	\$ 159
1018	Fluent Fonts	\$ 29
	Fluent Laser Fonts	EACH \$ 49
1403	FullPaint	\$ 55
1890	Geometry	\$ 69
1705	Glue	\$ 44
1865	GraphicWorks 1.1	\$ 69
1629	Hard Disk Backup	\$ 39
1778	Hard Disk Partition	\$ 39
1289	Hard Disk Utility	\$ 57
1020	Helix 2.0	SPECIAL \$ 99
1459	• Double Helix	\$ 279
1790	• MultiUser Helix	\$ 445
1678	HFS Backup from PCPC	\$ 29
1592	HFS Locator Plus	\$ 27
1095	InHouse Accountant	NEW \$ 119
1799	Japanese Clip Art/Scroll I	\$ 69
1800	Japanese Clip Art/Scroll II	\$ 69
1965	LaserPaint	NEW \$ 399
1707	LaserServe	PER USER \$ 79
1894	LaserSpeed	\$ 69
1895	• LaserSpeed/MultiUser	\$ 369
1686	LaserSpool	\$ 79
1581	LightspeedC	\$ 129

1708	Lightspeed Pascal	\$ 89
1818	MacBillboard	\$ 24
1995	MacCalc	NEW \$ 85
1082	MacDraft 1.2	\$ 159
1692	MacFill-In	SPECIAL \$ 21
1159	MacForms	\$ 42
1918	MacGraphics Library	\$ 149
1874	MacInUse	\$ 35
1023	MacLabeler 2.2	\$ 29
1445	MacLightning 2.0	\$ 79
1575	• Legal Dictionary	\$ 79
1574	• Medical Dictionary	\$ 79
1573	• Webster's Thesaurus	\$ 39
1628	MacMatbook/Vols. 1-3	\$ 69
1770	• MacMatbook/Vols. 4-6	\$ 69
1771	• MacMatbook/Vols. 1-6	\$ 125
1803	MacMoney	\$ 40
1710	MacProof 2.0	\$ 109
1695	Mac3D	\$ 129
1105	Mac Zap	\$ 39
1986	MapMaker	NEW \$ 169
1932	Memorandum	\$ 79
1397	Micro Planner Plus	\$ 329

Microsoft

We carry all Microsoft products

1200	MindWrite	\$ 189
1819	MockPackage Plus	\$ 24
1641	MORE 1.1	\$ 159
1347	Notes... for Excel	\$ 42
1348	Notes... for Jazz	\$ 42
1693	Notes... for PageMaker	\$ 42
1723	Notes... for Works	\$ 42
1036	OverVUE 2.0	\$ 149
1478	• Mail Manager	\$ 29
1477	• Personal Finance	\$ 29
1490	PictureBase	\$ 45
1215	Print Shop	SPECIAL \$ 37
1505	Printworks	\$ 49
1254	Prof. Bibliographics	\$ 199
1666	• BRS	\$ 149
1665	• Dialog	\$ 149
1667	• MEDLARS	\$ 149
1658	Pro3D	SPECIAL \$ 249

Rags to Riches

We carry all Rags to Riches accounting modules; call to order

1728	Ragtime	\$ 249
1798	RAM Snap	SPECIAL \$ 33
1634	Record Holder	\$ 49
1689	Reflex for the Mac	\$ 59
1863	SideKick 2.0	\$ 59
1488	Silicon Press	\$ 42
1465	Smart Alarms	\$ 39
1857	SmartScrap & The Clipper	\$ 44
1365	Spellswell 1.3	\$ 55
1060	StatWorks 1.3	\$ 79



Fanny Mac cools your Mac even in the heat of summer, and the built-in surge suppressor guards against destructive power spikes. Not compatible with Mac SE & II 1296 • From Beck-Tech
\$59 NEW LOWER PRICE

1848	Stella for Business	\$ 199
1937	Stepping Out	\$ 59
1474	Studio Session	\$ 69
1811	Super LaserSpool	\$ 99
1938	• Super LaserSpool/Multi	\$ 299
2069	SuperMac Sentinel	NEW \$ Call
1720	SuperPaint	\$ 55
1810	SuperSpool	\$ 45
1307	Tempo	\$ 59
1432	TopDesk	\$ 35
1847	Trapeze	\$ 189
1745	True Basic 1.2	\$ 89
1750	• Algebra Utility	\$ 36
1762	• 3D Graphics Library	\$ 36
1755	• True Stat Utility	\$ 36
1448	TurboCharger 2.0	\$ 39
1840	Turbo Macaccountant	\$ 275
1721	Turbo Pascal	\$ 66
1047	Typing Made Easy	\$ 35
1377	WillWriter	SPECIAL \$ 27
1839	WorksPlus Spell	\$ 39
1694	WriteNow for Macintosh	\$ 109



In-House Accountant, a low-cost, integrated accounting package that makes generating your financial statements painless. Works w/512K, Mac Plus & SE 1095 • From Migent, Inc.
\$119



EDUCATION / GAMES

1761	Dark Castle	\$ 29
1868	Dinner at Eight Bundle	\$ 49
	First Byte Educat'l Games	\$ 27
<i>We carry all First Byte programs</i>		
1559	Flight Simulator	\$ 32
1685	Grand Slam Tennis	\$ 27
1475	KidsTime	\$ 29
1896	LOC	\$ 35
1652	MacGolf	\$ 36
	MacKids' Educat'l Games	\$ 24
<i>We carry all MacKids' programs</i>		
1233	Math Blaster	\$ 32
1869	Smash Hit Racquetball	\$ 13
1766	Toy Shop	\$ 42

COMMUNICATIONS

1460	CompuServe Sub. Kit	\$ 25
1699	Courier 1200 Modem	\$ 249
1515	Courier 2400 Modem	\$ 499
1805	Courier 9600 Modem	\$ 829
1801	Direct 1200 Modem	\$ 119
EasyNet Networking Products		
1975	• For Plus, SE & II	NEW \$ 29
1976	• For 128K & 512K/E	NEW \$ 29
1974	• AppleTalk Adapter	NEW \$ 5
Hayes		
<i>We carry all Hayes products; call to order</i>		



The Migent Pocket Modem is Hayes-compatible, comes with dual phone jacks, runs at both 300 and 1200 bps, and slips easily into your briefcase or pocket. Comes w/ Mac-to-Modem Cable 2006 • From Migent, Inc.
\$199

1593	InBox Personal Connection	\$ 99
1437	• InBox Starter Kit	\$ 279
1731	MacLink Plus w/8' Cable	\$ 159
1396	MacServe	\$ 199
1648	MicroPhone	\$ Call
2006	Migent Modem	NEW \$ 199

HARDWARE

1902	AST TurboScan	\$1699
Dove Computer Corp.		
1861	• MacSnap 524	\$ 139
1796	• MacSnap 548	\$ 399
1793	• MacSnap Plus 2	\$ 269
1794	• Plus 2H CMOS	\$ 639
1941	• Plus 2S CMOS	\$ 689
1795	• Plus 4H CMOS	\$1199
1942	• Plus 4S CMOS	\$1349
1797	• SCSI Port	\$ 99
1738	Enhanced MacCharlie	\$ 799
	Kurta Graphics Tablets	
1900	• IS/One (12x12)	\$ 779
1898	• IS Penmouse (6x9)	\$ 249
1899	• Series One (8.5x11)	\$ 399
1946	• IBM XT Interface Kit	\$ 49
1901	• Corded 4-Button Cursor	\$ 79
	<i>Works w/Series One only</i>	
1944	• Cordless 4-Button Cursor	\$ 129
1945	• Cordless Pen	\$ 129
<i>Both work w/IS One & IS Penmouse</i>		
1452	MacBuffer/256K	\$ 259
1451	MacBuffer/512K	\$ 365
1450	MacBuffer/1024K	\$ 569
1476	MacTablet (6 x 9)	\$ 329
1584	MacTablet (12 x 12)	\$ 449



We'd be lost without Super LaserSpool, DiskFit, and Sentinel — three invaluable utilities from SuperMac Software. (See Listing for prices and product numbers.) All work w/512K, Mac Plus & SE

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)



StatSoft

2832 East 10th Street, Suite 4,
Tulsa, OK 74104, (918) 583-4149



Circle 225 on reader service card

Desktop Communications Desktop Engineering Desktop Publishing

Macintosh II and Macintosh SE Compatible!

NEW... *Supports Color Monitors on the Macintosh II.*

Supports Big Screen Monitors.

Supports the new Apple Desktop Bus Keyboards.

VersaTerm-PRO™

Version 2.00 Price: \$ 295.00

Special upgrade price for registered VersaTerm Owners.

All the features of standard VersaTerm AND...

The most complete Tektronix 4105 Graphics Terminal Emulation available on the Macintosh!

Enhanced Tektronix 4014 Graphics Emulation

Zoom and Pan Graphics Interactively from Memory!

• New! Cleared Graphic Screens (up to 32) may be instantly viewed from memory.

- Create MacDraw, MacPaint and MacWrite documents from memory.
- Very high quality graphics may be printed on the LaserWriter.
- Color graphics output supported with ImageWriter II.

Designed for the Professional who requires sophisticated GRAPHICS features as well as the powerful TEXT features of standard VersaTerm.

Designed for a 512K Mac, Mac Plus or Mac-XL. Supports the ImageWriter (VII) and LaserWriter printer.

Published and Distributed by:



PCS Inc.
2457 Perklomen Avenue
Mt. Penn, PA 19606
(215) 779-0522

Developed by:



VersaTerm™

Version 3.00 Price: \$ 99.00

Terminal Emulation:

- DEC VT100
- DEC VT52
- Tektronix 4014
- Tektronix 4010
- DG D200
- MacTerminal™ XModem
- Text XModem Protocol
- MacBinary XModem
- Text/Binary Kermit Protocol
- MacBinary Kermit

File Transfer:

- Multiple file uploads and downloads.
- Automatic Macro Definitions
- Multiple Command Sets
- "Word Mouse" feature **New!**

- Not Copy-Protected.
- Supports DEC VT100 132 column mode.
- Very High character throughput.

Designed for users who require excellent TEXT performance but not heavily using graphics.

Verbatim

means new Systems and Finders. Face it, would you rather have MS-DOS or the System and Finder?

What do you think of the computer press that covers Apple?

I have no complaints. I really enjoyed working with the press because it has kept me young and agile. The more cynical, like Stewart Alsop and *Forbes*, the better. If anything, I wish that Mac-specific magazines would lose some of their cheerleader attitude and become more critical.

The best press scene that I remember was David Bunnell asking Mitch Kapor of Lotus where 1-2-3 would be today if he couldn't copy the look and feel of *VisiCalc*. One of the tensest moments in PC history. A great moment.

If you had to set up an office for a small business today, what hardware and software would you choose, excluding Acius products?

The Mac SE, the LaserWriter, and Farallon's PhoneNet. *WriteNow* as a word processor, *More* for outlining, *Excel* as a spreadsheet, *MacDraw* for graphics, *MicroPhone* for communications, *Filemaker Plus* for a database, *PowerPoint* for presentations, and a Radius Full Page Display with an 020 accelerator.

What about the home office?

Same. There is no separation of home and office for a Macintosh person. My wife will attest to that.

What will happen to evangelism after Guy Kawasaki?

That's a very interesting question. If I did my job well as a manager, my organization will still function well. I just hope I'm not forgotten too fast.

Write your parting scene, where you surf off into the sunset.

I want a conference room named after me so I can take my kids to see it. The usual pattern for ex-employees is that after two weeks people start saying that the person was a bozo. Alain Rossman holds the record for not being boozed. I want that record too. I hope it comes true. □

Interviewed by Jerry Borrell

Circle 304 on reader service card

PSY-DEN

PSY-DEN AMERICA Corp.

Statistics prove that successful **BUSINESSMEN** have strong Extra Sensory Perception: their decisions are based on analysis and **INTUITION**.

IMPROVE YOUR SIXTH SENSE: use **MAC-ESP™**, a complete method in training non-verbal communication, Extra Sensory Perception and your **INTUITIVE POWER** (including a chapter dedicated to businessmen).

SUBLI-MAC™

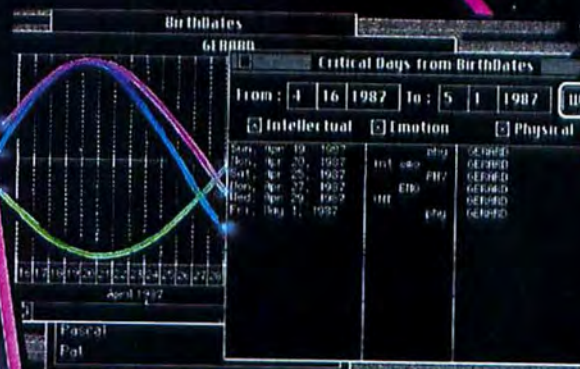
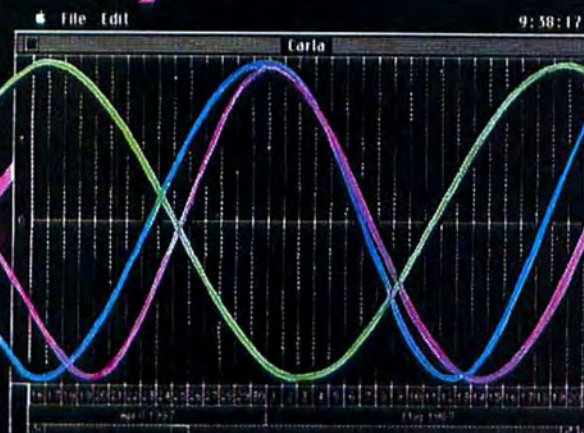
offers you the power of Self-Hypnosis, **ALPHA WAVES** and subliminal thinking to help you **TRANSFORM** your life, maintain schedules, act easily and at will.

Also use **MAC-ESP™**, the Computer Aided Telepathy software with your friends and know who is in harmony with you.

CHANGE YOUR LIFE, do what you decide!
CAPTURE THE POWER OF POSITIVE THINKING ON YOUR CONSCIOUS MIND.

BIO-MAC™

draws your **BIORYTHMS**, and indicates your **CRITICAL DAYS** (did you know it is one of the keys to the **SUCCESS** of Japanese businessmen?).



Circle 755 on reader service card

PSY-DEN 44 West Service Road, BOX 248

Champlain N.Y. 12919



1-800-361-2591

The

Free Offer!

Best
COMPUTER
SUPPLIES

P.O. Box 810370
San Jose, CA 95161-0370
(408) 435-3888

Just

Got

Better!

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!

he Best
in
ac
Supplies



SONY OR **maxell** 3 1/2" SS/DD 20+ 1.09 100+ 1.02
3 1/2" DS/DD 1.59 1.52

Call for Larger Quantity Discounts

DATA TECH
DISKETTES

20+ 100+
3 1/2" SS/DD .99 .95
3 1/2" DS/DD 1.19 1.15
Boxed in Tens - Minimum Order: 20



AMARAY
Media Mate 3

Holds 30 3 1/2"

\$7.95

with lock
\$9.95



Teakwood Diskette Files

Holds 45 3 1/2"

\$16.95

Holds 90 3 1/2"

\$26.95

Holds 135 3 1/2"

\$36.95

Mac-Pacs
Boxed in 50's - Labels Included

SONY OR **maxell**

3 1/2" SS/DD
3 1/2" DS/DD

50+ 100+ 400+
1.05 .99 .92
1.35 1.29 1.22

Best 3 1/2" SS/DD
3 1/2" DS/DD

50+ 100+ 400+
.99 .95 .89
1.09 1.05 .99

MicroComputer Accessories, Inc.

Deluxe Rolltop File

Holds 55 3 1/2"

\$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)
1 (800) 451-BEST 351-2378
In California

FAX (408) 435-3002

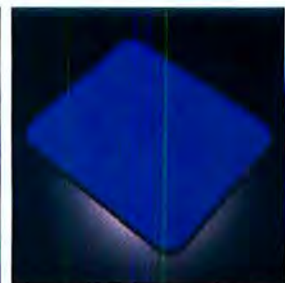
Get your FREE 52 Page Color Catalog with Order

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 additional 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



Mouse House
Add a bit of
Personality
to your Mac.
\$5.95

Tef-Glides
Teflon Mouse Feet
Make Your
Mouse Glide.
\$2.95

disk-book from MicroStore.

isk Book 10... \$9.95 Available
Holds 10 3 1/2" in

isk Book 32 ... \$19.95 Blue
Holds 32 3 1/2" Red

isk Book Plus ... \$19.95 Burgundy
Holds 16 3 1/2", Plus Manuals, Pens, etc. Grey



EHMAN
ENGINEERING, INC.

BOOK 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

MORE OF THE BEST MACACCESSORIES + 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
Includes cable
and software
\$249.00

Mac Carrying Case ... \$55.00

Mac Plus Carrying Case ... 59.00

Imagewriter II Carry. Case... 49.00

Mac & Keyboard Cover ... 12.50

Mac Plus & Key. Cover. ... 12.50

Imagewriter I & II Cover. ... 7.50

DataShield 200 Watt

Back-up Power Source \$299.00

Copy II Mac Software ... 24.00

Curtis Univ. Printer Stand ... 14.95

Glare/Guard for Mac. ... 24.95

3 1/2" Head Cleaning Kit. ... 9.95

Mac Plus to Imagewriter II

8' Computer Cable ... \$12.50

Mac Plus to Hayes Modem

8' Computer Cable ... 12.50

Inland 6 Outlet

Surge Protection. 19.95

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 (2oz.) ... 3.00

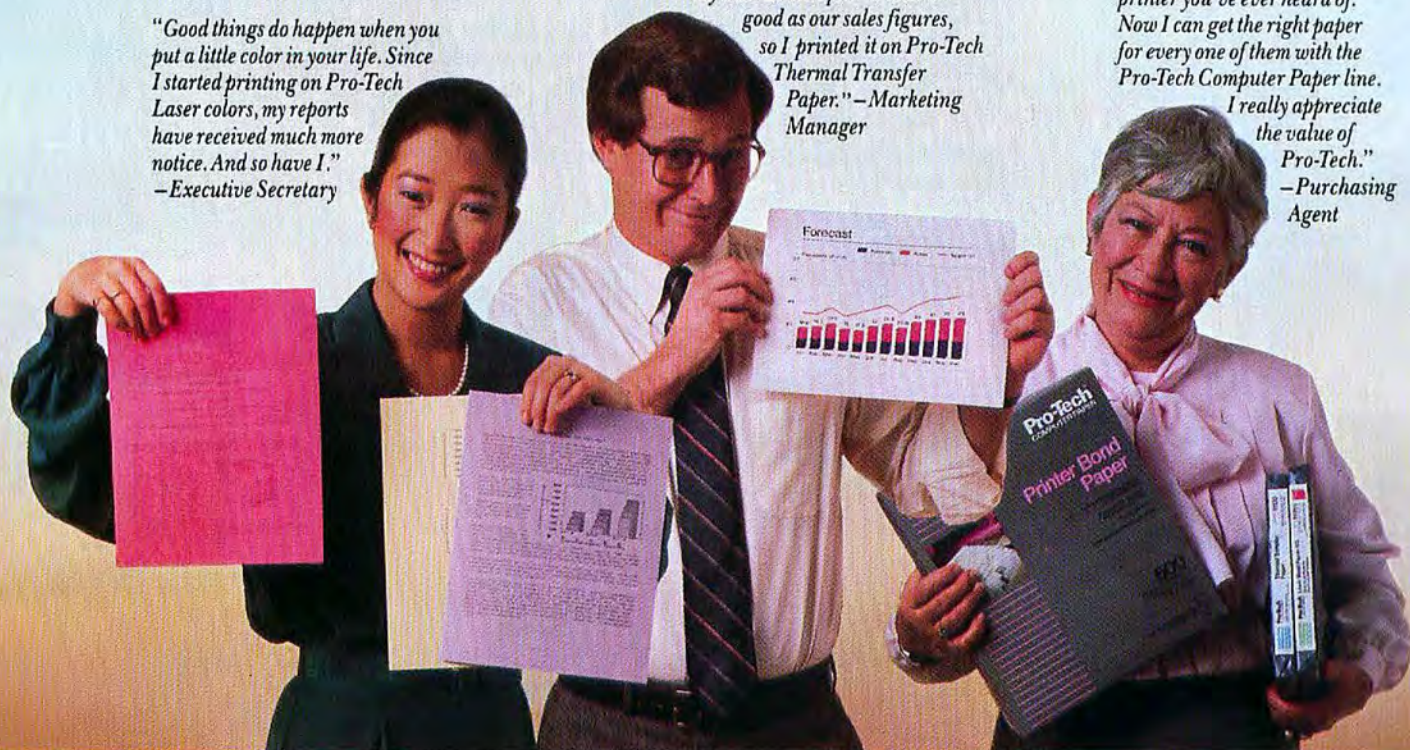


Circle 373 on reader service card

"Good things do happen when you put a little color in your life. Since I started printing on Pro-Tech Laser colors, my reports have received much more notice. And so have I."
—Executive Secretary

"We've had a great year. I wanted my Year End Report to look as good as our sales figures, so I printed it on Pro-Tech Thermal Transfer Paper."—Marketing Manager

"We have every kind of computer printer you've ever heard of. Now I can get the right paper for every one of them with the Pro-Tech Computer Paper line. I really appreciate the value of Pro-Tech."
—Purchasing Agent



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.

Pro-Tech™

Because the right paper and film makes all the difference.™

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.)



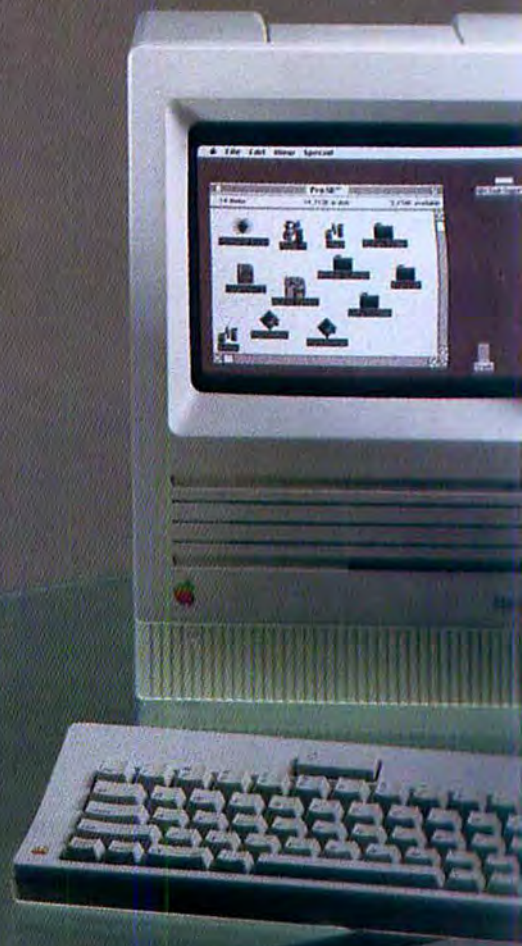
JAMES RIVER CORPORATION
GROVETON DIVISION
Groveton, NH 03582

MWD 8:87

© 1987 James River Corporation

Circle 762 on reader service card

WE HAVE THE BEST VIEW OF THE MACINTOSH WORLD: 1664x1200



S I G M A D E S I G N S

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 1664x1200 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.

Circle 743 on reader service card

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.

Macworld News

by Daniel Farber



Writer Douglas Adams's latest book includes a character who programs on the Macintosh.

Anthem



Douglas Adams is the author of *The Hitchhiker's Guide to the Galaxy*, a best-selling book and interactive fiction game for the Macintosh. Since Adams uses the Mac for all his writing projects and for composing music, it seems inevitable that this penchant should spill over to his fiction. One of the two major characters in his latest book, *Dirk Gently's Holistic Detective Agency* (Simon & Schuster, 1987), is a Macintosh programmer writing a program

called *Anthem*—an integrated business program that does spreadsheets, reports, and graphics. He decides to add an extra module as a joke, one that turns data into a company anthem. As it turns out, the musical module makes the software take off in a major way, except in England, because there when a company's data is converted into an anthem, it invariably comes out as a death march.

Adams also got a taste of desktop publishing with his latest book. The British edition was produced on the Lino-tronic, and the North American version on the LaserWriter.

Adams is still actively producing interactive fiction for the Mac. His latest, *Bureaucracy* (Infocom), is a harrowing journey through the absurdities of red tape. The seemingly simple task of traveling to Paris takes on new meaning as you find yourself dealing with an extremely bureaucratic bank or hanging from a tree deep in the Zalagasan jungle. He believes that the computer fosters an interesting relationship between reader (player) and author. "As an author, you don't know if the reader is concentrating on the book, but as a

game developer, you know that the player must have followed the plot step-by-step to reach each point in the game. As an author, I'm better able to spring surprises and play around with players' expectations."

Ultimately, Adams is waiting for more computing power to realize his ambitions as an interactive fiction author. "Games that involve several people will help restore social intercourse that computer junkies seem to have lost."

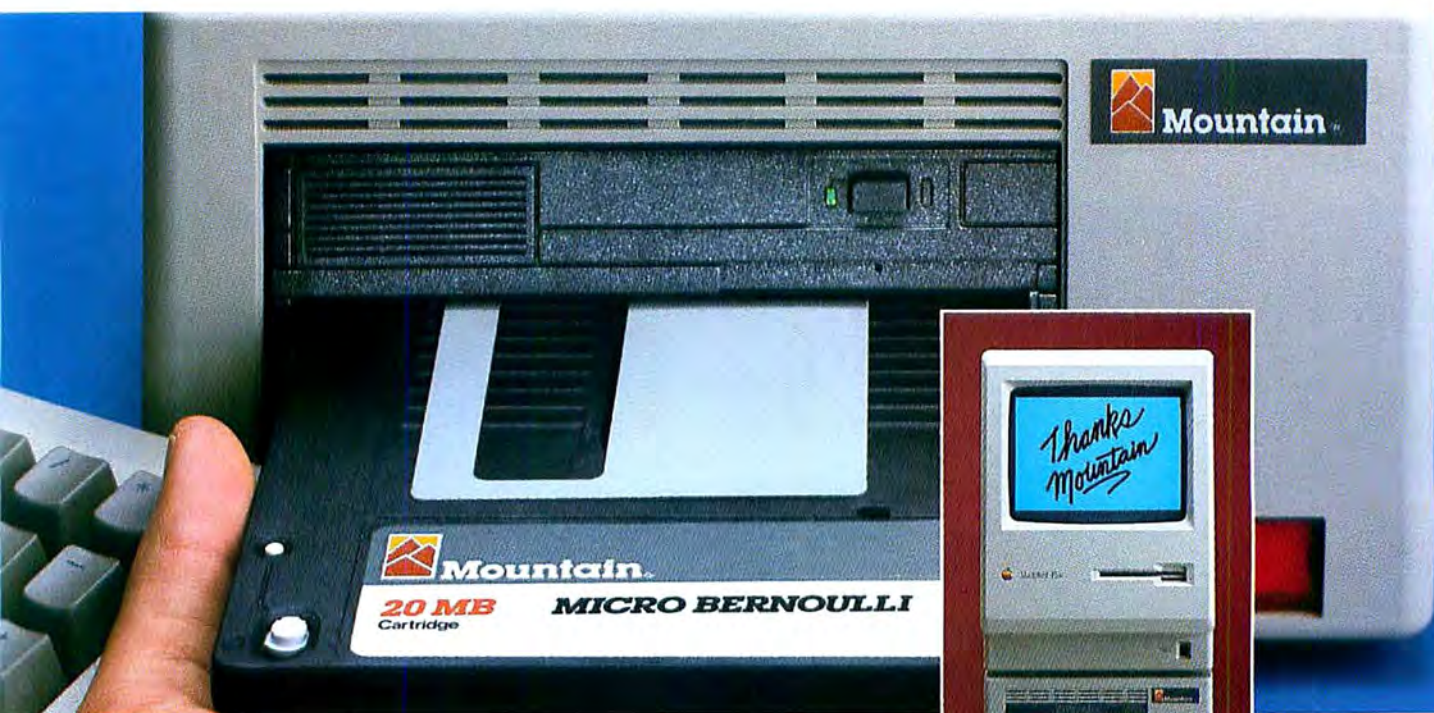
Real Estate Software Boom



When the new tax laws were first released, there was a lull in the real estate market. Now that investors, real estate brokers, and financial institutions understand the new laws, we're starting to see an increase in real estate software for the Mac in such areas as property management, mortgage analysis, and real estate office management. According to RealData (203/255-2732), which offers eleven *Excel* and *Microsoft File* templates, the hottest topic right now is real estate investment analysis. The latest version of *MacGuide*, a software listing publication from MENU (800/MAC-MENU), includes more than 30 real estate prod-

(continues)

REMOVABLE MAC PACKS. MOUNTAIN MICRO BERNOULLIS.



Now Mountain Computer provides the widest range of high-performance data storage options for Macintosh™ Plus, SE and II users.

Starting with the industry's only removable Micro Bernoulli® that gives you unlimited storage capacity with 20 megabyte cartridges, fast access speed (40 millisecond seek time), and better reliability than a standard hard disk by eliminating head crashes.

Which makes these small cartridges perfect for big storage jobs like desktop publishing, accounting, and database management.

A MOUNTAIN OF CHOICES.

No matter what your storage needs, Mountain offers a secure

solution: *Micro Bernoullis* in single and dual 20 megabyte drive models; stand-alone *FileSafe™ Hard Disks* in capacities from 40-140 megabytes; and *Micro Bernoulli Combo* units that combine either a 20, 40 or 80 megabyte fixed hard disk with a Micro Bernoulli drive.

SPACE-SAVING STORAGE.

Because all models feature a zero footprint, they fit neatly under the Mac Plus and SE, or alongside the Mac II monitor, and interface to the SCSI port. And all come ready to support AppleTalk®, AppleShare™, and most popular LAN software.

A HISTORY OF APPLE SUPPORT.

With a decade of experience in the Apple® market, Mountain backs every storage system with a 12-month limited warranty featuring "Ready Replacement" anytime within the first six months, and a 10-year record of responsive support.

The removable Mac packs are here. Pick up a new Mountain Micro Bernoulli today at leading computer stores everywhere.

Mountain Computer, Inc., 360 El Pueblo Road, Scotts Valley, California 95066 (408) 438-6650, TWX 910-598-4504, FAX 408-438-7623
Mountain products are distributed and sold worldwide. Call or write for the name of the representative nearest you.

*registered trademarks and *trademarks of Mountain Computer, Inc., Apple Computer, Inc., and IOMEGA Corporation. ©1987 Mountain Computer, Inc.

Circle 772 on reader service card



Mountain.
THE PEAK OF PERFORMANCE

1-800-458-0300 (in Calif., 1-800-821-6066)

ucts for the Mac, up from just 20 less than nine months ago. The latest version of the Heizer Software (415/827-9013) catalog, an *Excel* template publishing service, also includes a variety of low-cost real estate templates.

Another investment analysis product is *ProAnalysis* from Technalysis Services (415/949-4176). Taking full advantage of the Mac interface, *ProAnalysis* produces a nine-page report on each property you want to analyze. These reports determine profitability, cash flow, depreciation, and investment return schedules over a five-year period. *Investor 2000* from Real Estate Micro-computer (206/883-7000) examines various property investment scenarios, taking into consideration multiple economic and financing variables.

Queue (800/232-2224) sells several programs designed primarily for residential and commercial real estate brokers. They include property-listing and client-database management, potential homeowner analysis, real estate office management, and comparative property analysis. Yardi Sys-



tems (805/687-4245) also has a variety of real estate products, including a financial functions tool kit for the real estate industry, investment analysis, and several property management programs.

HMS Computer Company (612/452-5928) offers a mortgage loan calculator that qualifies a potential property buyer by income level or purchase amount. The *HMS Mortgage*

Loan Calculator, designed for financial institutions, home developers, and realty offices, includes provisions for federal and state taxes for all 50 states. Comvest (714/661-1266) sells several real estate programs, including one that simplifies the preparation of the legal documents required for real estate transactions. Finally, MacLord Systems (714/788-4020) offers property management and investment analysis programs.

Even if none of these companies offers the product you want, be assured that more are on the way.—*Steve Mann*

MathType



Design Science (213/433-0685) has introduced a mathematical typesetting program for the Mac. *MathType*, which works as a desk accessory or a stand-alone application, enables you to create and edit complex mathematical equations. The program automatically sizes, spaces, and positions symbols and takes advantage of the Mac user interface. The \$149 program is also available at education discounts and for site licensing.

Teaching English with the Mac



Computers have long been an integral part of a college education, especially in areas that require serious computational power, like science and engineering. But the humanities are also discovering useful applications for computers. English composition courses are being revamped at places like Cornell,



Dr. Eva Thury is among the educators changing the way students learn English composition skills. Courseware developed for the Mac has proven an effective teaching tool.

Biola, Lewis and Clark, and Cal Poly.

This innovation is a result of the English Consortium, a group of American universities that use the Mac to help students develop English composition skills.

"The computer goes far beyond offering superb editing capabilities; it encourages new kinds of creativity, engenders new attitudes toward writing, and instills new pride in the finished work," says Dr. Joan Mitchell, professor of English at the University of California in Santa Barbara. "When these general attitudes are combined with the special attributes of the Macintosh—extreme ease of use, a simple word processing program, imaginative graphics, and the typography of a printing press—the English instructor can teach writing in new and far more effective ways."

Along with commercial applications such as word processors, outliners, and spelling checkers, courseware has been developed for teaching writing skills. *Tools for Writers*, for example, provides text analysis for reading ease, word frequency, proper use of articles, and subordination, as well as passive-voice and vague-word usage. It also allows instructors to customize diagnostic fea-

tures for their own special needs. The library of vague words can be expanded by both student and teacher. Additionally, the Spelling Problems Finder accumulates words the student finds troublesome, and can check them against the student's work.

According to Dr. Eva Thury, professor of English at Drexel University in Philadelphia, who is the creator of *Tools for Writers*, "My students like these [programs] because they can actually see what characteristics make up a writer's style. They can see the difference between Swift and J.D. Salinger, who, in *Catcher in the Rye*, used eleven words per sentence and lots of vague words to make his main character sound like a teenager." *Tools for Writers* is not just for students looking at literature. Some professors are using it to teach business students how to write more effective memos and reports. In addition, Automated Language Processing Systems publishes a commercially available text-analysis program—*MacProof*—which is similar to *Tools for Writers*.

Prose, developed by the Cornell University Writing

(continues)

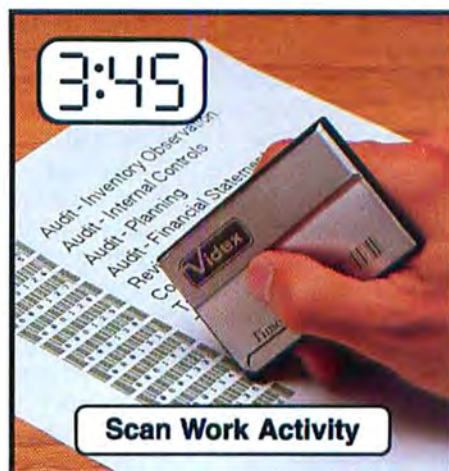
TimeWand™ - Keeping track of time...



Assign Bar Code



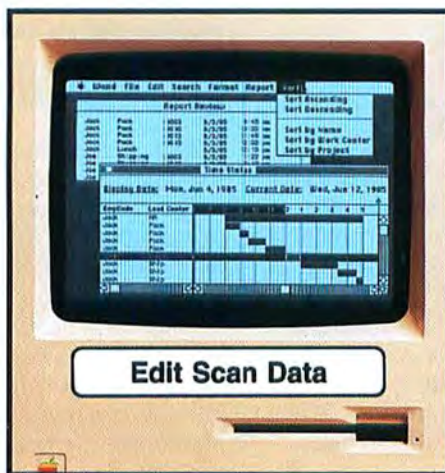
Scan File Name



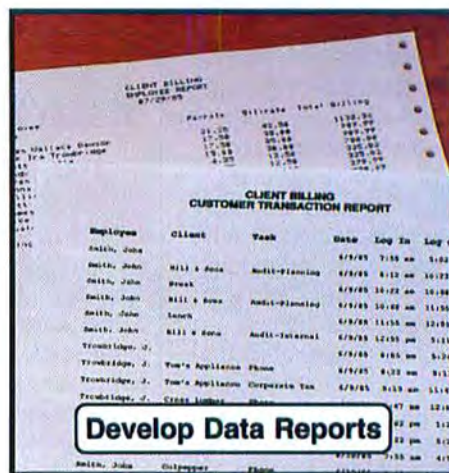
Scan Work Activity



Transfer Scan Data



Edit Scan Data



Develop Data Reports



Six easy steps to time management!



The Videx TimeWand™ is an intelligent yet inexpensive bar code system for your business needs. Small enough to fit easily into a shirt pocket and weighing in at less than two ounces, TimeWand gives a new dimension to the concept of fully portable bar code readers.

Versatility is the hallmark of the TimeWand system. With its built-in microprocessor, TimeWand puts the power of a computer into the palm of your hand. Power that lets you actually change how TimeWand works. Whether you want to read different types of bar codes or program the wand to read bar codes in a certain order, TimeWand can accommodate your needs.

Available in three different memory configurations, TimeWand can store from 2,000 to 16,000 characters in its internal memory. This means you can hold from a few hundred to a few thousand bar codes in the TimeWand before transferring the information to a host computer system.

TimeWand time-stamps *each* bar code as it's read. This lets you know not only what the bar code says, but *when* the code was read.

The TimeWand's recharging/download station uses a standard RS232C serial connector that allows you to communicate with the wand through a variety of host computer systems. Since the communication is keyless, the scan information is sent quickly and error free. Currently, software packages are available for the IBM PC (and compatibles), Apple //, and Apple Macintosh personal computers.

Put the power of TimeWand in your own hands... and let it work for you.

TimeWand (2K version) - \$198

Recharger - \$149

TimeWand Manager Software (Macintosh) - \$489

TimeWand Communications Software (IBM) - \$299



1105 N.E. Circle Blvd., Corvallis, OR 97330
503-758-0521

Videx is a registered trademark and TimeWand is a trademark of Videx, Inc.

Circle 383 on reader service card

Workshop, helps instructors and students communicate about writing and editing. It provides a forum, on written drafts, for comments and revisions by the instructor. Notations are entered in pop-up windows, and when the windows are closed, small marks appear in the text to alert the student to the notation. The beauty of *Prose* is that it enables the student to see the comments and revisions separately, but when it comes time to revise, the program guides the student through the comments in the order specified by the instructor. Both *Tools for Writers* and *Prose* are available through Kinko's Academic Courseware Exchange (800/235-6919 or 800/292-6640 in California).

Courseware development is only beginning to tap the potential of computers in teaching. More than just a supplement to the curriculum, courseware actually enhances the teaching process. Thury sees the Academic Courseware Exchange program as a new information source that instructors can use to discover new ideas. —Elinor Craig

Mac II and 3-D

Three-dimensional modeling programs have suffered somewhat on the Macintosh, since the Mac Plus just didn't have enough computing power to render complex drawings in split seconds. With the addition of the 68020 and 68881 processors on the Mac II and various accelerator boards for the Mac Plus and SE, as well as color, things have changed.

Challenger Software's (312/957-3475) *Mac3D* has been modified to take advantage of the Mac II's processors and color capabilities. In addition,



Super 3D from Silicon Beach is typical of the sophisticated CAD applications that will be running on the Mac II.

tion, the company plans to enhance the text capabilities of the program and add more CAD features. Enabling Technologies' (312/427-0408) *Pro3D*, a 3-D solid-modeling program for the Mac II, is slated for release by the end of 1987. The program will have color and an array of new features, including a zoom option and gloss and focus lighting.

The newest 3-D program, seen in a beta version, is Silicon Beach Software's (619/695-6956) *Super 3D*. Like the others, *Super 3D* works in color on the Macintosh II and takes advantage of the 68881 math coprocessor. The program can create and work with both wire-frame and solid objects.

Super 3D offers multiple light sources and cameras, reads text files created by other 3-D graphics applications—including minicomputer, mainframe, and supercomputer 3-D packages—as well as text files created by user-written programs. It can also create objects from user-supplied cross-sections, a function similar to that of *Pro3D*'s Profiler option. *Super 3D* allows you to animate models and store the ani-

mations on disk for playback. The program also has a customizable user interface that adapts to users as their skills grow.

As the Mac II proves itself in the field, expect companies that develop 3-D modeling software for other computers to bring their programs to the Mac.

Robots and Beyond

"Robots and Beyond: The Age of Intelligent Machines" is a four-million-dollar traveling exhibit sponsored by Digital Equipment Corporation in association with the Kurzweil Foundation. Computer novices are likely to find the exhibit as interesting as will computer scientists. Included are state-of-the-art applications of AI and robotics in industry, medicine, tools for the handicapped, speech recognition, robot skin, and artificial vision. MIT Press is preparing a book on the event.

Three areas of the show are devoted to the arts. First, there's a continual projection of famous robot scenes on film—one of the robots from *Short Circuit* is even on display. Next, applications of robotics to painting are demonstrated. Finally, the Macintosh is featured in the AI and music section of the exhibit.

Charles Ames of Buffalo, New York, spent nearly six months designing *Cybernetic Composer*, proprietary software that became the centerpiece of the music portion of the exhibit. Onstage are a Mac Plus, two MegaScreens, and an Apple Hard Disk SC, interfaced to a Kurzweil 250 digital sampling keyboard and sound system. Exhibit-goers use the Mac to choose the style of music they want to hear: rock, standard jazz (à la Art Blakey), or Latin jazz. The Mac then uses the Kurzweil 250 to perform music it has composed in the chosen style.

Cybernetic Composer actually composes the music overnight while the museum is closed. The reason? The program takes about as long to compose the piece as it does to perform it. While this is much faster than the rate at which humans compose music, it's still

(continues)



A museum exhibition profiles robotics and AI applications.

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.

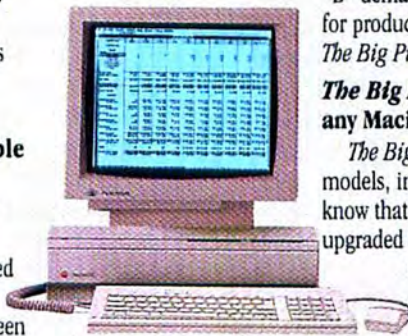
The Big Picture supports all standard Macintosh software. Plus, it's compatible with the leading high-performance add-ons. Like Hypercharger-020™ from General Computer and TurboMax™ from MacMemory; products from Levco, Dove, and more.

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

too lengthy a process for exhibit-goers. Running *Cybernetic Composer*, the Mac is able to compose 40 new works in each style every night and save these onto a hard disk. Each piece is different yet clearly within the defined stylistic categories. Ray Kurzweil has called it "the record that never repeats itself no matter how many times you play it."

Charles Ames stresses, "I'm not trying to put any composers out of business; I'm merely trying to show what is possible with current AI techniques and

Exhibit Schedule:

June 13 to September 1, 1987, Philadelphia's Franklin Institute (Pennsylvania)

October 3 to January 3, 1988, Science Museum of Charlotte (North Carolina)

February 1 to April 30, 1988, Fort Worth Museum of Science (Texas)

June 3 to August 29, 1988, Los Angeles Museum of Science and Industry (California)

September 30 to January 2, 1989, St. Paul Science Museum (Minnesota)

February 1 to April 30, 1989, Chicago Museum of Science and Industry (Illinois)

June 8 to September 5, 1989, Columbus Center of Science and Industry (Ohio)

Inside Macintosh



Addison-Wesley is adding the final chapter to the Apple Technical Library *Inside Macintosh* collection with volume 5, scheduled for release this fall. It will cover changes for the Mac SE and the Mac II.

In addition, the *Inside Macintosh Library*, which will focus on specific topics for developers, will be published over the next year. The first offering will be *Technical Introduction to the Macintosh Family*, a language-independent discussion covering basic hardware and programming concepts for first-time Macintosh product developers.

The second *Inside Macintosh Library* title, *Macintosh Family Hardware Reference*, will cover hardware for all the Macs. The third book, tentatively titled *Macintosh II and Macintosh SE Cards and Drivers*, will focus on the Nubus and the SE expansion port. The fourth in the series, *Programmer's Introduction to the*

Macintosh, will be similar to *Technical Introduction to the Macintosh Family* but heavier on programming concepts.

Another set of *Inside Macintosh Library* books is also in the works. These will provide



about 2000 pages of documentation in three volumes: one on the Toolbox; one on System software; and one volume of summaries and indexes. The advantage of this recompilation of *Inside Macintosh* is that it organizes the information better, so readers waste less time thumbing through the volumes for cross-references.

Addison-Wesley will also release Scott Knaster's new book, which picks up where *How to Write Macintosh Software* (Hayden Books, 1986) left off. The new book includes information on new machines and should be out in the fall.

The Mac in High Yemen



Twenty-five years ago in High Yemen, electricity was not a problem. There simply wasn't any.

Progress and stability have since blended with seventeenth-century traditions and Arab pragmatism, enabling the Mac to set up America's multi-million-dollar Yemen-America Language Institute (YALI).

When Oregon State University won the contract to operate YALI from the United States Agency for International Development (USAID), the Mac was a

key element in the competitive bidding. Oregon State gambled that the user-friendly features of the Mac, along with some sophisticated software packages, would help cut the costs of assigning Americans with technical expertise to the Middle East.

However, problems surfaced almost immediately. Electricity in Yemen is nominally 220-volt/50-Hz and unstable in the extreme. The only Mac the project could buy required an even 110 volts. Government regulations, shipping delays, and red tape involving national security clearance for the university computer expert resulted in the Mac arriving before the computer expert. Left to untrained users unaware of its voltage capacity, the Mac functioned three days and then burned up.

Unfortunately, the problems did not stop there. The fried Mac could not be repaired. Small wonder—the ROM had been stolen. But a second Mac was dispatched, and the staff met the challenge by attempting office automation and more.

(continues)



The revolutionary and the revolutionary computer meet in High Yemen.

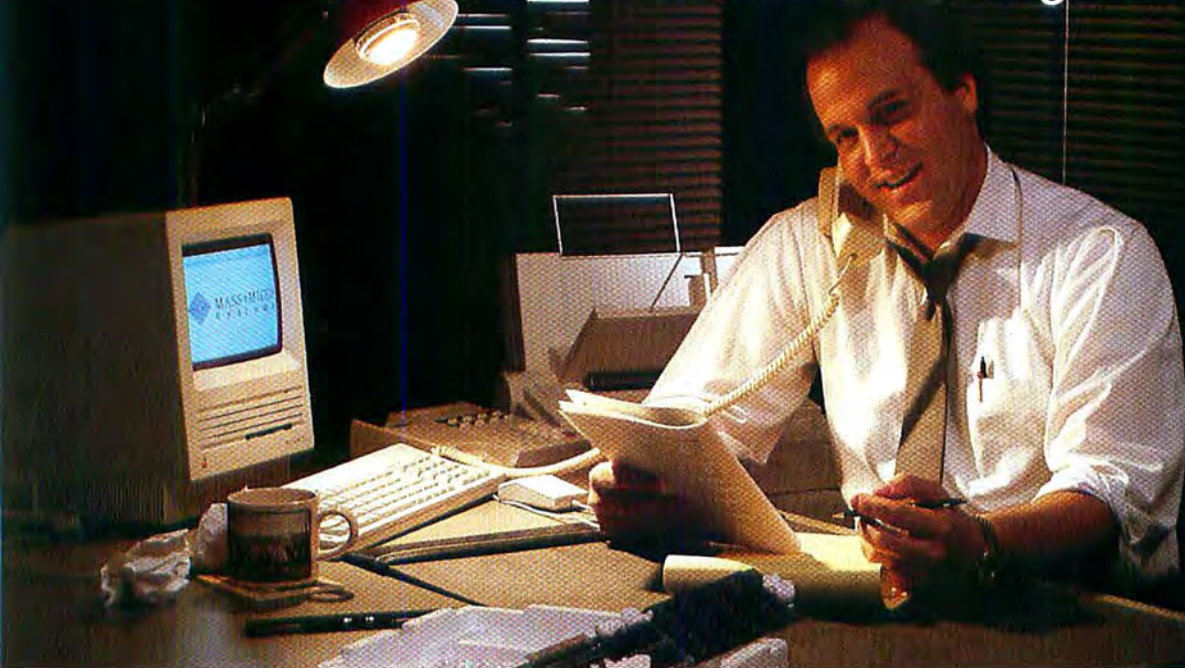


Charles Ames teaches the Macintosh to compose music.

how closely this can simulate human processes." The software is continually being upgraded, with new musical styles being added. In fact, by the time you read this, systems programmer Michael Domino will have added a real-time visual score with notes in the shape of Apple logos synchronized to the actual pitches being played. You can watch them while you listen to the music.

When the exhibit opened at Boston's Museum of Science, Ames was asked whether the Macintosh compositions were equivalent to human-generated music, causing listeners to respond in the same way. Ames pointed to a teenager, dancing obliviously in front of the exhibit and said, "She seems to think so." —Christopher Yavelow

It's 2 a.m. We're still with you.



It's never past our bedtime Long after the other companies have gone home to watch their T.V.'s we're still here watching our phones. We do it 24 hours a day, seven days a week.

It's not that we really expect any calls. In fact, we've gone to great lengths to avoid them. We've made our products so easy to use, and our manuals so clear and concise that the only reason you'll want to call is to place another order. And another. And another.

But if someone in your company should have a question or need advice it's nice to know that MASS ♦ MICRO Systems is here working for you. Ready to give the kind of professional, first-rate service that our competition is home dreaming about.

Now for something really great All of our products carry a full one year warranty, and our memory expansion products carry an unsurpassed lifetime warranty. Your company also receives a 48 hour turnaround on repairs and an incredible 30 day money back guarantee.

We also give you the added option of purchasing any of four different support levels, so you're sure to find one that meets your company's exact needs.

How do you get this support? Simple. Just purchase any of MASS ♦ MICRO Systems quality products:

The MASS ♦ PLUS™ Now you can add our MASS ♦ PLUS to your Mac Plus and gain a whopping 2Megs of memory, with room to expand your system to its full 4Meg potential. Just plug it into the Apple's memory sockets—no soldering, modifications or headaches here. And like Apple we're using the very latest SIMM technology combined with the new low powered megabit chip. Nothing but Apple standard.

The MASS ♦ PAK™ If you own a Mac SE or a Mac II, our MASS ♦ PAK will give you the ability to run huge spreadsheets and more advanced graphics. By using the same SIMM technology and Megabit chips as our MASS ♦ PLUS you can give your Mac SE the 2Meg advantage. Add another MASS ♦ PAK and get 4 Megs total. If you have a Mac II you can purchase four Mass Paks and bring your Mac up to a full 8Megs. If you have got a Mac Plus just combine the MASS ♦ PLUS and a MASS ♦ PAK for the power you've been dreaming of.

Of course the MASS ♦ PAK is internal drive and large screen compatible. Neither

we or our friends at Apple would want it any other way.

The MASS ♦ STORAGE™ family If your company is looking for reliable, quiet and fast hard drives, we have them—from 20 to 160Megs. Three-way surge protection, shock absorbers, and an optional built in modem are just some of the features our drives offer.

At about 2" high, our drives come in either sand or the new platinum color. They fit perfectly under your Mac and look like they belong there. And they do.

So go ahead. Plug one in along with one of our memory expansions to create the perfect couple, MASS and Mac.

More about us At MASS ♦ MICRO Systems we've been working late to give your company the very best products and support available to Mac owners today.

Keep an eye on us as we continue to work with Apple, to provide quality products at affordable prices for the future of your Mac and its accessories.

So while MASS ♦ MICRO Systems is becoming a major part of the Macintosh evolution, others are just sleeping through it.

Circle 764 on reader service card



Copyright 1987 MASS ♦ MICRO Systems Inc. MASS ♦ PLUS, MASS ♦ PAK, MASS ♦ STORAGE are trademarks of MASS ♦ MICRO Systems Inc. Apple and the Apple logo are registered trademarks of Apple Computer Inc. Macintosh, Macintosh Plus, Macintosh SE and Macintosh II are registered trademarks of Apple Computer Inc.

MASS ♦ MICRO

s y s t e m s

1 800 ♦ 253 ♦ 8900 outside California or 408 ♦ 988 ♦ 1200 in California.
3250 Jay Street, Santa Clara, California 95054

A full spectrum of international problems besieged the YALI project. From language differences to complex international communications jamming the modem, the field staff had met their frustration capacity. But finally the Mac came through. In just one week, YALI's bilingual secretary went from no computer skills to unsupervised data input and word processing in both English and Arabic using *MacArabic*.

YALI's pioneering efforts in Yemen have spread confidence in the Macintosh. In other Yemen-American projects, where various regulations require the use of Wangs and Victors for office staff, the heads of the United States Information Service and two multimillion-dollar agriculture projects have chosen the Mac.

Despite the initial obstacles of setting up the Mac in High Yemen, the remarkable degree of acceptance it has achieved in one short year can be summed up by the comment of the YALI bilingual secretary. Confronted by the Apple II Plus workstation, she dismissed it with total disdain. "It's old-fashioned," she said, turning on her heel and heading back to her Mac. —*Deborah Healey*

Bargain Desk Accessories



While the number of commercially produced desk accessories grows at a relatively slow pace, the proliferation of desk accessories available from user groups, bulletin boards, and the like continues unabated. And not only are these free or inexpensive desk accessories increasingly abundant; they are also rich in variety and often imaginatively conceived.

Several desk accessories are handy for those times when

you need to do some file management within an application. *FileStar* 1.0 (Scott Searle, \$15 shareware fee) installs a menu that enables you to rename, delete, move, or copy any file or create a new folder. You can also use it to change a file's Finder attributes and to switch



to a different application without making an intermediate stop at the desktop.

DeskZap 1.2 (Bruce Tomlin, \$15) provides the same file-management functions as *FileStar*, as well as the ability to strip line feeds, strip control characters (those with ASCII numbers above 127) from text files, add line feeds to a text file, and delete the resource fork of a file. To find a file hidden deep within your hard disk, you can use *HFS Find* from Coyote Systems. This free desk accessory will search your entire disk, or just selected folders, for all files meeting one or more search criteria.

Other desk accessories make convenient reference tools.

Periodic Table (Jeff Garner, \$5) puts elementary chemistry facts at your fingertips. Jonathan Whitman's *SuperHelp* contains *MacPaint*-style help screens for *SuperPaint*, which lacks on-screen help. Install the two *SuperHelp* desk accessories in *SuperPaint* rather than in your System file; this puts them on the Apple menu only when you need them. Or use *HelpDA* (James McCarthy, \$25), *Extra Help* (John E. Doner and Benjamin F. Shang, free for private use) or *HelpFileMaker*

with a word processor to create your own indexed help files for any other program lacking adequate on-screen assistance.

With *Convert* (Tseung Ngai Cheung, \$15) you can change from one unit of measurement to just about any other at the push of a button. Whether it be a simple conversion (from inches to miles, say) or a complex one (such as cubic yards to milliliters), *Convert* can handle measurements of length, weight, area, volume, temperature, energy, and more. And once you enter the rate, term, and amount of a loan into *Amortization Calculator* (Roger V. Mitchell, free), you can quickly calculate the size of your monthly payment and the remaining balance at any time during the loan's lifetime.

—*Robert C. Eckhardt*

Mac-a-Mug



Police departments and research psychologists are finding *Mac-a-Mug Pro* from Shaherazam (414/442-7503) a useful alternative to the police artist and photo overlay methods of producing composite pictures of suspects. Several law enforce-

ment agencies are using the program, including the campus police at Boston University, the sheriff's departments in Milwaukee and Chattanooga, and police departments in Midland, Texas, and East Aurora, New York. The program has over 100 eye combinations and 200 hair parts, and theoretically can produce 10^8 combinations of features.

In addition, research psychologists are using the program to conduct experiments in perception and memory. Dr. Leslie McArthur, chair of the psychology department at Brandeis University, uses the program in an experimental psychology course. Students design faces in *Mac-a-Mug* with slight variations in physiognomy. Then the faces are presented to subjects, whose impressions are recorded, based on a series of questions (for example, Does this face look trustworthy?) and a rating scale. A custom program, *Mac-Psych*, was developed at Brandeis to display the faces and record the data. Students then do statistical analyses of the data and compare the results to their hypotheses. And at the Boston Museum of Science, *Mac-a-Mug* is used as part of a display that encourages visitors to interact with the program.



Police departments are turning to *Mac-a-Mug Pro* on the Mac to create composite pictures of suspects.



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.

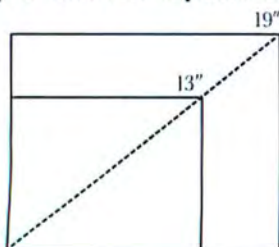
How to create the Macintosh workstation:

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*™



Spectrum offers double the visual area of Apple's color display. So you see much, much more of your work.

system. That means that Macintosh can display a two-page spread with room to spare. *And* you can still read the fine print!

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*.



Monkee Davy Jones got a taste of desktop publishing with his autobiography, *They Made a Monkee Out of Me*.

They Made a Monkee Out of Me

On September 12, 1966, the first episode of "The Monkees" aired across America. Within a few months Davy Jones, the Brit of the zany, made-for-TV group, and his costars had a hit TV show and a number one song on the pop charts. What happened during the heyday of the Monkees and in the life of Davy Jones is chronicled in a new book, *They Made a Monkee Out of Me*. Rather than go with a major publisher, Jones and his collaborator, Alan Green, published the book themselves with the Mac.

Green had been using a Macintosh to orchestrate a musical he'd written, and he convinced Jones that they could become desktop publishers. Green procured hardware and software—including a ScanCoFurn MacTable, a Micrographic Images MegaScreen, and software such as *ReadySetGo* 3.0 and *FullPaint*. Rather optimistically, he projected that the book would be completed in three weeks so that it could be sold at the end of the Monkees' 1986 tour of the States. Three and a half months later, the book—248 pages with more than 400 pho-

tographs—was finally printed.

Green credits the people at MacTypeNet, a service bureau that provided the camera-ready output for the book, with helping solve several problems that came up in the process of preparing the manuscript for printing. You can get *They Made a Monkee Out of Me* from Dome Press, P.O. Box 400, Beavertown, PA 17813; send \$11.95 plus \$3 postage and handling.

Desktop MTV



If you look inside any professional audio or video box, you'll see a 32-bit bus, an operating system, and a user interface, usually a very expensive custom-built unit. Now that a Macintosh is available with a 32-bit bus, a great standardized user interface, and slots that can take digital audio and video cards, the cost has been drastically reduced. You can create broadcast-quality animation, video, graphics, and sound—like MTV—without an expensive studio.

The real potential is to bring those separate activities together into an integrated multimedia approach. Jim Armstrong, an Apple hardware

evangelist, sees the market evolving over the next few years. Already we are seeing 16-bit audio digitizers, new compression techniques for audio and video (such as RCA's DVI format for laser storage), and companies like MacroMind and Beck-Tech working on video products like frame grabbers and real-time video systems.

According to Mark Canter, president of MacroMind and developer of *VideoWorks* and *MusicWorks*, "You shouldn't underestimate the superiority of the Mac user interface compared to those of existing high-priced custom devices. Before the Mac II you couldn't do real-time composition and editing of music or video. Now you can do 3-D animation and render those images with texture-mapping or ray-tracing algorithms. We are entering a new age of Macintosh TV—MTV."

Steve Beck, president of Beck-Tech, has another name for it—*desktop TV*—which he believes represents the next wave of presentation graphics. Leaving behind the paper output of desktop publishing, television media format, created on a machine like the Mac II, will carry the bulk of information. With 40 million VCRs in the United States today, video is a significant alternative to paper. Beck feels that, with the TV distribution format as one of the

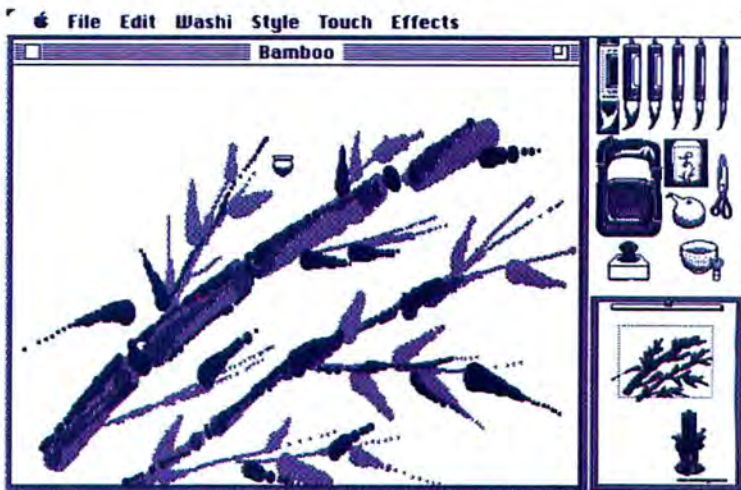
largest local area networks, in just a few years we'll have the potential to beam Mac output from a broadcast facility to millions of viewers.

MacCalligraphy



One of the more unusual graphic applications for the Mac is *MacCalligraphy* from Enzan-Hoshigumi (USA). The program simulates the ink-and-brush-on-paper medium used for calligraphy and oriental painting. Lines are controlled by the speed of the mouse, menu options, and other features, including nine shades of gray, four ink-flow speeds, four tail lengths that finish off a line after the mouse button is released, customizable brush patterns, a seal editor, and a dry brush option that gives a drier appearance to gray lines. The program also comes with several templates for brush patterns, calligraphic fonts, and clip art.

MacCalligraphy comes in a handsome wooden box with sheets of handmade Japanese paper that can be used with the ImageWriter—and a bit of Zen philosophy. For more information contact Enzan-Hoshigumi (USA) at 617/456-8255. □



MacCalligraphy, an oriental version of MacPaint, gives you the feeling of using a calligraphic brush on paper.

Dress your Mac

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.
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.
Berkeley System Designs ... NCP	
Stepping Out (requires 512k)	64.
Blyth ... NCP	
Omnis 3 Plus	call
Omnis 3 Plus (multi-user versions)	call
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.
Graphindex (DA graphics organizer)	69.
Designscope (electronic circuit design)	129.
StatView 512+ (req. external drive, 512k)	179.
Bravo Technologies ... NCP	
MacCalc (easy to use spreadsheet)	85.
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.
Central Point Software ... NCP	
Copy II Mac (includes MacTools)	20.
Challenger Software ... NCP	
Mac3D (3D graphics, CAD features)	119.
Chang Labs ... CP	
Rags to Riches Ledger or Payables	125.
Rags to Riches Receivables (req. 512k)	125.
Rags to Riches Three Pak	299.
Inventory Control	243.
Professional Billing	243.
Cortland ... CP	
TopDesk (7 new desk accessories)	34.
Cricket Software ... NCP	
Statworks (statistical package)	77.
Cricket Graph (multiple windows)	127.
Cricket Draw (advanced draw capabilities)	177.
Data Tailor ... NCP	
Trapeze (spreadsheet, reqs. 512k)	173.
DataViz ... NCP	
MacLink Plus (transfer Mac/IBM data)	159.
Desktop Graphics ... NCP	
DrawArt (MacDraw artwork, req. 512k)	28.
DrawArt Vol. 2 (MacDraw clipart, req. 512k)	42.
DrawForms (requires MacDraw)	30.
Digital, etc. ... NCP	
Turbo Maccountant (GL, APAR, Payroll)	262.

MacConnection Software Special through August 31, 1987

TRUE BASIC True BASIC

From the people who gave you BASIC to begin with, comes True BASIC. It's the flexible structured programming version of BASIC with a full range of control libraries.

- Features a full editing environment
- ANSI transportable code
- Supports all QuickDraw routines
- Full HFS support

And when you buy True BASIC, we'll sell you either or both of two of the most popular optional libraries, *Calculus* and *3D Graphics* for only \$25. These programs are not copy-protected.

True BASIC	\$59.
Calculus (reg. \$35) w/purchase of True BASIC	25.
3D Graphics (reg. \$35) w/purchase of True BASIC	25.

Dove Computer ... NCP	
RAMSnap (RAM Disk/Disk Cache)	35.
Dow Jones ... CP	
Market Manager PLUS 1.5	159.
Dreams of the Phoenix ... NCP	
Day Keeper Calendar	35.
Quick & Dirty Utilities	each 35.
Twelve-C Financial Desk Accessory	35.
Dubi-Click Software ... NCP	
World-Class Fonts! Vol. One or Vol. Two	28.
World-Class Fonts! (both Volumes)	49.
WetPaint Vol. One or Vol. Two	29.
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 "Earth"	65.
Japanese Clip Art Scroll 2 "Heaven"	65.
MacCalligraphy (create unique designs)	119.
Firebird Licensees ... NCP	
Laser Author (word processor)	105.
1st Byte ... CP	
Speller Bee or First Shapes	27.
KidTalk or Mathtalk	27.
Smoothtalker (speech synthesis)	27.
Forethought ... NCP	
Factfinder (free-form info organizer)	49.
FileMaker (custom forms & reports)	79.
FileMaker Plus (feature-packed database)	159.
PowerPoint (professional presentations)	269.
Foundation Publishing ... NCP	
Comic Strip Factory (create cartoons)	65.
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	
Early Music	12.
KidsTime (educational, ages 3-8)	28.

TimeMasters (learn about time, ages 4+)	\$28.
ConcertWare+ (music composition)	36.
ConcertWare+ MIDI	75.
Hayden Software ... CP	
MusicWorks (songs for your Mac)	29.
VideoWorks (animation)	32.
Home Design (NCP)	49.
Score Improvement for the SAT	59.
Score Improvement: Achievement Test	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)	175.
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)	229.
Layered ... CP	
Notes for...Excel or Microsoft Works	each 42.
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	
SuperFrench/German/Spanish	39.
MacHieroglyphics, MacKana/Basic Kanji, MacSemitic/Coptic/Devanagari, MacKorean, MacGreek, MacHebrew	
MacCyrillic	each 59.
SuperGreek New or Old Testament	79.
MacGreek/Hebrew/Phonetics	89.
LaserGreek or LaserHebrew	79.
LaserFrench/German/Spanish	79.
LaserCyrillic	115.
Living Videotext ... NCP	
More (outlines, windows, & tree charts)	158.
Lundeen & Associates ... NCP	
WorksPlus Spell	39.
Magnum ... NCP	
Natural Sound Effects	27.
Natural Sound Cable & Editor Disk	89.
McPic - Volume 1 or Volume 2	29.
The Slide Show Magician 1.3 (CP)	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)	105.
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 3.0 (word processor, NCP)	239.
Miles Computing ... NCP	
Mac the Ripper (req. Paint program)	27.
Orchestra of Fonts Vol. 4 (30 different fonts)	27.

Soft Wear.

Out on a limb.

We don't want to offend anyone, but people who still use hard copy are seriously out of date. Just take a look at the artistic strokes of genius on our temporarily tattooed friend. Why, for the right price, you could present your next newsletter, spreadsheet, or epic poem in real living color.

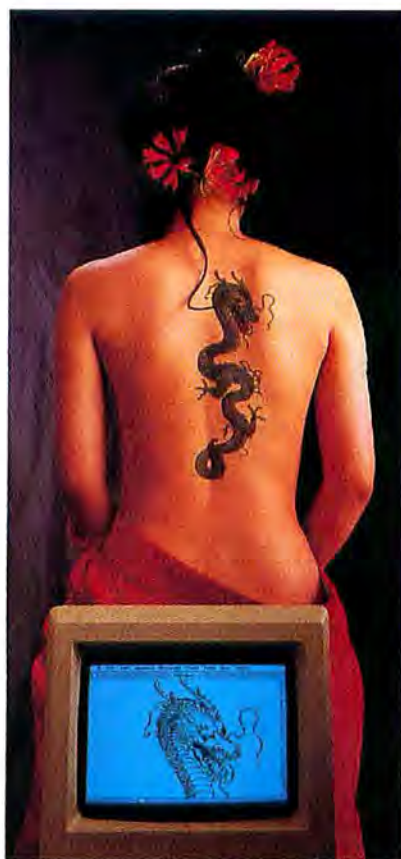


Picture your logo rippling across someone's exotic exterior. Amaze your boss as the gentle undulations of breath do things to

your five-year plan that you never imagined possible. Why, even editing could be fun again!

Fleshtop publishing.

David Chalk and his partner Roy Zuckerman at Temptu Marketing in New York are designing tattoos on their Mac



which are turning traditional marketing literally inside out.

It all started when Roy saw what his father, one of the world's leading cosmetics chemists, had developed for the movie "Tattoo"—a safer and longer-lasting body paint than anything previously available. He and David were soon selling

the paint in kits along with design transfers which can be applied in seconds with good old rubbing alcohol.

They've done custom work for everyone from Miami Vice to Guinness Stout. And, for quick designs, the Mac is starting to come in handy (and footy, and everywhere in between). Temptu can now digitize very custom images for transfer to very custom parts.

According to our winners, temporary tattooing is "the contact sport of the 80's." So it's only natural that they've chosen the micro of the 80's to help with their design and marketing. Oh, Lydia, could you have had fun with this one. Eh, Groucho?

<input type="checkbox"/>	Contest Winner #9
Name: David Chalk, Temptu Marketing	
System: Mac Plus	
Applications: Designs custom temporary tattoos; tracks clients and orders; produces mailing pieces and catalogs.	

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.

Connection.

Deja Vu (murder mystery)	\$30.
PBI Software ... CP	
Strategic Conquest (multi-user)	35.
Primera Software ... CP	
Smash Hit Racquetball (top-rated!).	15.
Psion ... CP	
Psion Chess (3D and multi-lingual).	31.
Rainbird ... CP	
Pawn (fantasy adventure).	27.
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	
GATO (submarine simulation).	26.
Orbiter (space shuttle simulation).	27.
Tellstar II (No. & So. hemispheres, req. 512k)	32.
XOR ... NCP	
NFL Challenge (be the coach!).	79.

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.

Apricorn ... 1 year	
Apricord Mac (for Mac 512k or Mac Plus)	75.
AST Research ... 2 years	
AST TurboScan (300 dpi scanner)	1479.
AST 2000 (20 MB, 20 MB tape)	1479.
AST 4000 (74 MB, 60 MB tape)	3895.
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 524 (512k to 1 Meg).	139.
Mac Snap 524S (incl. SCSI interface)	239.
Mac Snap Plus 2 (Mac Plus to 2 Meg)	249.
Mac Snap 548 (512k to 2 Meg)	369.
Mac Snap 548S (incl. SCSI interface)	469.
Ergotron ... 1 year	
Mouse Cleaner 360°	15.
MacTilt or MacTilt SE	74.
MacBuffer 512k	329.
MacBuffer 1024k	429.
Hayes ... 2 years	
Smartcom II (communications software)	88.
Smartmodem 1200	299.
Smartmodem 2400	449.
InterBridge (connect Appletalk networks)	599.
IOMEGA ... 90 days	
Bernoulli Box (dual 10 MB w/SCSI)	1579.
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.

MacConnection Hardware Special through August 31, 1987

20 Megabyte SCSI Hard Drive

This highly-rated 20 megabyte hard drive from a leading manufacturer is one of the most reliable we've tested. Simply connect it to your Mac Plus and gain 20 to 25 floppy disks worth of additional space. Or daisy chain several drives together for even more storage. This beige colored drive fits directly underneath the Macintosh, raising your computer a comfortable 3 1/2 inches.

- Comes with backup software
- Includes SCSI cable and built-in terminator
- Convection cooled—no noisy fan
- Additional SCSI port for daisy chaining

20 Megabyte SCSI Hard Drive \$569.

Imagewriter II Dust Cover	9.
Mouse Cleaning Kit w/Mouse Pocket	17.
Disk Case (holds 36 Mac disks)	19.
Disk Drive Cleaning Kit	20.
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)	65.
Turbo Mouse	85.
Koala Technologies ... 90 days	
MacVision (digitizer)	175.
Kraft ... 1 year	
3 Button QuickStick	49.
Migent ... 1 year	
Pocket Modem (ext. 300/1200 baud)	169.
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.
MagNet 85x (w/40 MB tape)	3995.
Nuvotech ... 1 year	
EasyNet (AppleTalk network connector)	29.
Personal Computer Peripherals ... 1 year	
MacBottom Hard Drive 21MB (SCSI)	859.
MacBottom Hard Drive 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 (high-resolution digitizer)	189.
Powerport	29.
Western Automation ... 1 year	
DASCH RAMdisk 2000k	459.

DISKS

Double-sided Diskettes

Sony 3 1/2" Disks (box of 10)	\$21.
MAXELL 3 1/2" Disks (box of 10)	21.
Fuji 3 1/2" Disks (box of 10)	21.
Verbatim 3 1/2" Disks (box of 10).	23.
3M 3 1/2" Disks (box of 10).	24.

INFORMATION SERVICES

Compuserve

Compuserve Information Service. 24.

Dow Jones

Dow Jones News/Retrieval Membership Kit 24.

ACCESSORIES

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) 89.

Innovative Technologies

The Easel (holds 20 disks) 13.

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

High Quality "MacAttire" dust covers 7-17.

Smith & Bellows

Mahogany Disk Case (holds 90 disks) 28.

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: For printers and drives add 2% for UPS ground shipping (call for UPS Blue or UPS Next-Day-Air). For all other items, add \$2 per order to cover UPS shipping. We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground. **Hawaii:** For printers and drives, actual UPS Blue charge will be added. For all other items, add \$2 per order. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

for success. Call your c

Mindscape ... CP

The Lüscher Profile (*personality profile*) . . \$24.
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.

Odesta ... NCP

Double Helix (*relational, custom menus*) . . 275.

OWL International ... NCP

Guide (*hypertext, free-form info*) 79.

Palantir ... CP

MathFlash, WordPlay or MacType 26.

inTalk (*communication to emulation, NCP*) . 99.

PBI Software ... NCP

Icon Switcher (*customized icons*) 14.

HFS Locator (*DA organizer for HFS*) 26.

HD Backup (*supports MFS, HFS*) 29.

Personal Computer Peripherals ... NCP

HFS Backup 29.

ProVUE Development ... NCP

OverVUE 2.0 (*power-packed database*) . . 149.

Mail Manager Template 29.

Personal Finance Template 29.

Rubicon Publishing ... CP

Dinner At Eight-Silver Palate Bundle 52.

Satori ... NCP

BulkMailer (*mailing lists*) 74.

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.

Colormate (*color printing utility*) 48.

Printworks (*print faster & in color*) 49.

Laserstart (*Hewlett-Packard Laserjet*) . . . 58.

Softview ... NCP

Macinuse (*time-use manager*) 35.

Software Ventures ... NCP

Microphone 1.1 (*includes Glue*) 119.

Solutions, Inc. ... NCP

SmartScrap & The Clipper 41.

Glue (*creates "print to disk" capability*) . . 41.

Springboard ... CP

Art a la Mac Vol. 1-People & Places (*NCP*) . 23.

Art a la Mac Vol. 2-Variety Pack (*NCP*) . . 23.

Certificate Maker (*CP*) \$35.

State of the Art ... CP

Electric Checkbook (*print checks*) 28.

SuperMac Technology ... NCP

SuperSpool 39.

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.

Target Software ... NCP

Memorandum (*electronic post notes*) . . . 75.

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*) 67.

Lightspeed Pascal (*includes debugger*) . . 87.

Lightspeed C (*top-rated C Compiler*) . . . 127.

InBox Starter Kit (*CP*) 235.

InBox Personal Connection (*CP*) 85.

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*) 104.

TML Systems ... NCP

TML Source Code Library 58.

TML Database Toolkit 64.

TML Pascal (*compiler, req. 512k*) 68.

TrueBasic ... NCP

True BASIC see special

Chippendale utilities, Trigonometry,

Pre-calculus, Alegbra II, Discrete Math,

Probability 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

Spellswell (*spelling checker*) 45.

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!*) 15.

Artworx ... CP

Bridge 4.0 (*sharpen your skills*) 20.

Avalon Hill ... CP

MacPro Football (*req. 512k*) 30.

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

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.

Mindscape ... CP

Balance of Power (*world politics*) 30.

King of Chicago (*req. minimum 512E*) . . . 30.

Brataccus (*great graphics, req. 512k*) 30.

Uninvited (*mystery adventure*) 30.

Shadowgate (*fantasy graphic adventure*) . . 30.

1-800/Mac&Lisa 730C

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.



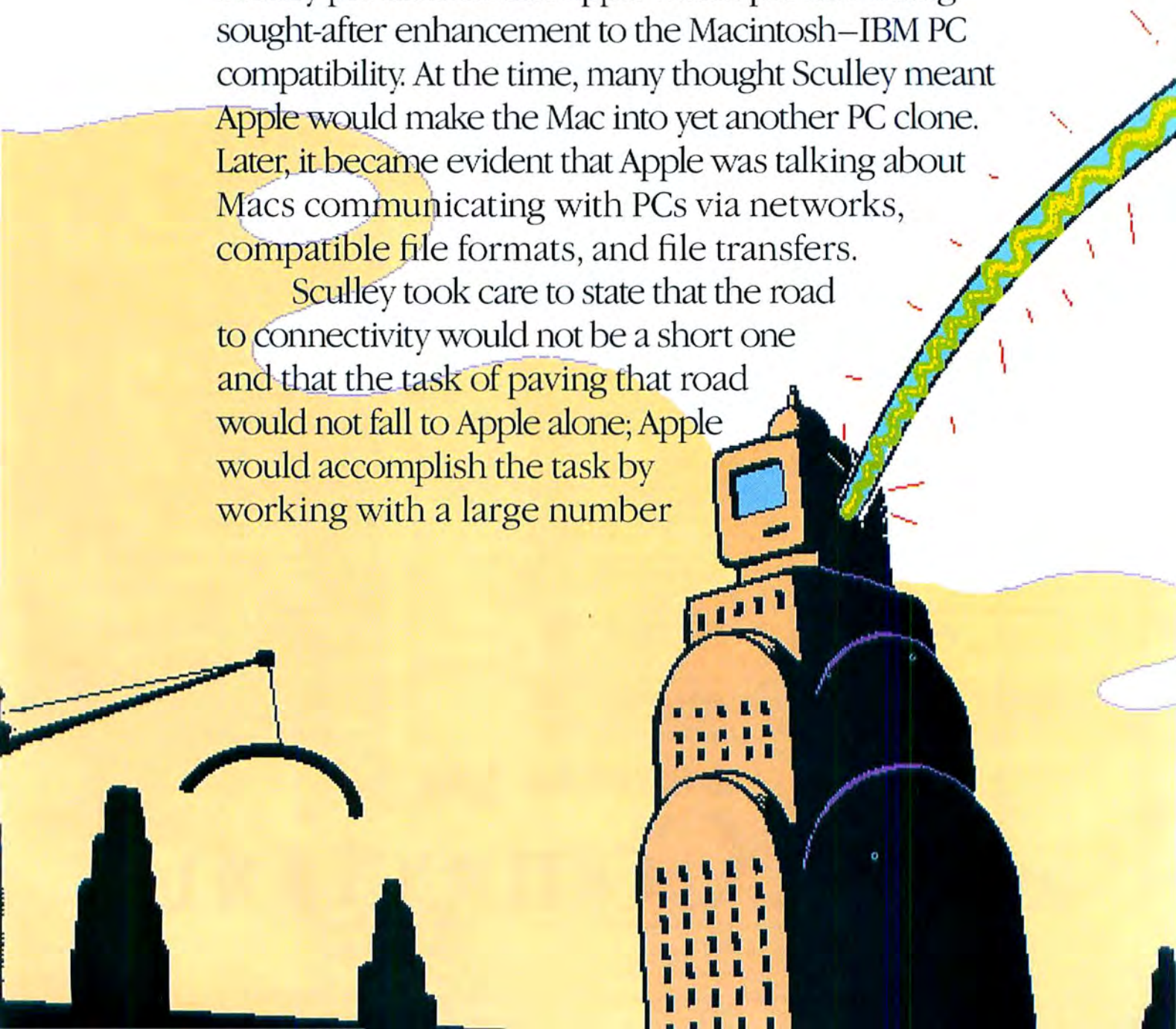
The Road to MS-DOS

Exploring the paths to connectivity

by Rick LePage

Early in 1986, Apple president John Sculley proclaimed that Apple would provide a long-sought-after enhancement to the Macintosh–IBM PC compatibility. At the time, many thought Sculley meant Apple would make the Mac into yet another PC clone. Later, it became evident that Apple was talking about Macs communicating with PCs via networks, compatible file formats, and file transfers.

Sculley took care to state that the road to connectivity would not be a short one and that the task of paving that road would not fall to Apple alone; Apple would accomplish the task by working with a large number





of third-party vendors. In recent months, the announcements of the Mac II, the Mac SE, and related third-party products have helped Apple realize its goal of MS-DOS connectivity. Many of these products break down the formidable barriers of incompatibility that have often separated users into two camps.

Mac users can access information from MS-DOS computers in three primary ways. The most obvious is by placing Macs and PCs on a single network and letting network members share files from a central or a distributed server. The second way is to add a coprocessor board to the Mac—Mac users can then run MS-DOS programs. The third is to connect the Mac to a PC-compatible disk drive that reads from and writes to MS-DOS disks. All three methods can use file-conversion utilities that allow translation of files from one format into another.

Things have progressed from the early days when ASCII text was the common denominator between PC and Mac documents (see "The Macintosh Data Exchange," *Macworld*, December 1986). Now a growing legion of MS-DOS software, in-

cluding page-layout programs like *PageMaker* 1.1, will at least utilize *MacPaint* and *MacDraw* files. The *Microsoft Windows* operating environment, which will be an option for IBM and Microsoft's new Operating System/2 (OS/2), should offer its own standard graphics file format, but whether that format will be compatible with the Mac's PICT format was undetermined at press time.

Network Paths

Three primary networking schemes are available to microcomputer users—AppleTalk, Token-Ring, and Ethernet. While AppleTalk is the standard in the Mac environment, the PC world is divided. Token-Ring is prominent in many PC environments; however, Ethernet has the largest installed base and is available on a wide range of computers from PCs to VAXs and even on IBM's 9370 minicomputer.

One of the major problems with networking PCs and Macs is that although you can physically link the machines via a network, incompatibilities still exist between operating systems. In addition, while AppleTalk has had a great deal of success

with Mac users, its slow transmission rate (imposed by the standard AppleTalk transmission scheme) is a poor match for DOS-based networking schemes, which offer PC users faster and more comprehensive networking services.

Before the introduction of the Mac SE and the Mac II, the only way a Mac and a PC could talk was through an AppleTalk card placed in the PC. Tangent Technologies was the first company to develop such a product—PC MacBridge—for PC users who needed to access LaserWriters on an AppleTalk network.

The next entrant into the field of Mac-PC networks was Centram Systems West, which offered versions of its *TOPS* networking software for the Mac and the PC. *TOPS*, currently the most prevalent networking solution for integrating Macs and MS-DOS machines, allows PCs and Macs to share files across a network. Participating PCs must have Centram's PC AppleTalk card installed. While PCs are guests on the network, PC and Mac users can share information in a manner consistent with their respective user interfaces. Centram has also released a version of *TOPS* for machines running UNIX BSD4.2 or UNIX System V, allowing PCs and Macs to share files with UNIX hosts. In addition, *TOPSPrint* software lets PC users print to a LaserWriter.

Sharing Apples

In January 1987, Apple introduced the AppleTalk PC card, along with the *AppleShare* file-server software. The card and an accompanying utility let PC users convert MS-DOS files to PostScript in order to print documents on a LaserWriter. Apple intended the AppleTalk PC card to be the hardware link to the MS-DOS world—third-party developers would provide software so that PC users could access AppleTalk resources such as *AppleShare*.

The first vendor to provide this type of software for PCs was Tangent. *TangentShare* allows a PC user to act as a client to an *AppleShare* server: users access files and folders on the server, change protection and access to folders, and copy files to and from the server. In short, with *TangentShare*, a PC user can do anything a Mac user on an *AppleShare* network can do.

TangentShare enables users to easily exchange text files, spreadsheet files, and other format-compatible files between the two operating systems. Users could also



A PC in Disguise

The Mac II, equipped with AST's Mac286 card, displays a graph created with Micrografix's Win-

dows Graph. The same graph on IBM's PS/2 Model 60 is shown on the right.



3Com founder and chairman Bob Metcalf. His company's 3+ network system will unify PC and Mac workgroups located throughout the country.

hook up a PC to both an AppleTalk network and a PC-based network, turning the PC into a gateway between the two networks. Using this setup, one PC user must access Macintosh files from the gateway PC; but after that, the files would be accessible to other users on the PC network.

Tangent also has a number of other utilities that simplify networking with the Mac and the PC. All these utilities work with either Apple's or Tangent's AppleTalk PC Card. For the PC, Tangent offers a version of InfoSphere's *MacServe* client software, which allows PCs to access *MacServe* disk servers on an AppleTalk network. PC *MacServe* users can open and copy files the same way Mac clients do. Tangent also offers *PSPrint* and *WinPrint*, both of which print PostScript and ASCII text files directly on the LaserWriter, emulating the Diablo 630 daisy wheel printer. *PSPrint* works from the MS-DOS environment. *WinPrint* runs with *Microsoft Windows* and allows users to print, for example, files created by Aldus's PC version of *PageMaker*.

PC Post Office

A prime example of Mac and PC users working together is an integrated mail system through which users send and receive mail regardless of the machine they're

using. (After all, the phone company doesn't require that all customers have a particular type of phone.) Think Technologies' *PC InBox*, a PC version of Think's *InBox* electronic mail system for the Macintosh, allows Mac and PC users to share mail and files. *PC InBox* works with PCs that have either Apple's or Tangent's AppleTalk PC Card installed. The limitation of *PC InBox* is that PC users must be on AppleTalk to exchange mail and files. This limitation rules out the possibility of using a PC as a gateway to exchange messages with users on another non-AppleTalk network. However, Think is working on a product that will allow a PC to act as a gateway between AppleTalk and Token-Ring networks.

Internet was also scheduled to release a PC version of *InterMail* (its electronic mail software for the Mac) in May. The *InterMail* PC Message Center, like *PC InBox*, would let PC and Mac users send and receive messages and files. Internet's product will work with Apple's, Centram's, or Tangent's PC AppleTalk card.

The Complete Network

Currently 3Com is the only manufacturer that has announced a complete network architecture for AppleTalk, Ethernet, and Token-Ring. 3Com's 3+ network system allows Macs and PCs to coexist and to use their own network schemes. The product also lets Mac and PC users share files and printers, as well as send and receive electronic mail. Linking an AppleTalk network to the server of a 3+ system that is connected to an Ethernet or Token-Ring network gives the Mac and PC network

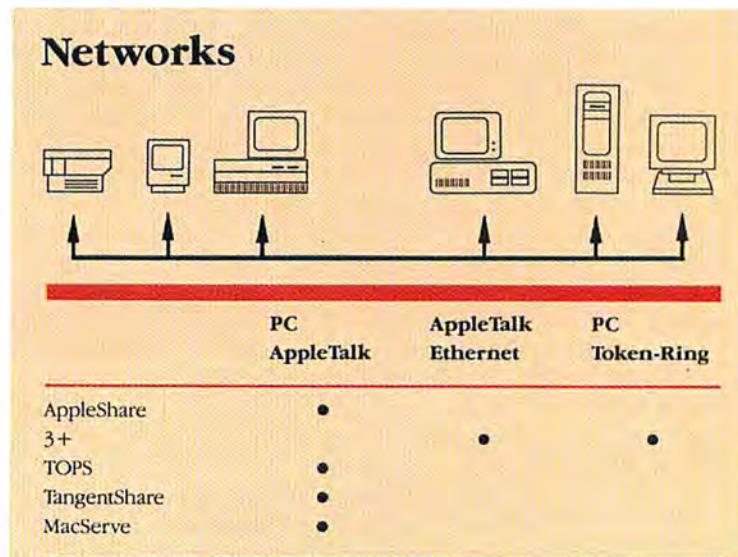
users transparent file-exchange and file-sharing facilities.

To boost AppleTalk's speed, Apple and 3Com both announced plans to market Ethernet cards for the Mac SE and the Mac II. Apple's version is called the Apple EtherTalk Interface Card. As this article went to press, 3Com had not yet decided on a name for its card. Both Ethernet cards raise the speed limit on AppleTalk networks to a comfortable 10 megabits per second. Currently, 3Com's software is the only application that utilizes the Ethernet cards.

Planting a PC in a Mac

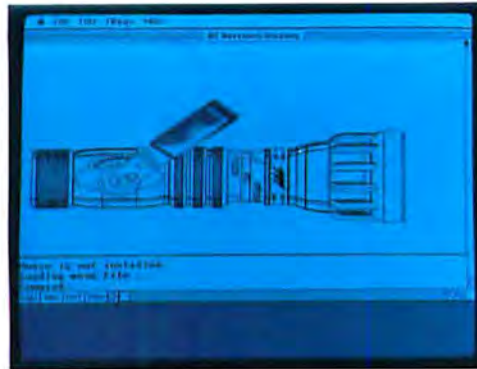
An MS-DOS coprocessor gives a Mac user the best of both worlds without having two machines on the desk. A coprocessor board lets you run PC software by attaching an Intel 8086-family microprocessor to the Mac's central processing unit (CPU). Most MS-DOS coprocessors can use nearly all Mac peripherals—hard drives, modems, and printers. MS-DOS coprocessors take two approaches: the first adds a nearly complete PC motherboard to the Mac; the second adds only the Intel chip and minimal electronics, while relying heavily on the Mac's hardware. At best, coprocessors offer MS-DOS compatibility comparable to what you can find in an under-\$1000 PC clone.

Dayna Communications pioneered the field of MS-DOS coprocessors, announcing its MacCharlie within a year after the Mac's introduction. MacCharlie, an L-shaped unit that wraps around the Mac, is really a PC that utilizes the Mac's screen, user interface, and I/O ports, while relying



Network Options

Networked PCs can connect to Macs with AppleTalk or by using 3Com's 3+ to connect Macs to Ethernet-connected or Token-Ring-networked PCs.



Tale of Two Screens

Two documents created on a PC and displayed on an IBM PS/2 (top) and a Mac II with AST's Mac286.

on its own internal hardware (including a 5¼-inch disk drive) to run MS-DOS software. One criticism is that MacCharlie is a bulky unit that tends to diminish the Mac's portability.

Since the introduction of MacCharlie, two additional options for MS-DOS co-processing have been introduced. Perfectek offers MacPlusPC, a clip-on board for the Mac 512KE or the Mac Plus. MacPlusPC is an Intel 8086-based board that clips onto the Mac's 68000 CPU and shares the Mac's memory and peripherals for most operations. Currently, MacPlusPC utilizes Abaton's Drive 5.25, a 5¼-inch MS-DOS disk drive, to read MS-DOS disks and programs. However, Perfectek plans to offer a MacPlusPC version for the new Macs, which will allow the coprocessor to utilize Apple's PC 5¼-inch drive as well.

MacPlusPC runs either as a stand-alone application, which uses all the Mac's available RAM (up to the 640K MS-DOS limit), or in a *Switcher* partition. Using MacPlusPC with *Switcher* allows MS-DOS

MS-DOS Emulation



	Mac II	Mac SE	Mac Plus 512K
AST Research	Mac 286 (80286)	Mac 86 (8086)	
PerfecTek			MacPlusPC (8086)
Dayna Communications	MacCharlie (8086) attaches to serial port		

applications to share information with Mac programs through the Clipboard. Hard disk users can set up a portion of their disk space for MS-DOS files. Perfectek offers translation utilities and a direct Mac-PC link utility to make file conversion easier.

286 for Speed

AST Research has introduced PC coprocessor cards—the Mac86 and the Mac286—for the Mac SE and Mac II, respectively. AST designed the cards in concert with Apple and Phoenix Technologies, the developer of the PC basic input/output system (BIOS) ROM that most of the PC clone manufacturers use. Designed for the card slot in the Mac SE, the Mac86 uses the Intel 8086 microprocessor and contains a floppy-disk controller that works with Apple's PC Drive 5.25. The card contains no memory and uses up to 640K of the Mac SE's RAM for processing. The Mac86 operates at approximately the same speed as a PC XT and supports the IBM Monochrome Display Adapter (MDA) and Color Graphics Adapter (CGA) video standards.

Designed for the Mac II, the Mac286 is essentially an IBM PC AT on a card. It contains an Intel 80286 processor, a slot for an 80287 math coprocessor chip, 1MB of RAM, and a floppy-disk controller for Apple's PC Drive 5.25. The Mac286 emulates the same video modes that the Mac86 does, with the addition of the Hercules Graphics Card (HGC) standard.

Both cards operate similarly to Perfectek's MacPlusPC: an application allows the Mac to run MS-DOS in a window on the

Mac screen, just like any other Mac application. Both cards offer a complete menu, desk accessories, and mouse support, as well as cut and paste operations. In addition to attaching the Apple PC drive, you can set aside a portion of the Mac's hard drive for MS-DOS files. By creating a Mac-based HFS folder that acts as an additional PC drive, users can copy files easily between the two operating systems. You can also configure the Macintosh mouse to emulate the MS-DOS Microsoft Mouse.

The Mac286 offers full use of the Mac II's color capabilities. When configured for the CGA video mode, the Mac286 displays colors in appropriate shades of gray. While ensuring that entertainment-minded users will be able to play PC games on the Mac SE, this configuration also allows many PC-based graphics programs to use the CGA for displaying graphs.

Users of the Mac286 should find it compatible with version 3.3 of MS-DOS and with OS/2, both announced in March 1987 along with IBM's new Personal System 2 (PS/2). OS/2 with *Windows* will both provide a closer match to the Mac's graphics-based interface than the current character-based MS-DOS environment, and give users the ability to access much more memory than is currently available under MS-DOS. Unfortunately, OS/2 will not run on the Intel 8086, but requires the 80286 chip or the 80386 chip to run. Therefore, if you are using MacPlusPC or Mac86, you will be limited to MS-DOS 3.2 or 3.3 opera-

Emulation Options

While all Macs except the 128K can take advantage of 8086 PC emulator cards, only the Mac II can emulate an AT-class machine using AST's Mac286 card.

tion. However, because OS/2 won't replace MS-DOS as the dominant PC or PS/2 operating system for at least a year or two, users of 8086-based coprocessors won't have to worry about obsolescence for a while.

Reading PC Disks

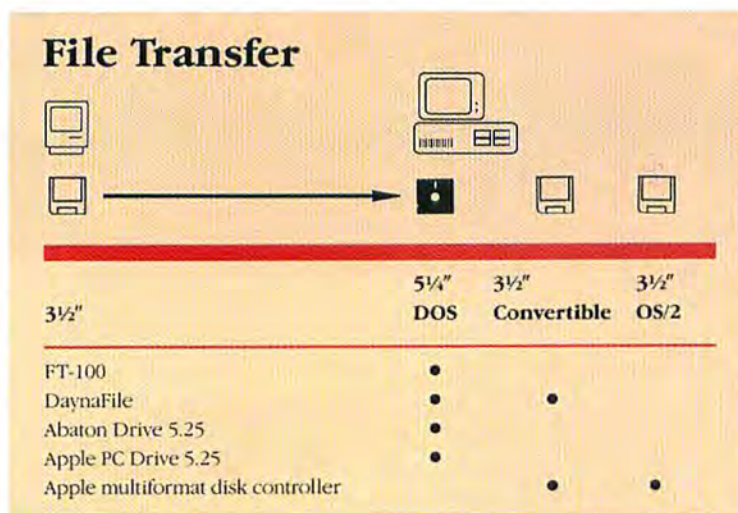
The third option for Mac users who want to access MS-DOS files is to attach a PC-compatible drive that reads and writes DOS-formatted disks—and, in fact, can format the disks too. PC-compatible drives often have file-transfer and file-translation utilities that enable you to translate file formats as well as to copy the files from one type of disk to another.

Aside from Dayna's MacCharlie, which has a 5¼-inch drive built into its chassis, the first PC drive available for the Mac was Drive 5.25 from Abaton. Drive 5.25 attaches to the Mac's floppy-drive port and allows you to copy files between the two disk types. Later Dayna introduced the FT-100. This drive looks similar to the MacCharlie, and like Abaton's Drive 5.25, the FT-100 lets you transfer files between the two mediums using a separate transfer application. Since then, two additional drives have become available—one from Apple and another from Dayna.

The Apple PC Drive 5.25 is a 5¼-inch disk drive that works with either the Mac SE or the Mac II. In addition to buying the drive itself, you must purchase a disk-controller card from Apple. You need the Macintosh SE-Bus PC Drive Card for the Mac SE and the Macintosh II PC Drive Card for the Mac II. (You do not need the controller card if you buy the drive to use with AST's Mac86 or Mac286 card.)

File Transfer Options

With these products Mac owners can transfer files between DOS-, OS/2-, and Mac-formatted disks.



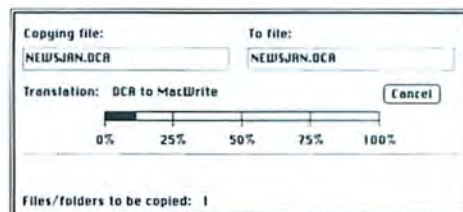
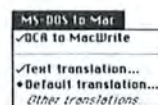
Along with the PC Drive 5.25, Apple includes a file-transfer and file-translation utility called the Apple File Exchange, which works not only in the MS-DOS and Mac environments but also in the Apple II ProDOS environment. The utility is unique because Apple offers it as an application shell. At its simplest level, the Apple File Exchange transfers binary and text files and also translates between *MacWrite* and IBM's Document Control Architecture (DCA) format. The utility also provides batch-translation capabilities that speed up the conversion process.

Apple is looking to other vendors to write additional translation modules for different formats. Already, DataViz plans to offer some of *MacLinkPlus*'s file conversions for the Apple File Exchange.

For Mac users, Apple will provide the Apple File Exchange free in an upcoming software update and will bundle the utility with all new Macs as part of the System Tools disk, so you won't even need to buy the 5¼-inch drive to get the program.

DaynaFile, Dayna's MS-DOS drive option, is unique because it runs on the Mac Plus, the Mac SE, and the Mac II. DaynaFile utilizes not only the standard 360K 5¼-inch MS-DOS floppy, but also the 1.2MB 5¼-inch AT floppy format and the 760K 3½-inch floppy used with the PC Convertible. The standard model comes with the 360K PC disk drive.

DaynaFile attaches to the Mac's SCSI port and functions transparently as an additional disk drive. Dayna offers the same file-format conversion program with DaynaFile as it does with MacCharlie and FT-100. DaynaFile's unique ability to work



PC to Mac

Apple's File Exchange lets users translate files from one format to another. Apple will provide MacWrite, DCA, binary, and text formats; third parties will provide others.

with three of the MS-DOS disk formats—it does not yet work with the high-capacity 3½-inch floppy-disk format found in the new IBM PS/2 machines—makes it an excellent choice for businesses that have diverse PCs.

Apple is also reported to be developing a disk controller chip that, once installed in the Mac SE and Mac II, will allow those machines to read DOS-compatible 3½-inch disks.

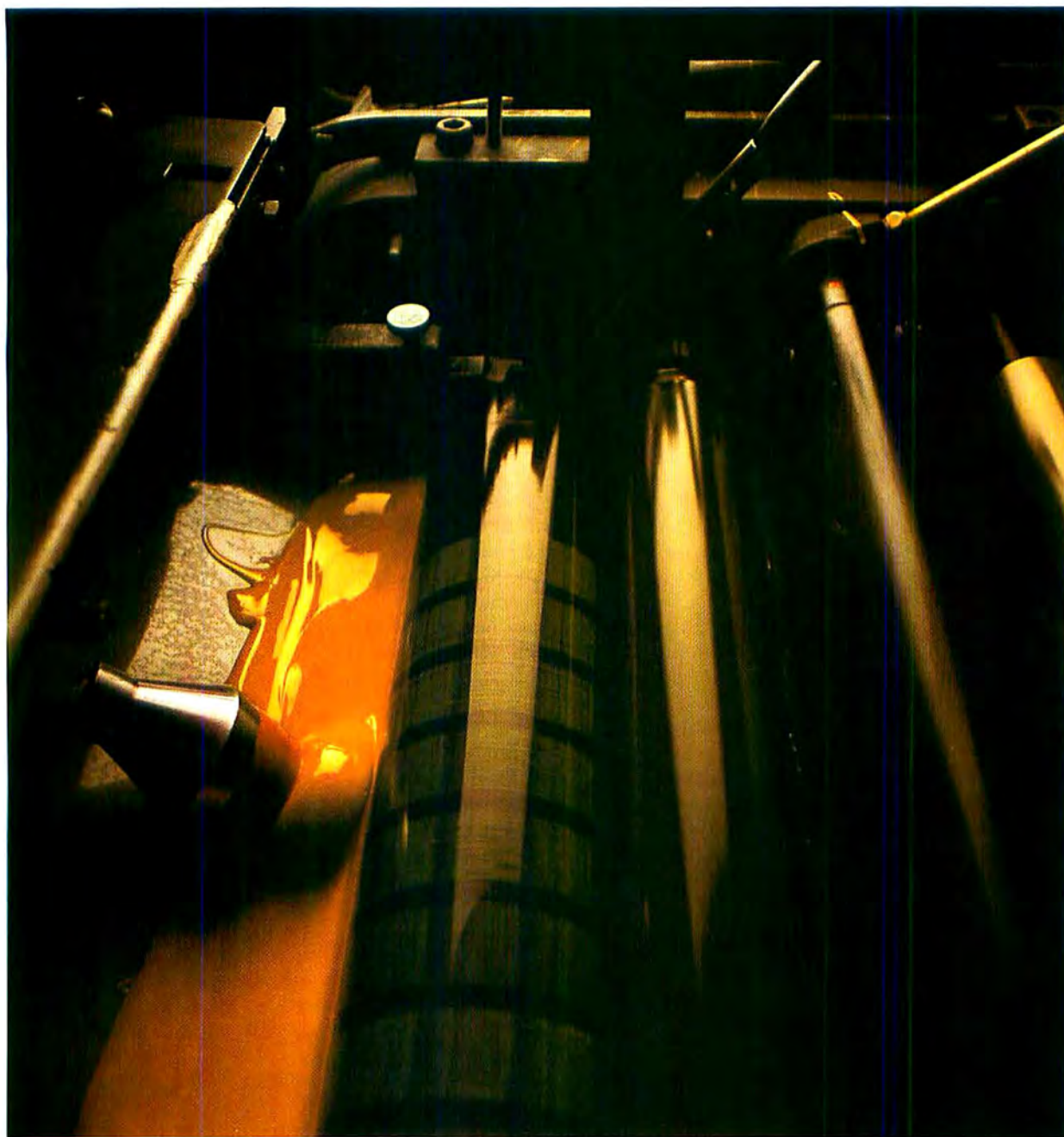
On the Horizon

The three paths to MS-DOS connectivity—networks, MS-DOS coprocessors, and PC-compatible disk drives—offer options that work today.

In the future, as networked machines approach the plug-and-play concept that Apple initiated with its AppleTalk network—and as Microsoft and IBM solidify their plans for OS/2—the sharing of files, peripherals, and message systems will become much more transparent. As the Mac matures, and as applications migrate from Mac to PC and vice versa, common file-formats will become more prevalent.

Eventually you should be able to buy a Mac for an IBM-dominated environment, or a PC for a Mac environment, without worrying about application and file incompatibilities. You will be able to work on the machine with which you're most comfortable—the one that offers the right blend of performance and productivity—without feeling isolated. □

See *Where to Buy* for product details.



*The inking fountain
of a Heidelberg four-
color offset press
applies yellow ink to
rollers that transfer it
to the printing plate.*



First Edition

A print-services primer for the beginning publisher

by Suzanne Stefanac

So you've finally finished that newsletter, pamphlet, brochure, invitation, or book. The desktop publishing software worked beautifully, and the document looks great. Now you're ready to present it to the printer.

Or are you? For those who have never ventured inside a printer's shop, the experience can be maddening. Good printers have mastered a complex and precise craft, and most assume that their customers will be familiar with the basic jargon and conventions of the trade. Failing to communicate clearly with your printer can often mean the difference between a fine product and a costly disaster.

Unless you ask, for instance, the printer might not bother to show you the cheaper types of paper or tell you that a more standard page size could substantially lower your overall cost. No one will volunteer to tell you that the color snapshot of the company picnic is going to look like a detail of the moon's surface once it's shot as a halftone. Or that foregoing a color headline could halve your printing costs. Or that the shop down the street could do the job in one day.

The bottom line is that printing is probably the single most costly item in any desktop publisher's budget. Without at least a basic understanding of the printing process and the options available, you could easily end up watching the money

you saved through electronic design and pasteup dribble away like so much spilled ink.

Types of Printshops

A glance at the variety of printers advertising in the yellow pages is enough to intimidate most first-time publishers, but basically printers can be divided into three categories: photocopy shops, quick-print shops, and larger commercial printers. Each has its own capabilities and limitations.

Simple photocopy shops produce one-color, standard-size reproductions that can be collated, stapled, and folded. These services are cheap and fast, but the quality limitations inherent in the process make photocopying unsuitable for many print jobs.

Better-quality printing, heavier or smoother paper, more than one ink color, specialized folding, binding, and the reproduction of halftone graphics generally require offset lithography. Quick-print presses and commercial shops both do offset printing primarily.

Quick-print presses use a graphic arts camera to create a paper or plastic printing plate that can be used to print a finished product immediately. Fast turnaround and cost-effectiveness are the pluses. In addition, quick printers often allow you to submit work that hasn't been pasted up. On the down side, these services usually cannot print pages larger than 11 by 17 inches, and many don't print more than one color. Large graphics—particularly if they include

sizable solid patches—don't fare well with this method.

Larger commercial presses generally use metal printing plates and produce a higher-quality product. They also offer more options, such as a wider selection of paper grades and sizes, better halftone reproduction, the ability to print four-color graphics, a choice of binding styles, and the ability to print alternate versions of a publication (in case, for example, you want to produce different editions for different localities). Commercial presses usually require more time because they must first shoot negatives of your text and graphics and then assemble, or *strip*, them onto printing flats.

Printshop Shopping

Once you've decided what type of printing service is appropriate for your job, you can start shopping for a printer. Time spent on this activity will be richly repaid. Finding someone about whom you've heard good things, whose work you've seen and admired, and with whom you feel comfortable puts you ahead of the game from the start. As Jim Smith of the Laser's Edge, a laser printing service in Oakland, California, puts it, "Quality printers do quality jobs, and half-assed printers do half-assed jobs."

Price is another reason to compare printers. Toby Towland-Jones coedits and publishes *Benefit*, a journal for nonprofit organizations. "We shopped our mock-up

around quite a bit," he remembers, "and some estimates were double others." Print prices can even vary considerably at the same shop, depending on how heavy its schedule is at a given time.

The process of choosing a printer isn't difficult once you understand a few of the main concerns that need to be addressed. Especially if you're a new publisher, the best time to start talking to printers isn't after you've pasted up your work, but somewhere in the middle of the design process—when you have a good idea of what the project will look like but have not yet put too much effort into working out the details.

Tibor Harsanyi of A-1 Print and Copy in South San Francisco stresses the importance of early consultation: "At the design stage, we can give customers valuable tips that eliminate wasted work." As examples, he cites cases of clients not realizing that enlarging laser fonts would exaggerate their jagged edges, that shrinking digitized images might render them unreadable, or

that tabs rather than spaces should be used to line up columns of figures or other material. In addition to helping you avoid such pitfalls, early consultation with your printer enables the shop to schedule time for your job and to order any special materials you may require.

The best way to approach potential printers is to bring along a mock-up of your final product. This can be a sketch or a dummy showing size; number of pages; any folds required; and the number, placement, and type of graphics. Since you may find that you and your printer speak a different language, using a mock-up will help ensure that you communicate exactly what you mean.

Stock Comments

Since paper costs can constitute as much as 50 percent of your final printing bill, paper stock should be one of the first items you discuss with your prospective printer. Weight, finish, and color are obvious considerations. Bringing a sample of some printed matter that's similar to what

you would like will help you and your printer decide which stock is most appropriate for your publication.

Whether to print on inexpensive bond or an elegant, coated book paper depends on your intent and your pocketbook. The reproduction quality will depend on how the paper takes the ink. Remember that expensive paper is not always the most attractive. Another consideration is that standard sheet sizes are always cheaper than odd sizes. Standard sizes will usually be multiples of 8½ by 11 inches. However, if you're committed to a design that can't use one of those sizes, don't give up hope. Since printers often keep odd-size paper in stock to accommodate regular customers with special needs, there's a chance the size you want may rate a "standard" price at a given shop.

Limiting the number of pages in your publication to multiples of four is another money- and time-saver. For example, an 11-by 17-inch sheet printed on both sides can be folded and cut into a 4-page, 8½-by 11-inch pamphlet. Commercial printers often group 8 or 16 pages onto one printing plate, called a *signature*, so setting up your job to conform to those numbers will speed up printing preparation and lower the final job cost.

Graphic Details

From the point of view of print reproduction, there are two types of graphics: line art and continuous-tone art. Examples of line art would include most diagrams, Mac graphics (including digitized images), special headlines, and other graphics that are made up of only black and white elements. You can put line art directly into your layouts.

Continuous-tone images such as photographs or shaded drawings are slightly more complicated than line art, since they include gray tones. Because offset presses generally print with only one color (usually black), printers must use *halftones* to create the illusion of different shades of gray. Halftones are made—either by your printer or a halftone service—by photographing an image through a screen. This converts different gray shades into fields of black dots whose variations in density define the halftone's lighter and darker areas.

Screens for halftones come in varying densities, measured in lines per inch. Newspapers commonly use screens ranging from 65 to 100 lines per inch, while art



The Laser Look

If you use a LaserWriter at a copy shop or quick-print shop to print your pages, trying to determine in advance how your layouts will look can be a problem. Using your ImageWriter to print proofs is dangerous, mostly because the LaserWriter prints about two fewer lines per page than the ImageWriter. This difference can completely throw off your formatting, giving you page breaks where you don't want them.

One solution is to fool your Mac into thinking you've got a LaserWriter. Installing a LaserWriter driver in your System file will change your screen display so that what you see on screen is more like what the LaserWriter will print.

Simply drag the LaserWriter driver that came with your system disk into the System Folder. If you're using an old System, this might be a good time to ask your dealer for an upgrade to the latest version. Just make sure you don't use a new driver with an old System. Once the driver is in place, use the Chooser to select the LaserWriter. Return to your application program and remember to select Page Setup from the File menu. If you don't select Page Setup, the Mac won't reformat the screen.

This tip still won't give you true WYSIWYG results, but it's a start. (See "Mac Publishing Tools" in the June issue for more Image-to-Laser ideas.)

—Joe Matazzoni



A stripper uses Rubylith and orange tape to block out all but the desired elements for the black layer of a four-color ad. This negative will then be transferred to another negative, which will be used to create a printing plate.

books printed on high-quality presses can run up to 300 lines per inch. *Macworld* usually uses a 133-line screen. To determine the screen with which to shoot your graphics, you have to consider the quality of your paper, the ink your printer will use, the resolution of the original image, and your budget. Again, consulting with the printer is imperative.

For most desktop publishing jobs, halftone positives, known as PMTs (photomechanical transfers), provide adequate quality and save money. In the PMT process, a paper negative is shot and then a chemical process is used to transfer the image to a paper positive. You can then simply paste this positive onto your camera-ready layout.

"If you decide to use PMTs for your artwork," advises Jim Morton, a writer and publisher with many years of printing and photolithographic experience, "keep in mind that images tend to print darker. If you take your pictures to a reproduction house yourself, tell them you want the PMTs 'with shadow and highlight adjustment,' because you will be printing from them. You should also avoid using a screen finer than 100 lines if you are printing from PMTs. A 133-line screen will look better to your eye, but it won't look so hot to the camera that has to reproduce it." If you plan to use a quick printer, you should be aware that most quick shops can't accu-

ately reproduce photographs that are dark or that depend on shadow detail. High-contrast graphics work best.

If image quality is an important consideration for you, halftone negatives are the way to go. One advantage of this method is that you don't have to worry about getting the halftones made yourself. In most cases your printer will make the negatives and then *strip in* the halftones—tape them onto the page negatives so that they show through precisely cut openings. In large part it's this stripping-in process that makes the use of halftone negatives more expensive.

If the original graphic is not the correct size for your layout, you can have it scaled. Be particularly careful with semantics here. Telling a printer or photostat house that you want your image at 25 percent means you want it to end up one-quarter the original size. To blow up a picture to twice the size of your original, ask for a 200 percent enlargement. Keep in mind that photos lose detail as they shrink, and that enlarging tends to exaggerate flaws. If you're sizing rectangular images, be sure to calculate the effect on *both* dimensions. Neglecting to do so is a common error, resulting in pictures that don't fit their intended windows.

Because you can sometimes cut expenses by having several halftones shot at the same time, the printer may suggest *ganging* images, which means exposing them as a group, with the same screening and scaling. The printer can help you decide whether or not your images are similar enough in quality and intensity to be ganged.

Images that *bleed* (run to the edge of the page) require special consideration. Full-page images will have to be printed on larger sheets of paper and then trimmed, because presses do not print to the edge of the sheet. Printers should always be consulted on bleeds, particularly when they fall on the top of a page, since that is usually where the press grips the pages.

The Estimate

After you've worked out the physical concerns of folding, collating, and binding (again, referring to your sample will guarantee that the printer understands what you want), you are ready to discuss print run and price. If a job is fairly standard, some printers offer quite reasonable packages. Be sure to discuss at what print runs the printer offers price breaks. It may be to your advantage to order more copies than

you had originally intended. Damage, loss, or a sudden increase in demand could mean going to press a second time, which is always expensive. Once the plates are made for your job, printing a hundred—or even a thousand—extra copies may not cost that much more.

Pay attention to whether the printer offers you an estimate or a contract offer. In practice, few printers offer firm quotes until they see your mechanicals—the final camera-ready copy. As mentioned before, be prepared for a wide variety of quotes. Also be prepared to spend some time accumulating and comparing them, since each printshop has its own method of calculating cost.

It's not a bad idea to ask if you can arrange for a 30-day payment schedule. That way, if there are problems with the proofs or the final copy, the portion of the fee you've retained will give you some leverage.

Pasteup

Once you have settled on a printer and agreed on an estimate, it's time to prepare your mechanicals. The first step involves printing out the pages of your document in their final form. Dot matrix output will be too jagged, even if you shrink the image, for any but the most basic printing jobs. As for laser output, Carl Haeberle of Mac Studio in San Francisco stresses the importance of using laser-printed proofs: "The biggest problem for casual users is



A bindery machine mechanically gathers signatures for saddle-stitching and trimming.

that they proof at home with their dot matrix printers and then, when they bring their disks in to have final pages printed out on the laser, the justification goes sideways or columns don't line up. Even without those problems, the whole look, the weight of the page, is so different. If you're going to use a laser printer for your final product, then your dot matrix setup is good only as a paper weight." (See "The Laser Look" for tips on circumventing this problem.)

Deciding which paper to use for your final output depends on a number of considerations. "I enjoy working with laser-printed type," says lithographer Mitchell Taylor of Alex Photo Litho in San Francisco, "because it tends to have a lot of blackness in it. Dot matrix printing comes out gray, and that causes trouble when you're making a negative. A big problem with laser printing, though, is that if the page gets dirty, there's nothing I can do. Cold type is set on standard photosensitive typesetting paper, which can be cleaned with solvent." Some people use enamel-coated stock for laser printing, which is a little easier to clean than regular uncoated paper, but it does not completely solve the problem. If the paper is too slick, the toner can chip off, and it can come up with the solvent.

Jim Smith of Laser's Edge finds other problems with the enameled papers:

"We've experimented with putting enamel- and clay-coated papers through an automatic waxer and it's true that the wax doesn't soak through them, but sometimes they don't feed properly. What we like is a very white, very smooth, 24-pound stock. If you use a hand waxer, there's no bleed problem anyway."

Ted Nace, coauthor and publisher of the book *LaserJet Unlimited* (Peach Pit Press, 1987) and a columnist for *Publisch!* magazine, recommends using a 70-pound stock that's enameled on both sides: "The coating on one side gives you a surface for printing; on the other side it keeps the wax from soaking through. The smoothness can be a problem, but it helps keep the print sharp." Nace adds a laser printing tip: "When printing stuff that will go to an off-set lithographer, you want the type to be very light, because jaggies will merge together when the printer shoots a negative. This tends to make the type appear heavier. If your laser printer has an adjustment, use the light setting."

If your laser-printed pages are complete, including graphics, you may be able to submit loose sheets to the printer—particularly if you're using a quick-print shop. However, if you need to add, delete, resize, or otherwise change any elements on your basic printout, you'll need to paste up your pages.

Your printer can give you premarked pasteup boards that clearly show the borders of the active image area for your print job. You can also purchase lightweight pasteup boards at any art supply store and put in your own crop marks and fold lines. Avoid heavy boards, which present problems for the camera and are an unnecessary expense.

If you're not an experienced publisher, you'll probably want to lay out the pages of your publication in *reader order*—as they will appear. However, some quick-print shops require that you paste up the pages using *imposition*—the arranging of pages so that they'll be in the proper order once the sheets are folded and assembled (see Figure 1). Quality shops will arrange the pages for you, but you can save money by doing it yourself. This is something you must discuss with your printer in advance; ask the printer to give you a simple dummy, folded and marked with page numbers, and then work from that.

When you begin pasting up your mechanicals, it's important to remember that camera-ready copy must be kept absolutely clean. Many printers complain that novice publishers often come in with smudged, sticky boards. The best adhesives to use for pasteup are wax and spray mount. Rubber cement produces very messy results. Professional production houses have waxers that are easy to use, safe, and neat, but these machines are too expensive for most desktop publishers. Getting consistent results with a hand waxer requires experience, but for anyone contemplating regular pasteup jobs, this is an excellent option. The drawbacks include dangerously hot wax and the toxic solvents necessary to remove wax from your hands. Wax sticks are cheap, but they can leave visible lumps under the paper, and they can't be used on bond paper because the wax will seep through and smear the image.

Spray mount—particularly the repositionable type—offers a convenient alternative. The fumes, however, can be hazardous, and the excess spray can gum up your floor and work surfaces. These problems can be minimized simply by holding the elements to be sprayed inside a cardboard box positioned just outside your main work area.

When you lay down your page elements, carefully align them with the grid on the board. PMTs, clip art, and original

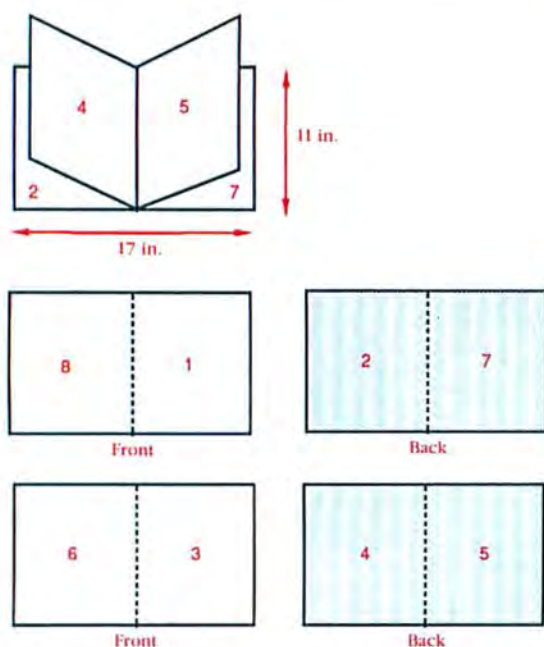


Figure 1

Although many commercial printers prefer single-page mechanicals that are clearly numbered in reader order, quick-copy shops may require you to paste up pages according to an imposition so that your pages will be in the proper order once the printed sheets are folded and cut. Shown here is the proper imposition for a double-sided eight-page newsletter printed on 11- by 17-inch sheets to be folded and assembled into an 8½- by 11-inch format.

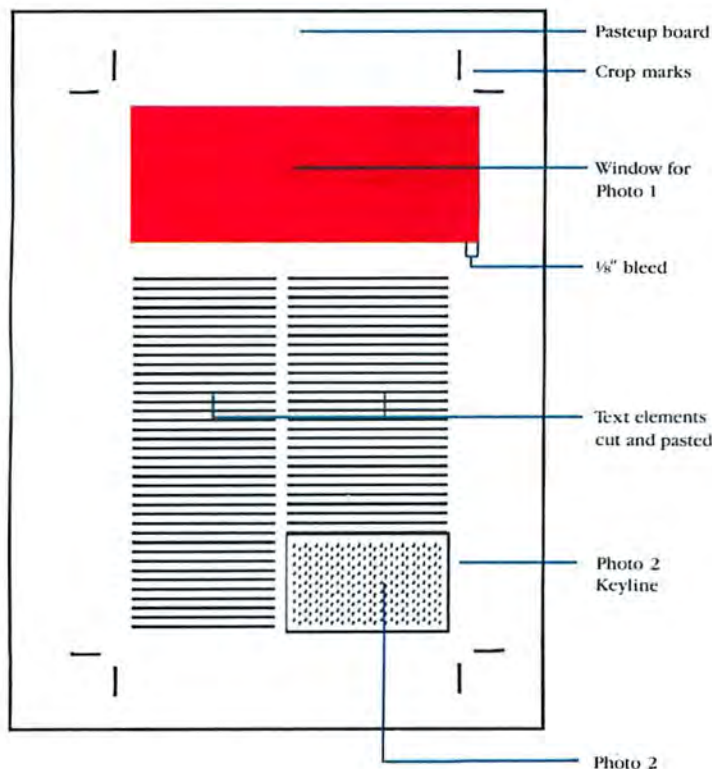
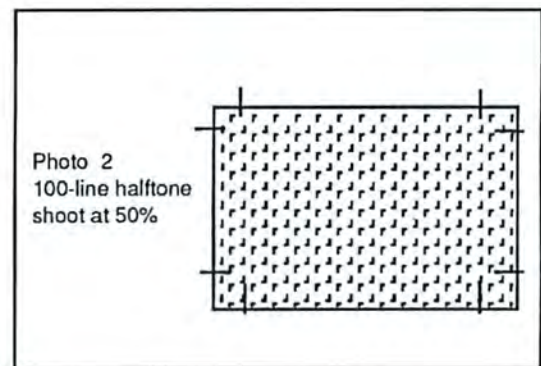


Figure 2

A mechanical ready for the printer. Page size is indicated by crop marks, text elements are pasted up neatly, and two red windows have been placed where halftone negatives will be stripped in. Photo 2 is mounted on a separate board, ready to be shot as a halftone. The instructions tell the printer to shoot it at 100 lines per inch, and reduce it to half the original size.



line drawings can be pasted right onto the mechanical. If you've printed fine-line boxes—or *keylines*—to define the spaces for graphics, be careful to conform to those keylines exactly.

For halftone images, you must put black or red “windows” in the appropriate places on your page mechanicals. Because they do not reflect light for the printer's camera, the windows leave precise openings on the page negatives where the printer will strip in the halftone negatives prior to platemaking. Some printers prefer to cut the windows, but doing it yourself is cheaper. While most printers say that laser-generated black windows are not dark enough for the photolithographic process, some people use the LaserWriter and touch up window imperfections with a red felt-tip marker. The camera reads the red as black. The more expensive but time-tested technique is to use adhesive block-out film, such as Parapaque or Zipatone. Either should be cut to the exact window size and attached to the mechanical.

Once you have fully proofread your mechanicals, you may want to place tissue

overlays on each board. These protect your mechanicals and are useful for writing notes to identify your halftones for the printer. Each graphic to be shot as a halftone should be mounted separately with specifications noted beside it—the number or letter used to key it to the finished product, the number of lines per inch for the halftone screen, and the enlargement or reduction percentage, if any. Crop marks indicating the portion of the graphic to be used should also be drawn on the mounting board. (See Figure 2 for examples of a pasted-up page and a mounted photograph.)

Check your mechanicals one last time. Once they have been submitted to the printer, any changes will cost you money and delay printing.

Checking Proofs

It's a good policy to tell your printer you want to see proofs after the mechanicals are shot. Quick-print services will probably provide only a photocopy, but

commercial presses offer *bluelines*—contact prints of the fully stripped flats. This is your last chance to check for correct placement of graphics, proper color registration, proper imposition, typos, and trim problems.

If changes do need to be made, discuss with the printer which of you will bear the cost. If you require another proof, keep in mind that it will almost certainly push back the print date. Once you sign the proofs, you authorize the printer to go to press.

For major jobs, you may want to make a press check after the first sheets have been printed. Check the paper stock, ink color and density, print registration, and imposition. Point out any flaws to the printer and determine whether or not they are worth correcting.

Finally your pages are run off the press, and you can breathe a sigh of relief. You've navigated the complex printing process and emerged with a professional-looking publication. And best of all, the second edition will be even easier. □

A DA in the Life

*In which desk accessories save
our hero considerable time, trouble,
and expense*

by David Simerly and Erfert Nielson

They laughed when I sat down with Font/DA Mover. My fellow employees have always made fun of me for staying after work and browsing through CompuServe, downloading desk accessories until my eyes glaze over; exchanging disks with those scruffy-looking characters from the user group on campus; sending off for products with names like *SmartScrap* and *CheapPaint*. I keep telling my co-workers that collecting desk accessories isn't a frivolous pastime; why, I've accumulated a collection that lets me do everything from file maintenance to scheduling, all without leaving whatever program I'm using.

My office mates could learn how to work more efficiently if they'd only listen to me, but when I talk about my DAs they just snicker and head back to their Macs, switching from one ponderous application to another—when their Apple menus could be built for speed. Well, let 'em laugh. Little do they know that DAs have saved our corporate assets more than once. Take last Monday, for example. . . .

8 a.m. I arrived at work early, since I had a busy week ahead of me at Superfluous Commodities, Inc. We're rolling out some innovative products this year, and as head of market research, I've got my hands full. The test-market figures for our new gourmet pet food line were on my desk, and the prospects looked good: Canine Cajun Cuisine was a hit, especially the Blackened Beef Byproducts. The Kitty Sushi series was a smashing success, with the possible exception of Kappa Maki Treats. The Gerbil Tapas didn't do too well, though. I must say I was a little hurt, since that one was my idea. C'est la vie, I guess.

Bell, Clock, and Calendar

After perusing the figures, I turned on my Mac, ready to put in a full morning's work. To my dismay, it was already 8:56. Ever since I installed *JClock* in my

Mac's System Folder, I have an unobtrusive little digital clock running constantly in the upper-right corner of the screen. *JClock* lets me be subtle about my clock-watching habit, but more important, it allowed me to delete the Alarm Clock desk accessory, freeing up space in the Apple menu for other DAs (see Figure 1). *JClock* is not a desk accessory, but rather an Init resource; you simply drag it into the System Folder and it's activated when the Mac is turned on. *JClock*, like many of my DAs, is available in the public domain.

9:00 a.m. As I was pondering whether Guppie Rijsttafel would sell in Peoria, my Mac began to beep frantically, drawing my attention to a message on the screen. Things can get pretty hectic around here, so I've installed Imagine Software's *Smart Alarms*, a DA that pops a reminder onto the screen at a specified time (see Figure 2). This message read, "Market research report due by 4:00 this afternoon. Don't forget!" I groaned as I remembered my forgotten task—saved by *Smart Alarms* again!

I clicked the "Thanks! I've dealt with this now" button and then opened *Appointment Diary*, a DA that's included with *Smart Alarms*, to see if I had any other deadlines. Thankfully, the report was my most pressing task, but *Appointment Diary* contained a number of helpful notes that I had entered the week before and had subsequently forgotten about. I noted that I needed to paste a chart of the test-market figures into the report. At least I had that part of the job sewn up; I'd created the chart in *Excel* several days ago. To make sure I wouldn't forget to include the chart, I dragged the cursor across that message and then pressed ⌘-R to turn the calendar entry into a *Smart Alarms* reminder. *Smart Alarms* popped up, and I set



the reminder for a few hours later. I figured that would give me enough time to finish typing the report, barring any disasters.

Security Measures and Housekeeping

9:15 a.m. I needed a morning cup of java to fortify myself for the task ahead. Before leaving my office, I pulled down *ScreenLocker*, a public domain DA I'd gotten at a user-group meeting, and entered my password. I like *ScreenLocker* because it prevents people from other departments from coming over and tying up my machine with their jobs—which happens all too often. My office mates like *ScreenLocker* because it prevents *Smart Alarms* from going off while I'm away from my desk and annoying them with its persistent reminder bells. My Mac protected, I set off for my much-needed coffee.

I returned to my office and typed in my password. As *ScreenLocker* returned my Mac to full operation, I half expected to be nagged with another *Smart Alarms* reminder (Mondays are like that sometimes), but my Mac simply sat and waited for my next move. I wanted to start *MacWrite*, and I knew what folder it was in on my hard disk, but rather than opening all those windows, I simply selected *DiskTop* from my Apple menu and chose *MacWrite* from the applications I had installed in the *DiskTop* menu. A single click on the menu bar and a new *MacWrite* document sprang to the screen.

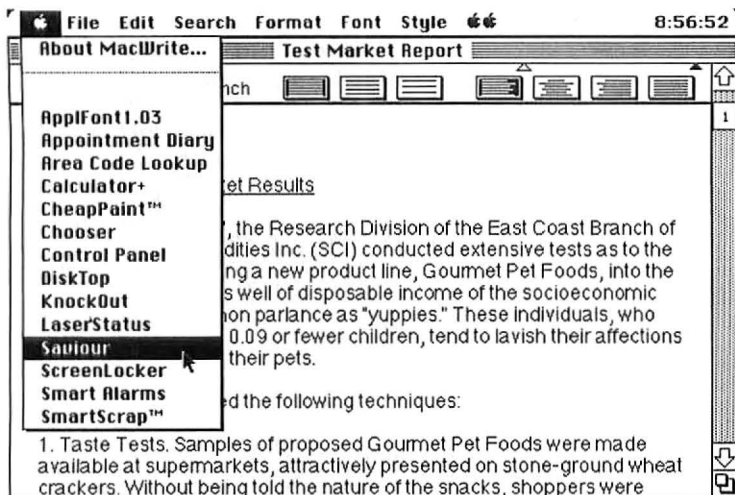


Figure 1

You can install up to 15 desk accessories under the Apple menu. The desk accessories are installed in a System file; any program run with that System will offer those DAs.

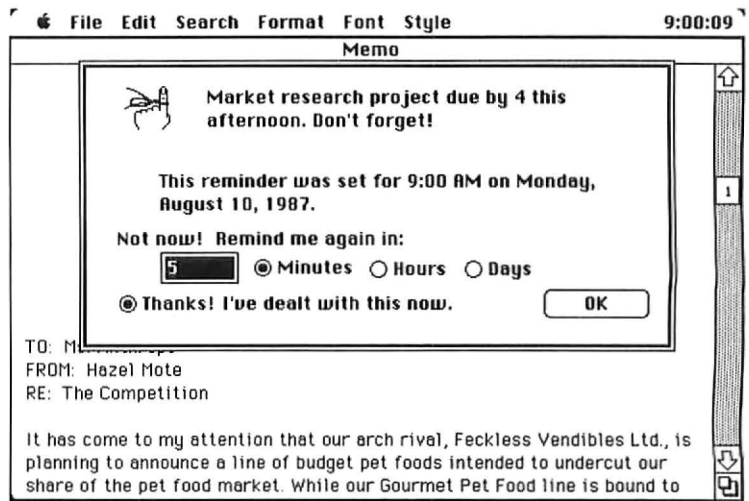


Figure 2

Whether you're absent-minded or just too busy to remember all your appointments, Smart Alarms can save the day. This helpful DA pops reminders onto the screen at specified times.

9:30 a.m. Once in *MacWrite*, I closed the blank document so I could open my notes on the various proposed product lines. I decided to begin with the figures for Kitty Kaviar. Now what folder had I saved the file in? Once again I pulled *DiskTop* from the Apple menu. The *DiskTop* desktop appeared, showing an icon for my hard disk, the Trash Can, and a number of buttons. I double-clicked the hard disk icon, and the list of the files on my hard disk appeared, along with more function buttons: Copy, Move, Delete, and Drive (see Figure 3). First I double-clicked my New Products folder; the file wasn't there. Next I opened my Marketing Plans folder; not there either. I really must take a memory-improvement course.

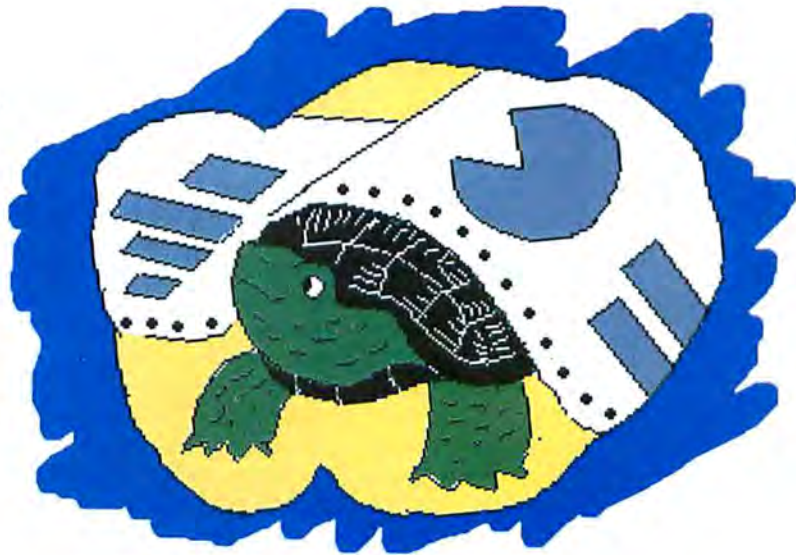
With a sigh I clicked the Find button, and a dialog box appeared so I could enter a search string. I typed in the word *kitty* and changed the search criteria from Match Any to Match Start. I figured that I had probably started the file name with *kitty*, so that would be the most likely way to find it. I clicked the Search button, and soon a diagram of the file structure appeared in the Find window. My hard disk's name and icon appeared at the top of the structure, and a series of folders and names led downward to the file name *Kitty Cologne*. Nope, old product. I clicked the Search button again and *DiskTop* continued downward through my hard disk's file structure. Soon another diagram appeared with the file name *Kitty Kaviar* at the bottom of the structure. That was the one. For some reason I had stored it in my Product Ideas folder—it must have been the Friday night rush to get home. Anyway, now that I had found the file, I wasn't about to leave it in the wrong folder. I clicked the Go To button and *DiskTop* jumped to the Product Ideas folder and selected the

Kitty Kaviar file for me. Next I clicked the Move button, and when the dialog box appeared I clicked my way up through the structure until I reached my Marketing Plans folder. Next I clicked OK and watched as Kitty Kaviar disappeared from Product Ideas and headed for its new location in the correct folder.

Default Font and Faultless Spelling

9:40 a.m. With disk housekeeping out of the way, it was time to start on the report; I couldn't afford to waste a minute. I noted with satisfaction that another of my DAs had saved me precious seconds. I'd installed *Change Font*, a public domain desk accessory by Loftus Becker that lets you set any installed font as the default font. I always work in Helvetica, so this DA saves me the trouble of pulling down the Font menu and switching from Geneva—the Mac's default font—to Helvetica each time I open a new document. I looked around smugly to see if any of my colleagues had noticed this time-saving technique, but they seemed oblivious, as usual.

11:45 a.m. Soon I was immersed in typing a rough draft of my report. I read the first page and saw just how rough it really was. Due at 4:00 p.m. I glanced at *JClock*, ticking away in the menu bar; it was almost noon. I knew there would be little time for lunch. Not a minute to waste, and no time for mistakes either. I pulled *MacLightning*, Target Software's spelling checker DA, from the Apple menu's bag of tricks. After a second or two the *MacLightning* menu appeared to the left of *JClock*. I pulled down the menu and selected Interactive, in order to check my spelling as I typed.



No sooner had I pounded out two paragraphs than *MacLightning* beeped. The Library window opened up and showed me my mistake. Of course *Kaviar* is wrong; it should be *caviar*. I knew that. I clicked a button to add *Kaviar* to the dictionary so *MacLightning* wouldn't bother with that word again.

But a few moments later, as I was typing, "We should be very careful of ..." I was stumped. How do you spell *litigious*? I was drawing a complete blank. I quickly selected Library, typed *latijeous* and clicked the Phonetic Search control. Soon the Phonetic Search window appeared and there it was, right at the top of the list, *litigious*. I copied the word and pasted it into the document so I wouldn't type it in wrong.

Save Me!

While typing along, I remembered what had happened to me as I was scrambling to finish my last report. I'd been working feverishly on the blasted thing for four hours. It was 5:00 in the morning and I was just about finished. I got up to get one final cup of coffee (I drink a lot of the stuff), tripped over the Mac's power cord, and *pow!* four hours of work down the tubes. In my haste, I'd forgotten to save the document even once. I vowed that would never happen to me again, and it hasn't so far, thanks to a public domain desk accessory called *Saviour*. This DA is definitely a lifesaver: just fill in how often (every *n* seconds or every *n* keystrokes or mouse clicks) you want a document saved, and *Saviour* automatically takes care of this troublesome but essential task. If you're typing along when *Saviour* kicks in, don't worry—text typed during the Save operation won't be lost.

12:30 p.m. With *MacLightning*'s help, I continued for another three pages before *Smart Alarms* interrupted. "Don't forget to add the chart," read the re-

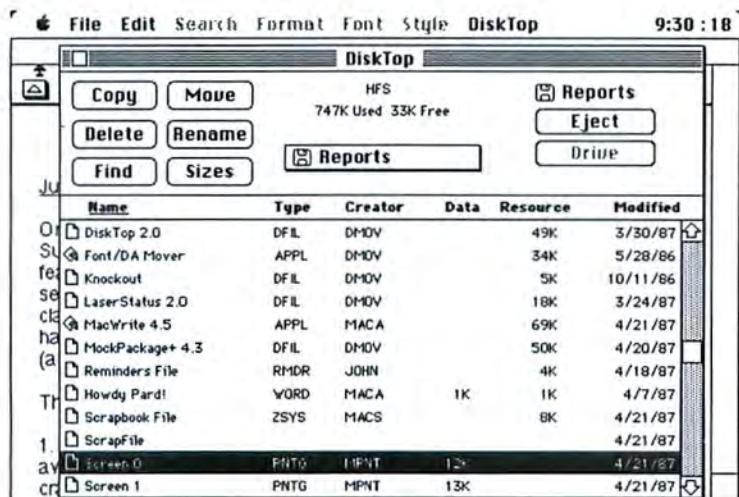


Figure 3

DiskTop lets you move, rename, or even delete files without returning to the Finder. This versatile desk accessory also searches for documents or folders on a hard disk and displays the path to the item it finds.

An Introduction to Desk Accessories

In your travels through any collection of Macintosh disks, you're likely to come across a suitcase icon. If your wanderings take you to online bulletin boards, you can download enough suitcases to make your desktop look like a baggage carousel at La Guardia. The icon represents a desk accessory, a portable application that can be installed in the Apple menu of any Mac program and can run while you're using the program. (Legend has it that the 4-by-4 grid on the suitcase icon represents the Puzzle, a now-extinct DA that was included in early Mac System files.)

The icon is generic, but its contents vary considerably; DAs run the gamut from calculators to graphics applications to games. Some are commercially available, while others are offered as shareware (try before you buy) or in the public domain (free). For a comprehensive list of shareware and public

domain desk accessories, see *Free (and Almost Free) Software for the Macintosh* by Robert C. Eckhardt, Dilithium Press, 1987. In addition to descriptions of DAs, the book provides tips and warnings on installing them.

Most desk accessories take up only 10K or less of memory, allowing you to install several—even on a floppy disk, where memory is at a premium. DAs reside in a hard or floppy disk's System file. Applications opened from that System will contain the installed DAs in the Apple menu. You install or remove desk accessories with Font/DA Mover, which is included on the System disk that comes with the Mac (the Font/DA Mover icon represents a moving van). The following tips will help you use Font/DA Mover to best advantage.

■ As Font/DA Mover's name implies, fonts get top billing.

When you open Font/DA Mover, it displays a list of installed fonts. Clicking the Desk Accessory button switches the display to a list of DAs. To immediately see a list of desk accessories, hold down the Option key when you open Font/DA Mover.

■ Installing or removing desk accessories is easy; simply click the appropriate buttons and the deed is done. Be careful when removing DAs, though—unlike most Mac applications, Font/DA Mover does not ask you to confirm your decision to delete. It's possible to become confused and delete your only copy of a DA by mistake, so always double-check before clicking the Remove button.

■ You can copy or remove more than one DA at a time by sweeping the mouse across a contiguous group in the list or by Shift-clicking several individual DAs (see "The DA Shuf-

minder. Nag nag nag, I thought to myself, as I headed to the cafeteria for a quick bite. I knew my boss would be looking for me—he has a knack for stopping by my desk during those rare periods when I'm away from it—so I called upon *Display Message* to inform passersby of my whereabouts. *Display Message* is a clever little public domain DA that runs any message across the screen, Times-Square style, until you turn it off.

Trusty Sidekicks

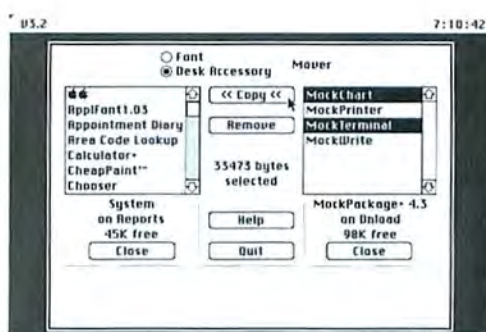
1:30 p.m. When I returned from lunch, I found about a dozen phone messages waiting for me on my desk—all marked *urgent*, of course. Since our company is in California, I had to figure out if any of the calls were from the East Coast in order to return them

before 2:00 p.m., California time. As usual, there were two or three unfamiliar area codes in the bunch. Fortunately, I had installed *Area Code Lookup*, a desk accessory included with Borland's *SideKick*. I simply selected the DA and typed in each unknown area code; *Area Code Lookup* immediately gave me the code's locality (state), region (major city), and time zone.

One of the messages was from a caller in New York, so I quickly dialed the number. Good thing, too—it was our East Coast sales rep with some new survey figures on Kibble with Black Bean Sauce and Mesquite-Grilled Chew-Bones, two items we'd added to Canine Cajun Cuisine at the last minute. I whipped out *Calculator+*, another *SideKick* DA, and made some quick calculations as I talked. (I replaced the Apple menu's standard Calculator with *Calculator+* because I like seeing a record of my calculations on the calculator's "paper tape" display; I can even print out the tape if I need a permanent record.)

The DA Shuffle

Apple's Font/DA Mover lets you copy several desk accessories at once to a System file; hold down the Shift key and select the DAs you wish to copy or delete.



file"). Font/DA Mover displays the amount of free space available, as well as the space required for the selected DAs.

■ When a desk accessory has been installed with Font/DA Mover, the suitcase icon is no longer required. Delete it from your disk to save space. Once you're finished shuffling DAs in and out of a System, Font/DA Mover is also a space-waster; remove it from your disk to regain about 33K (make sure you have a copy somewhere).

■ Font/DA Mover allows you to install up to 15 DAs at a time.

(This number is sufficient for most people, but see "Breaking the DA Limit" for tips on exceeding the 15-DA ceiling.) You may want to parcel out DAs, however, using a customized set of DAs for different applications. You can use Font/DA Mover to install DAs directly in an application. Simply hold down the Option key when you click one of the Open buttons, and Font/DA Mover will open any file on disk instead of only the System, font, or DA files. Using this technique, for in-

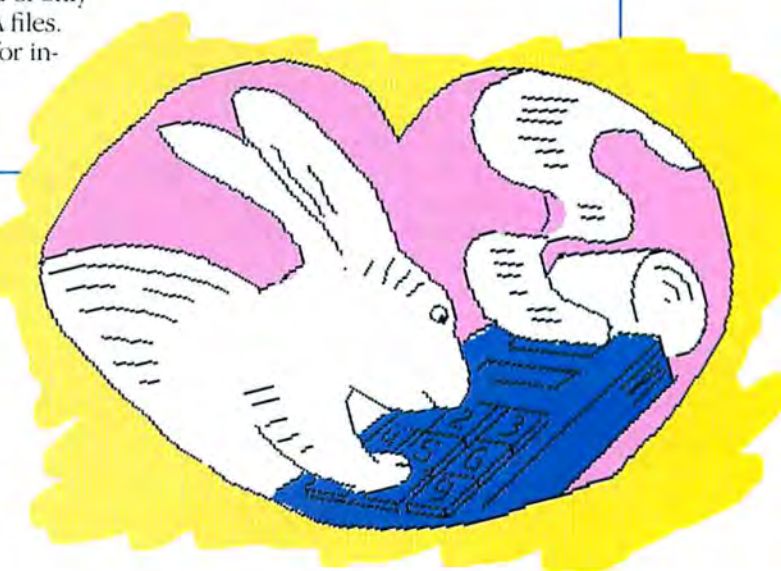
stance, you can install *Mac-Lightning* directly into *Mac-Write* or *Word*. If these are the two applications in which you're most likely to use *Mac-Lightning*, there is no reason why it should take up a DA slot in your System file. Another option is to remove the Control Panel from your System file and install the desk accessory directly in the Finder.

■ You can pack a suitcase full of desk accessories, allowing you to open an entire set of DAs at once and install them on a particular disk. Use Font/DA Mover's New command to create a file that can be filled with selected DAs and given a descriptive name. Opening the suitcase icon with Font/DA Mover displays a list of the DAs the suitcase contains.

—Erfert Nielson

An Auxiliary Apple Menu

2:00 p.m. I realized that my painstakingly prepared *Excel* chart was suddenly obsolete, now that I had new information. Time was running out, and I needed to slap a chart into my report. Rather than open *Excel* and redo the chart, I decided to stay in the current document and dash off a new chart with CE Software's *MockChart*, a shareware desk accessory. But I don't use *MockChart* too often, so it wasn't in the Apple menu, which was filled to capacity with 15 DAs. Happily, one of them was *Double Apple*, a public domain DA by Stefan Bilaniuk. Although you can normally install a maximum of 15 desk accessories at once (see "Breaking the DA Limit" for tips on how to add accessories), *Double Apple* lets you get around this limitation by opening DAs that are not installed in the Sys-



tem file. If a DA's suitcase icon is present on a disk, it can be opened with *Double Apple*: select *Double Apple* from the (single) Apple menu, and a *Double Apple* menu appears in the menu bar. A dialog box allows you to open one or more DAs and use them until you quit the application you're using or deactivate *Double Apple*.

Breaking the DA Limit

Macintosh desk accessories allow you to work more efficiently, opening a variety of tools without leaving a program. But with power comes danger. The Macintosh operates through a system called *shared resources*. In other words, the Mac shares common program routines like windows and menus with the programs that run on it. Every new DA you add is just one more program for the Mac to share resources with—one more set of “calls and events” to keep track of. Basically, it’s a big juggling act. And every new plate that’s added to the juggler’s load increases the risk of a crash. This is the reason Apple limited the number of DAs you can install in the System file to 15.

The situation improved dramatically with the advent of the Macintosh Plus. It had more memory, more ROM, and in essence was a better juggler. Now, with the more powerful SE and Mac II, the 15-DA limit really seems outmoded. So naturally, developers and hackers being what they are, techniques to break the 15-DA limit have been developed.

DA Installer+, from Dreams of the Phoenix, lets you install up to 36 desk accessories. This number is a little misleading, however, because although you certainly can install 36 DAs, you probably won’t be able to get all of them to work. The reason for this is simple. The main portion of a desk accessory resides in a resource known as a DRVR (short for *driver*), in the System file. There are 47 DRVR slots altogether, only 15 of which (12 through 26) are for DAs. The

others are used for printer functions, SCSI devices, and AppleTalk, and some are simply reserved by Apple for future expansion. *DA Installer+* and other programs like it break the 15-DA limit by installing DA DRVRs in the least critical of the extra DRVR slots. But some DAs just will not operate in, say, a SCSI device driver slot. Such a DA might show up in your Apple menu, but it won’t open.

In fact, after considerable effort, I was able to install no more than 22 desk accessories (that worked after installation) using *DA Installer+*. Another problem with *DA Installer+* is that it always opens the start-up volume’s System file automatically. And although there is a Switch System command that lets you work on the DAs in a different System file, it usually bombed when I used it. I also found there are fewer problems in the long run if I use one and only one method of installing extra DAs. For instance, if you choose *DA Installer+*, always install and remove your DAs with that program. If you prefer Font/DA Mover, then use that program exclusively. Don’t mix and match your programs, or your System file will eventually become corrupted.

Another method for working with more than 15 DAs at a time is to use a program that lets you run uninstalled DAs. One of the best of these is a public domain program called *Double Apple*. It’s a DA that lets you run as many as 10 or 12 uninstalled DAs. When you choose *Double Apple*, it lets you select a Font/DA Mover file. *Double Apple* installs the DA or DAs within the selected Font/DA Mover file in a menu. *Double Apple* is great for infrequently used

DAs, such as the Control Panel or Key Caps. Simply install them in a Font/DA Mover file entitled Other DAs. (To create a Font/DA Mover file, click one of the Font/DA Mover’s Open buttons and then click New in the dialog box that appears. After you click New, you can name the file and start copying DAs into it as if it were the System file. When you return to the desktop, you’ll see your new DA file as the familiar suitcase icon.)

You may encounter problems if you attempt to run multiple DAs from the regular Apple menu and *Double Apple* at the same time. But as long as you’re careful, and keep its limitations in mind, *Double Apple* can be a useful addition to the Apple menu.

If you’re feeling adventurous, an online article entitled “Installing More DAs” (by William P. Steinberg, CompuServe ID #76703,1027) provides yet another option. It tells how to use *Fedit*, *ResEdit*, and a modified version of Font/DA Mover to install up to 36 DAs in your System file. This clearly written article will teach you a great deal about the Macintosh system and will give you complete control over DA resources. But remember, anything that involves *Fedit* or *ResEdit* usually isn’t for the squeamish. Always hack around on a backup copy so you won’t destroy an important disk should you make a mistake.

So now you know. There’s no reason to restrict yourself to a measly 15 DAs—you can break the limit. Go ahead, all your friends are doing it.

—David Simerly

Charts, Graphics, and a Better Scrapbook

As I was saying, I used *Double Apple* to open *MockChart*, and plugged in the new figures. I created a pie chart, adding titles reflecting the new pet food lines, and copied the chart to *SmartScrap*, an excellent desk accessory from Solutions International. I've replaced the original Scrapbook with *SmartScrap*, which is much more versatile. For example, this DA enables you to create multiple scrapbooks, useful for filing large collections of artwork; *SmartScrap* provides a scrollable, resizable window, an improvement over the Scrapbook's fixed window; and *SmartScrap* lets you select a portion of a scrapbook entry, whether text or graphics.

2:45 p.m. I wanted to insert a note into the chart, so I opened MacroMind's *CheapPaint*, which crams most of *MacPaint*'s functions into a desk accessory (see Figure 4). I added a line of text with *CheapPaint*'s CheapFont text option (those guys at MacroMind certainly have a humble approach) and drew a small illustration to emphasize the chart's projections. *CheapPaint* automatically opens illustrations stored in the Scrapbook; fortunately, it works fine with *SmartScrap*. The altered chart was automatically pasted back into *SmartScrap*, which I opened once I was ready to paste the chart into the report. I decided that the illustration I'd added was unnecessary, so I used *SmartScrap*'s selection rectangle to copy and paste only the portion of the chart I needed. Just as I pasted it in, my disk crashed. I can't place the blame on any single desk accessory—sometimes a crash will occur if a System is crammed full of DAs. I rebooted, reopened the document, and said a prayer of thanks to the unsung heroes of public domain software: *Saviour* had done its job, and I didn't lose a word of the report.

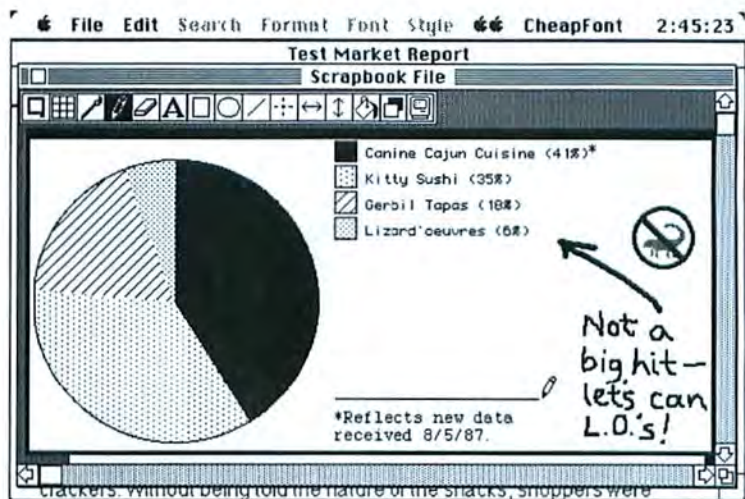
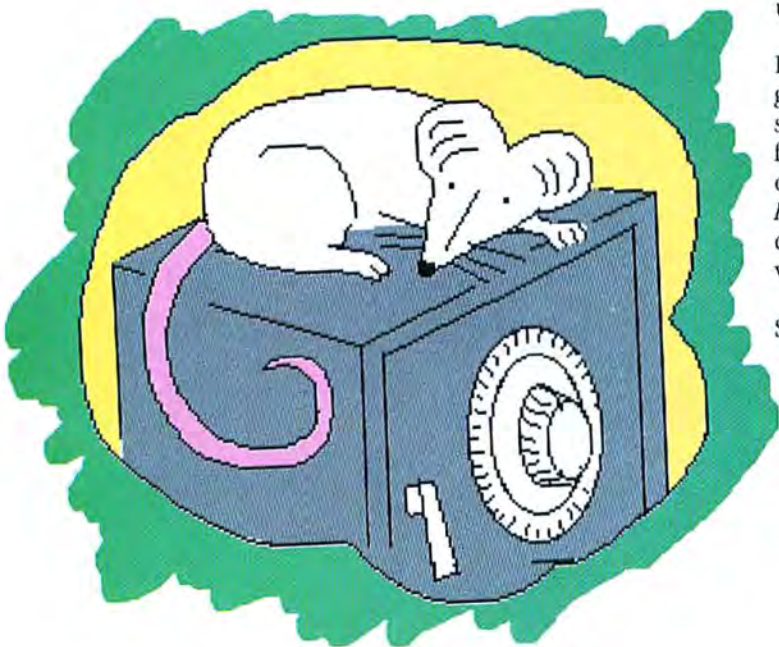


Figure 4

CheapPaint offers many of *MacPaint*'s tools in a 27K desk accessory. Use *CheapPaint* to produce sketches to place in reports or correspondence, or to touch up artwork created with programs such as business graphics applications.

Printing Out and Knocking Off

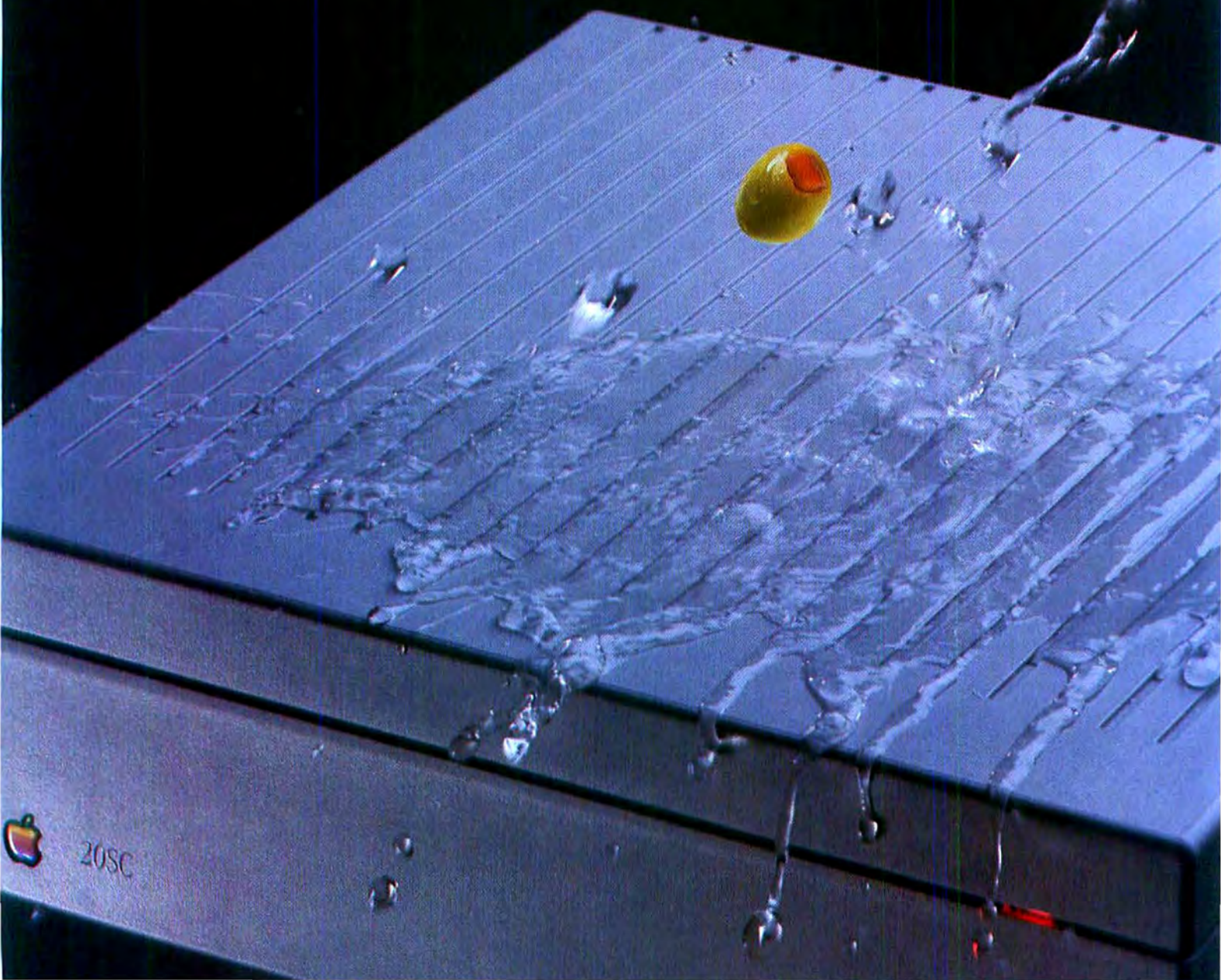
3:35 p.m. Finally, I was ready to print my report. We've got 12 Macs networked to a single LaserWriter, so it's not unusual for the printer to be busy. To check, I opened *LaserStatus*, yet another CE Software desk accessory (this one came as a bonus when I honorably paid for my shareware copy of *DiskTop*). The *LaserStatus* window informed me that the printer was indeed busy; more important, it told me the name of the person using it. I ran over to that person's desk and begged him to stop printing for five minutes so I could print my report. He obliged, and I had a good ten minutes left before my 4:00 p.m. meeting.

What did I do with that spare time? Need you ask? I used another desk accessory, of course. I played a few games of *Knockout* to soothe my shattered, caffeine-soaked nerves. *Knockout*, a public domain offering from Andy Stadler, presents a paddle, a ball, and a wall of blocks that must be wiped out for a win. If you play *Knockout* at the office, I suggest you turn the sound off; you wouldn't want people to accuse you of not working hard enough, would you? □

See *Where to Buy* for product details.

Safety Net for Storage

*Worried about losing the
contents of your hard disk?
Here's a guide to choosing
a stand-alone tape drive.*





by *Lon Poole*

Tape drives are hard to beat for hard disk backup. In most cases just one tape provides quick and efficient backup of an entire hard disk; even large disks only require a few tapes. In comparison, most floppy-disk schemes require more floppies than most people use in a year.

This article examines nine tape drives currently available for the Macintosh: the ADON TD-40, Apple's Tape Backup 40SC, General Computer's HyperTape, Mirror Technologies' Magnum Tape 40, The NuData Data File, Peak Systems' Plus-60 Tape, Peripheral Land's MacBack Plus 40, Relax Technologies' Tape 60 Plus, and SuperMac's DataStream. It also looks at the uses of tape drives and explains the features you should watch for when buying one. (For a review of the Mirror and Peripheral Land units, see "Two Tapes in Review.")

Backup King and More

Although most people think of tape drives as backup devices, they have other valuable uses. For example, tapes can be used for distributing large databases or collections of software. A handful of floppy disks can't store nearly as much, and hard disks are simply too bulky—and delicate—to ship in quantity.

Some tape drives allow tapes to be used like very large floppy disks. An inserted tape appears as a mounted volume on the Finder's desktop as well as in Open and Save dialogs. But tapes are generally much slower than floppy disks. In fact, they are so slow as to be unusable on a regular basis. For instance, after you insert a tape, its icon takes two to five minutes to appear on the Finder's desktop.

With or without the tape-as-disk feature, you can use tapes to extend the virtual storage capacity of your hard disk. You can store on tape several megabytes of information that you don't need on a daily basis, then quickly copy it to your hard disk when you do need it (making room on the hard disk by backing up and then deleting files you don't need at the moment).

Evaluating Features

On the surface, tape drives may seem to differ only in style and price. And it happens that the NuData and ADON units are remarkably alike, as are the Peak and Relax drives. Except for these fraternal twins, however, the tape drive family is a diversified lot, as evidenced by the drive mechanism and the backup and restore software used by individual models. Each drive comes with one or more application programs that back up information from disk to tape and restore information in the other direction. The features and user interfaces of this software, more than anything else, give each tape drive its personality.

The tables ("Tape Drives Compared" and "Backup Software") lay out tape drive and software features for easy comparison. The rest of this article explains the features so that you can decide which are important to you.

An Image a Day

There are two basic backup and restore methods. The image method works with an exact copy of the disk surface. The file-by-file method copies files and folders one at a time. In addition, there are variations and enhancements of each basic method.

The image method has two things going for it: it's simple and it's fast. You don't spend time selecting the

folders and files you want backed up or restored, and the program doesn't have to thrash through the disk directory to find each file's disk location. There's no faster way to copy an entire disk.

Because the image method is all or nothing, you can't use it to rescue good files from a partly corrupted disk. Likewise, if anything happens to your backup tape, you probably won't be able to restore any part of the disk from it.

Atypically, ADON and NuData image backups do not suffer from the common all-or-nothing syndrome. You can access and restore individual files from them using the Finder. The ADON and NuData drives do a basic image backup, copying the entire disk surface to the tape, including unused disk sectors. For this image to be restored, the destination disk must have at least as much usable space as the source disk had. This requirement may interfere with restoring a disk after formatting it. During formatting, weak sectors are marked unusable, which decreases the usable disk space. Furthermore, restoring an exact image backup to another disk may be impossible, because disk drive capacities vary slightly even among different drives of the same make and model.

The General Computer, Peak, and Relax drives use a faster variation of image backup, which is based on a high-water mark, stopping the backup just past the last sector used. If you've only put 20 megabytes on your 40MB disk, for example, the high-water method takes half the time of the basic method. You're also less likely to have trouble restoring, because the backed-up image will be smaller. Once you've filled the disk—even if you subsequently delete files—the high-water method copies the whole disk, just like a basic image backup.

The Mirror drive uses yet another image-backup variation, the fastest of all. It only copies the disk sectors that are currently in use.

The two fastest image methods assume that the map of active disk sectors, which resides on the disk itself, is accurate. In the unlikely event of the disk map's sustaining damage, only a complete image backup makes an accurate copy for later disk-rescue attempts.

File-by-File Backup

Another method of backup and restore, the file-by-file method, gives you a great deal of flexibility. You select the files and folders that need backing up or restoring. The time you spend doing that usually pays off in a shorter backup or restore session. However, if you pick most or all of the files, the session actually takes longer than an image backup or restore.

If a disk becomes partly damaged, you can often back up the undamaged files using the file-by-file method. Similarly, you may be able to restore some good files from a partly damaged file-by-file backup.

Backing up an entire disk using the file-by-file method is slower than using the image method, but

Both General Computer's HyperTape and Peak's Plus-60 Tape let you create an image, file-by-file, or incremental backup. Peripheral Land's drive only does an image backup, but it does so very quickly.



often pays off by improving disk performance when you restore. The process consolidates fragmented files, whose contents have been dispersed across the disk, into contiguous disk sectors. As a result, the disk can retrieve them more quickly.

Saving the Changes

An important variation of the file-by-file method is the incremental method, in which the backup program decides which files to copy based on when each was last modified. A true incremental backup only copies a file if it has changed since it was last backed up.

Peripheral Land's software defines *incremental* differently. Rather than referring to the date each file was last backed up, it uses a date you specify. Any files changed after that date are backed up. Many other backup programs offer this user-specified date method along with a true incremental method.

Restoring an entire disk from an incremental backup is a complex process. You have one tape containing the whole disk and several update tapes that contain progressively newer vintages of some files that are also on the whole-disk tape. You would usually want to end up with the most recent revision of each file restored to the disk. Most restore applications have you decide which version of a file you want to restore. The software used by NuData and ADON optionally restores the most recent vintage it finds, while a Super-Mac backup always restores the most recent one.

Automating Backups

Manufacturers can't add much value to tape drives with hardware features like autofocus and film advance. They can compete by adding software features, though. For example, you'll find a timer in more than half the backup applications. You set it in advance for the time you want a backup to occur, such as the middle of the night. It's just like taping a movie at 3 a.m. on your VCR while you sleep. An error log keeps track of missing files and other problems so that the backup can continue.

Another useful feature alleviates the burden of making the same complex file and folder selections every time you back up or restore. Instead, you make the selection once and save it as a script. Scripts, or macros as they're sometimes called, make it simple to back up a few files from scattered folders.

A less common feature is the ability to include or exclude a file according to the kind of file it is: system, application, or document. A few programs let you specify by name what to back up or restore. The ADON and NuData programs, for example, let you include or exclude files and folders that begin with, end with, or contain the name fragment you type.

Some programs let you select more than one volume for a single backup. Used in conjunction with a timer, this feature is especially useful for people with partitioned hard disks or multiple hard disks.



A few programs let you include or exclude files based on either or both of two hidden attributes called Type and Creator, which specify the type of file and which application created a document, respectively.

Append or Overwrite Tape

Some applications give you a choice of starting a backup at the beginning of a tape, overwriting anything previously recorded, and appending to the end of the tape. Others always overwrite, or always append. The advantage to appending is that you can back up several small volumes on a single tape; however, it takes more time to restore from a backup that starts in the middle of the tape. It may take several minutes to walk through the tape looking for the backup you want to restore. (Keep in mind that a program without an overwrite option can fake it by erasing the tape before starting, then appending the next backup at the beginning.)

Disk Drive and Network Compatibility

All the features in the world do you no good if the software won't work with your disk. As you'd expect, all the tape drives work with SCSI disks, an Apple Hard Disk 20 attached to the disk port, and disks attached to a serial port. Support for MFS volumes is less universal. While not too many people are likely to buy tape drives to back up their single-sided floppies, some do have MFS partitions on their hard disks.

Network compatibility varies. Almost all programs can do an image backup and restore of an *AppleShare* file server, provided the network is shut

Left to right: Mirror's Magnum Tape 40, Kamerman Labs' Cirrus 40T, and NuData's Data File all will be compatible with Apple's Tape Backup 40SC (bottom center).

Tape Drives Compared

Company	ADON	Apple	General Computer	Mirror Technologies
Product name	TD-40	Tape Backup 40SC	HyperTape	Magnum Tape 40
List price	\$1495	\$1499	\$1399	\$1395
SCSI ports (number and type)	two 50-pin	two 50-pin	two 50-pin	one 50-pin
SCSI ID change method	internal switches	back panel switch	back panel switch	internal jumper
SCSI termination method	internal (removable)	external (not included)	external (included)	internal
Size (w × h × d in inches)	9.5 × 3.5 × 12.1	9.7 × 3.07 × 10.5	3.9 × 8.3 × 13.3	3.25 × 7 × 13
Weight (in lbs)	7.5	7.3	7	9
Power requirements	110/220 volts 50/60 Hz (internal jumper select)	85 to 270 volts 47 to 64 Hz	90 to 130 volts 60 Hz, or 180 to 260 volts 50 Hz (2 models)	110/220 volts 50/60 Hz (internal jumper select)
Fan noise	moderate	moderate	moderate	moderate
SCSI cable supplied	none	none	none	SCSI-to-SCSI
Warranty	180 days	90 days	1 year	1 year
Tape	DC 2000 cartridge (QIC-100 format)	DC 2000 cartridge (QIC-100 format)	DC 2000 cartridge (QIC-100 format)	DC 2000 cartridge (QIC-100 format)
Formatted tape capacity	38.5MB	38.5MB	38.5MB	38.5MB
Maximum backup capacity (multiple tapes)	no limit	no limit	no limit	no limit
Mountable volume (icon on desktop)	yes	no	no	no
Reads tapes written by other drives	NuData, SuperMac; will be Apple-compatible	must conform to Apple format	will be Apple-compatible	will be Apple-compatible
Starts Mac with tape power off (Mac Plus with latest ROM)	yes	yes	yes	yes

down first. Because of *AppleShare*'s parallel directory structure (PDS), however, only a few programs, such as the one from Peripheral Land or SuperMac's Network DiskFit, can back up the server using a file-by-file method. Restoring an *AppleShare* file server from a standard file-by-file backup destroys the PDS and the associated file-ownership and access-privilege information.

A few applications, including Diversified I/O's SoftBackup, let you back up and restore over an *AppleShare*, *TOPS*, *MacServe*, or other network. You can hang a tape drive on your local Mac and back up files and folders for which you have read/write privileges on a remote file or disk server. However, in doing so you may bring the network to its knees and lose points in the network users' popularity contest.

Restoring Start-up Disks

A start-up disk must contain special information called boot blocks. These blocks are written in the first sector of the disk when you copy a System file onto the disk using the Finder. An image restore automatically includes the boot blocks. Most but not all the file-by-file restore applications also write the boot block information. Without it, you won't be able to use

the disk to start the Mac. However, you can write boot blocks on a disk that's missing them by dragging the System file from that disk to another disk, and then back again.

Reliability

The right software features may help you make the right backup, but they won't make the backup reliable. Reliability depends on hardware. For example, almost all tape drives have a fan to control temperature fluctuations inside the cabinet (as the temperature rises and falls, tape stretches and shrinks, making it less reliable). If fan noise bothers you, pick a tape drive that can be switched off and still permit the Mac to start up.

Drives that use the Teac mechanism format tapes on the fly during the backup process. Formatting a DC 2000 cartridge is a separate operation that takes about 35 minutes.

The DC 2000 cartridges have a 50 percent data-redundancy factor. This means that if an area of the tape goes bad, the drive can probably recover the data from a redundant copy elsewhere on the tape. The data redundancy exists partly out of necessity. The 3M mechanism records 24 tracks on the ¼-inch tape in the DC 2000 cartridge, compared to 9 tracks on ⅜-inch tape in a Teac cassette.

NuData	Peak	Peripheral Land	Relax	SuperMac	Kamerman Labs*
Data File	Plus 60-Tape	MacBack Plus 40	Tape 60 Plus	DataStream	Cirrus 40T
\$1295	\$1295	\$1295	\$1595	\$1299	\$1499
two 50-pin	two 50-pin	two 50-pin	two 25-pin	one 50-pin	two 25-pin
back panel switch	back panel switch	internal jumper	back panel switches	internal jumper	internal switches
internal (removable) or external (not included)	internal (removable)	internal (removable)	internal (removable)	internal	internal (removable)
6.3×2.8×8.3	9.7×3.5×11.25	9.7×3.2×10	10.2×2.6×12.8	6.5×3×10.75	3×6×9
4.5	9	6	9	4.9	4.1
110/220 volts 50/60 Hz (internal jumper select)	110/220 volts 50/60 Hz	110/220 volts 50/60 Hz (internal jumper select)	110/220 volts 50/60 Hz (internal jumper select)	110/220 volts 50/60 Hz (internal jumper select)	110/220 volts 50/60 Hz (internal jumper select)
moderate	moderate	quiet	no fan	moderate	(not evaluated)
Mac-to-SCSI or SCSI-to-SCSI	SCSI-to-SCSI; Mac-to-SCSI available	none	25-pin to 25-pin	SCSI-to-SCSI	25-pin to 25-pin
1 year limited	1 year	1 year	120 days	1 year	1 year
DC 2000 cartridge (QIC-100 format)	CT-600 digital cassette	CT-500 digital cassette	CT-500 digital cassette	DC 2000 cartridge (QIC-100 format)	DC 2000 cartridge (QIC-100 format)
38.5MB	60MB	44MB	60.11MB	38.5MB	38.5MB
no limit	no limit	no limit with image; 1- tape limit with file-by-file	no limit	no limit	1 tape; no limit
yes	no	no	no	yes; caches tape directory on disk	next version yes (can be partitioned)
ADON, SuperMac; will be Apple-compatible	Relax Tape-60 Plus	no	peak	ADON, NuData, will be Apple-compatible	will be Apple-compatible
yes	no	no	no	yes	yes

* Cirrus 40T received too late to review. Information included in table for comparison.

Speed and Capacity

All else being equal, the sooner you finish the onerous chore of backing up your disk, the better. Drives that use the DC 2000 create an image backup at 800K to 1MB per minute. Drives that use the Teac cassettes can back up an image about twice as fast.

Tape drive capacity is not a major issue for backups, because most software automatically asks for additional tapes as needed. Nevertheless, it makes sense to get a tape drive with at least the capacity of your largest disk drive, if possible. Drives that use the 3M mechanism get an awkward 38.5MB out of a DC 2000 cartridge. That fits a 40MB disk like pants on a growing child. But 3M will soon have competition that gets 43MB out of the same DC 2000, according to one tape drive manufacturer.

Installation

Installing a tape drive is fairly easy. You have to be careful to get the right cable, since there are two types of SCSI connectors in use on SCSI devices for the Mac. The Mac itself has a 25-pin SCSI port, and so do a few disk and tape drives (the Relax tape drive, for example). Most drives, though, have 50-pin ports. So for the first device you usually need a Mac-to-SCSI cable, which has a 25-pin connector on one end and a 50-pin



Both Adon's TD-40 (left) and SuperMac's DataStream (top right), like Apple's drive, use the DC 2000 cartridge. Relax's Tape 60 Plus uses a digital cassette.

Backup Software

Manufacturer	ADON (image)	ADON (file-by-file)	Apple	General Computer	Mirror (image)	Mirror (file-by-file)
Backup/Restore Methods						
Image	•		•	•	•	
Selected file/folder	restore only (use Finder)	•	•	•		•
Automatically backs up files changed since last backup		•	•	•		•
Automatically restores most recent backup of each file		optional				
Timed		4		•		2
Script		•		•		2
Other criteria		type of file		type of file; date; time		
Disk Drive Compatibility						
SCSI disk	•	•	•	•	•	•
Apple Hard Disk 20 (disk port)	•	•	•	•	•	•
Serial-port disk	•	•	•	•	•	•
800K floppy		•	•	•	•	•
400K floppy (MFS)		•		•		•
AppleShare file server	image only		image only	image only	image only	
Owned folders from any AppleShare node (FIB only)		•		•		•
Remote file/folder/volume over other network	all	all		Hypernet, TOPS, MacServe, Keeper	MacServe, ⁶	MacServe, ⁶
Other				password validation		
Max. number of volumes available for backup/restore	six	six; ⁷	no limit	no limit	no limit	no limit
User Interface						
Progress monitoring	•	•	•		•	•
Can cancel during backup or restore	•	•	requires confirmation	•	•	•
Advises what tape contains before beginning	uses Finder	•	•	•	4	•
Advises you to label tape after backup		•		•	4	4
Generates hierarchical directory listing		•		directory of file-by-file tape		disk directory in text or Acta format
Logs files backed up/restored		•		file-by-file		
Logs files not backed up/restored		•		•		•
Logs errors		•		optional		
General Features						
Appends or overwrites tape	overwrites	appends	optional append; image overwrite	overwrites	always overwrites	optional
Can restore to another volume	uses Finder	all or part	file-by-file and image	•	•	adds to existing files
Software developed by	Carl Nelson and Dennis Krueger	Carl Nelson Associates	Apple	D-K Research	Mirror	Mirror

NuData (image)	NuData (file-by-file)	Peak	Peripheral Land	Relax	SuperMac	Kamerman Labs
•		•	image only	•		•
restore only (use Finder)	•	•	file, folder, or volume	•	restore only (use Finder)	restore from Finder; ¹
	•	•		•	two versions	2
	optional				•	3
	4	•	separate application	•	•	
	•	•	2	•		
none	type of file; date	type of file; date; time	date	type of file; date; time	type of file	type of file; file/ folder name; date
•	•	•	•	•	•	•
•	•	•	•	•	•	from Finder; ⁵
•	•	•	•	•	•	•
	•	•	•	•	•	•
image only		image only	image or file-by-file	image only	Network requires DiskFit software	image only
	•	•	•	•	•	from Finder; ⁵
all	all	TOPS, MacServe, Keeper	TOPS, Corvus, OmniNet	TOPS, MacServe, Keeper	none	MacServe; ⁶
six	six; ⁷	no limit	eight with image; no limit with file-by-file	no limit	no limit	password protection no limit
•	•		file-by-file only		•	•
•	•	(eject tape)	•	(eject tape)	•	
uses Finder	•	•	•	•	•	•
	•	•		•	•	
	•	directory of file-by-file tape		directory of file-by-file tape	•	
	•	file-by-file		file-by-file	quantity only	
	•	•		•	quantity only	
	•	optional		optional	optional	
overwrites	appends	overwrites	image overwrite; other methods	overwrites	optional	appends
			append			
uses Finder	all or part	•	•	•	•	•
Carl Nelson and Dennis Krueger	Carl Nelson Associates	D-K Research	Peripheral Land	D-K Research	SuperMac	Kamerman Labs

¹File-by-file next version.

²Next version.

³Optional next version.

⁴Future version.

⁵File-by-file and image next version.

⁶TOPS next version.

⁷No limit next version.

Two Tapes in Review

Compared to disk drives, tape drives for the Macintosh have been a long time coming. At this writing, it was too early to review the file-by-file backup and restore capabilities of most tape drives. However, file-by-file software for the Mirror Technologies Magnum Tape 40 and the Peripheral Land MacBack 40 had been shipping for several months. This review evaluates those two tape drives.

The Hard Part

The Mirror and Peripheral Land tape drives are quite different physically. The Mirror drive is tall and thin, so it takes up little desk space. It has only one SCSI port and must therefore be the last device in the SCSI chain. It uses DC 2000 tape cartridges that store up to 38.5 megabytes each, the same as Apple's tape drive. Mirror intends to make its Magnum Tape 40 compatible with Apple's tape drive as soon as Apple publishes the necessary information.

The Peripheral Land drive fits under a Mac Plus or SE, taking up no additional desk space. But if you don't want to raise the screen 3 inches, the drive claims quite a bit of real

estate. Peripheral Land uses fast Teac digital cassettes that store up to 44MB each. The tapes are interchangeable only among MacBack Plus 40 drives.

The two tape drives do have some physical similarities. Both have adjustable SCSI ID numbers and terminators inside their cabinets. A technician can set the ID to eliminate conflicts with other SCSI devices. Peripheral Land's terminators also must be removed if you hook up the drive between two other SCSI devices.

The manufacturers claim their tape drives will back up almost any volume that appears on the desktop (see the table "Backup Software" for more details). I had no trouble using either tape drive with a DataFrame 20XP, an ADON 30, an Apple Hard Disk 20 connected to the disk port, or 800K floppy disks. The Peripheral Land drive backs up and restores remote volumes over a TOPS network; the Mirror drive does not work with TOPS, but Mirror expects to fix that this summer.

Being Selective

Peripheral Land's MacBack Plus

comes with three applications, two for backup and one for restore. One backup application makes an image backup. Once you set the time and select a volume, you cannot cancel gracefully—you must reset the Mac.

The main Peripheral Land backup application lets you make an image backup or back up one file, one folder, or one volume. Because you can only back up one file or folder at a time, backing up several files or folders can get tedious. Perhaps the script feature Peripheral Land plans to add will address this shortcoming.

The third Peripheral Land application restores backups made by either backup application. It can restore an image, file, folder, or volume backup, and can also restore single files or folders from a volume backup. However, it cannot restore a batch of files or folders at once.

Mirror furnishes two applications with the Magnum Tape 40. One, intended primarily for backing up an entire *AppleShare* file server, performs an image backup or restore. The other backs up and

connector on the other. For the second device, you usually need a SCSI-to-SCSI cable, which has 50-pin connectors on both ends.

Most drives have two ports, but a few have just one. The single-port device must always be the last in the chain. Be careful not to get more than one caboose, or you won't be able to chain all your SCSI devices together.

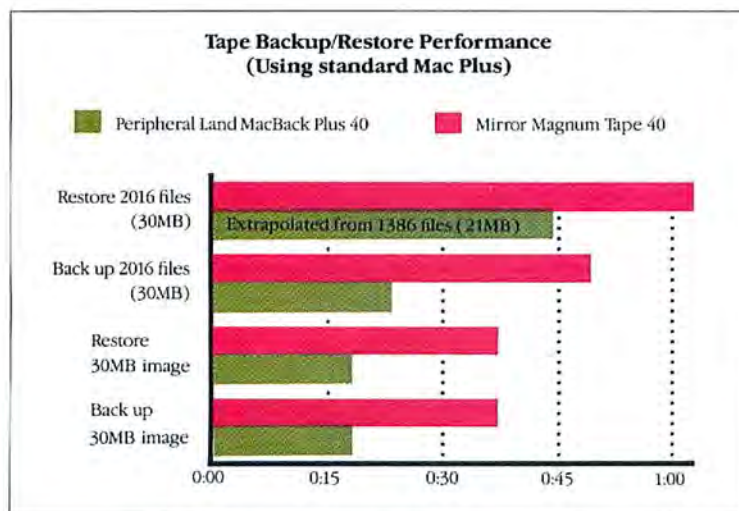
Each SCSI device must have a unique ID number between 0 and 6. The Mac also has an ID number, 7. It doesn't matter which device has what number, but each must have a different one or the Mac won't be able to start up. Many tape drives have a switch on the front or back panel for setting the ID number. A few

drives must be opened to gain access to jumpers or switches inside the cabinet.

Also, if you attach more than two SCSI devices to the Mac, only the two end devices should have terminators. Some drives have removable terminators inside their cabinets. Others use an external terminator between the SCSI port and cable.

Tape Interchangeability

If you plan to use tapes to acquire or distribute programs or data, it's best to get a drive that uses DC 2000 cartridges. Because Apple uses them in its drive, they will become the de facto standard. All manufacturers contacted who use the DC 2000 cartridge intend to have some sort of compatibility, even if it's just a util-



restores file by file. It's easy to use because you select any combination of files and folders in a dialog box much like the standard Open dialog.

Performance

The Mirror drive takes twice as long to complete a 30MB image backup or restore as the Peripheral Land drive does (see "Tape Backup/Restore Performance"). The Peripheral Land drive would probably also do file-by-file backup and restore about twice as fast as the Mirror drive. However, direct com-

parison of file-by-file times for the same test disk was impossible, since I couldn't get the MacBack Plus 40 to successfully back up and restore 30MB and 2016 files. According to Peripheral Land, the current version of the backup software can back up no more than 1500 files; however, this limit will be raised in the next version.

A file-by-file restore from a Mirror drive includes writing the start-up information, or boot blocks, so the restored disk can be used to start the Mac (see "Safety Net for Storage" for details). The Periph-

eral Land drive does not write the boot blocks.

Error handling

Neither Mirror nor Peripheral Land applications were very forgiving. They responded with vague or cryptic messages to errors such as using a write-protected tape during backup or a full-destination disk during restore. I encountered several fatal errors during backup and restore with both drives. Both companies said they are improving error handling.

Recommendations

Both the Mirror Magnum Tape 40 and the Peripheral Land MacBack Plus 40 are well-made machines. You'll have to decide whether you prefer the speed of the Teac tape in the Peripheral Land drive or the interchangeability of the 3M tape in the Mirror unit.

The Peripheral Land software does a good job of making fast image backups, but it needs improvement before I can recommend it for making file, folder, or volume backups. The Mirror software is fine for both image and file-by-file backups.

ity program that reads and writes the Apple format.

However, if you need to distribute information to a controlled population, such as several branches of a large corporation, you can use any of the drives. You should either stick to one model or at least choose drives that use the same type of tape and software. For example, Peak and Relax drives are compatible, as are ADON and NuData.

You may be able to read your tape on another drive that uses the same type of media by using your drive's software with the other drive. For example, you can read ADON or NuData tapes on Mirror or Super-Mac drives by using ADON or NuData software.

Backup Decisions

Is there a tape drive in your future? If you need removable mass storage for any reason—hard disk backup, increased storage capacity, or distribution of large amounts of software or data—the answer is yes.

If your main concern is speed, pick one of the units that uses the Teac mechanism. If you must read and write tapes in the Apple format, get a drive that uses the DC 2000 cartridges. Take a close look at the backup software and make sure it has the backup methods, disk and network compatibility, and other features you need. □

See *Where to Buy* for product details.

Top of the Charts

*On stage and in the studio, the Mac
is number one with music professionals*

by Christopher Yavelow

Five years ago you would have been hard pressed to find a full-time MIDI consultant, sound designer, or programmer working for a professional musician. Today people with such job descriptions abound.

Personal computers are revolutionizing the music business, and the Macintosh is leading the way. Nearly four dozen companies are developing musical products for the Mac, compared to scarcely a dozen for all other PCs. Macintoshes can be found in recording studios, on performance stages, in orchestra pits, and in the classrooms of some of our most renowned institutions of musical learning.

In December, *Macworld* looked at music processing programs that enable composers to print standard notation from MIDI performances (see "From Keyboard to Score"). But music professionals are putting the Mac to work in a variety of areas besides composition and publishing. Particularly in sound design, performance situations, and film scoring, the Macintosh is finding a place as a key piece of equipment.

Sound Design

Sound design is a field that encompasses a wide variety of activities, ranging from going out and recording natural sounds to programming synthesizers or setting up complex performance configurations. The new sounds created by this work often provide the essential ingredient that communicates the subliminal impact of a movie scene, or they may comprise the unforgettable characteristics of a corporate sound *logo* (an identifiable musical theme, usually under six seconds in length and over five figures in price). Finally, whereas in the past a pop group's unique sound might have been attributed to its recording engineer, today it's often traceable to the raw material provided by the sound designer.

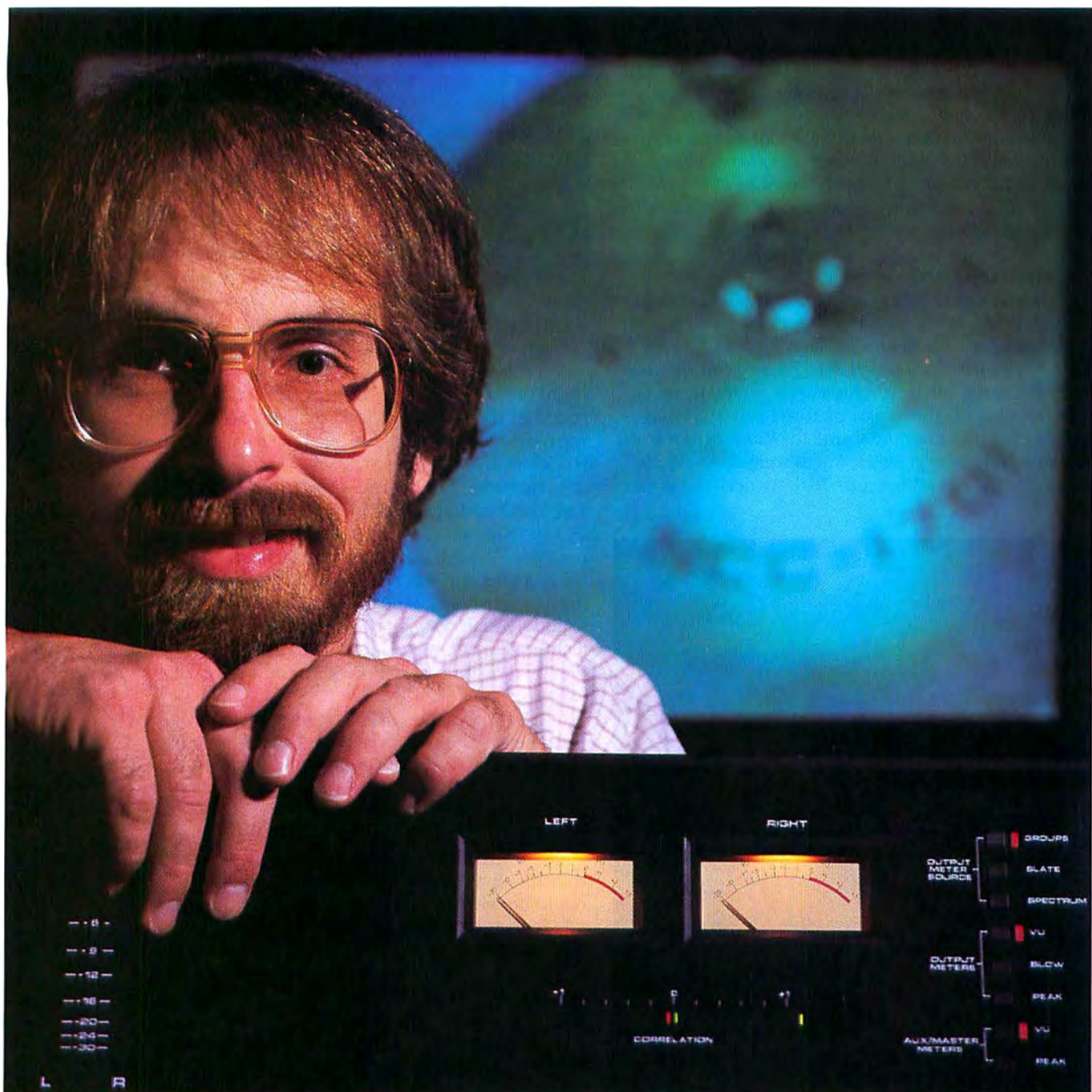
Sound designers work with sounds that are initially produced by either sampling or synthesis. *Sampling* is a digital recording procedure, similar to creating a moving picture from a series of still photographs. The sampler takes a number of "snapshots" (samples) of the sound and plays these back at a very high speed—usually between 32,000 and 50,000 samples per second. Because the samples are all in numeric form, it is easy to manipulate and transform the sounds they represent (*digital effects processing*). On the other hand, sampled *soundfiles* require vast amounts of memory.

Besides using sampled sounds, sound designers also create sounds from scratch by using either hardware controls or a computer to set parameters for the built-in sound-generating capabilities of a synthesizer. A synthesizer configuration that can be recalled for future playback is called a *patch*. Since patches don't record any sound data but merely the parameter settings needed to re-create a specific sound, they don't require much memory.

Serafine FX

Frank Serafine is a sound designer and composer whose sounds and effects have been heard in such blockbusters as *Star Trek (I & III)*, *Poltergeist 2*, and *Tron*. His studio, Serafine FX, employs engineer Rick Schwartz; librarian Peter Smetad; dozens of devices for generating, modifying, and recording sound; and three Macintoshes.

Serafine mixes sounds the way visual artists mix paints, sometimes combining hundreds of sounds to make a single effect. To create explosion sounds, for example, he once went into the desert with some marines to blow up 500-pound bombs. He captured the explosions with a digital recorder and then sampled them into his Emulator II. The effect was good, but not good enough. Using Digidesign's *Sound Designer*, Serafine supplied the missing ingredient: "We added a lion's roar to the bombs and flanged them beyond belief. The effect was much better [with *Sound De-*



MARK HANAUER

Film composer and sound designer Alan Howarth uses a variety of programs to seek out new sounds and boldly go where no Mac has gone before.

signer] than would have been possible with an out-board effects processor." *Flanging* is the process of "thickening" a sound by combining it with delayed versions of itself.

In addition to sounds he records himself, Serafine garners sounds from a wide range of sources, including sound effects libraries on compact disks, CD ROM libraries for the Emulator II Sampler, or other floppy disk-based sample libraries. He even used First Byte's *SmoothTalker* to do initial sketches for the robot in *Short Circuit*, although the final robot voices were made with *DECTalk*. Because he must be able to locate specific sounds instantly, Serafine uses *Microsoft File* to keep track of his ever growing collection.

Mr. Warp Drive

Alan Howarth is another Hollywood Mac music professional. Lately he has been working as a composer with John Carpenter on such films as *Escape from New York*, *Halloween 2* and *3*, and *Big Trouble in Little China*, but he got his start in sound design. *Star Trek* was his first major picture (as it was Frank Serafine's). After creating sound for *Raiders of the Lost Ark* and *Poltergeist*, Howarth went on to do the effects for the next three *Star Trek* sequels. If you can



The tapeless studio at Serafine FX includes three Macs and an 85-megabyte hard disk. Macs are used for everything from sequencing to console automation and signal manipulation.

recall the sounds of the "transporter" (usually preceded by the command "Beam me up, Scotty"), the warp drive, or the Klingon "Bird of Prey" spaceship, you know Howarth's work.

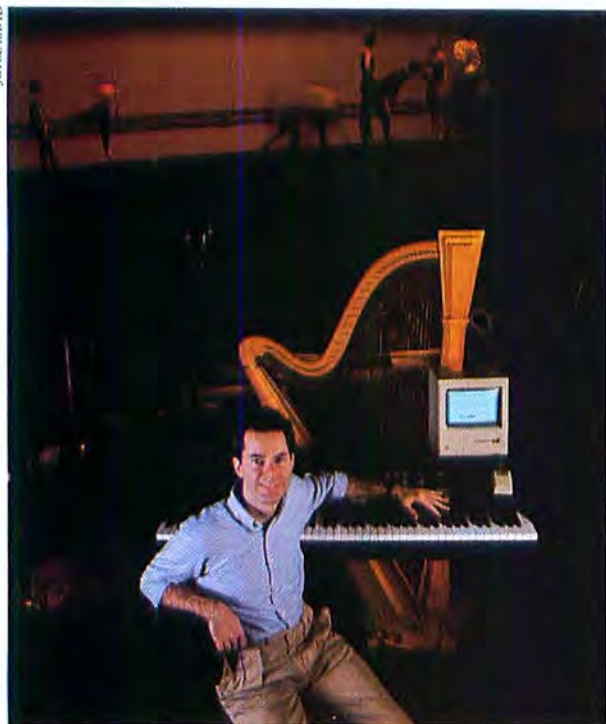
Howarth uses Digidesign's *Sound Designer* and *Soft Synth* packages with an Emulator II. "I use *Sound Designer* as an editorial tool because of its ability to cut, paste, double up, and pull out or extend the middle of a sound in ways that wouldn't be possible within the sampler itself," he explains. "When you have nice sounds, you don't want to loop them [a commonplace technique that extends a sound to a prescribed duration by repeating a portion of it], you want to do variations.

"Cutting sounds in analog form [using magnetic tape] makes your editorial base as wide as the razor blade. Using *Sound Designer* with a sound sampled even at a low 28K sampling rate gives you 28,000 possible edit points."

Howarth's work on *Star Trek IV* was interesting because the sound effects—mysterious, destructive transmissions from an alien probe that ultimately turn out to be whale songs—are a key part of the story. Usually sound effects are added during postproduction. In this case, however, the actors had to be able to react to the sounds during filming. Howarth recalls director Leonard Nimoy asking merely for "gibberish, something I've never heard before."

To create the working version of the whale effects, Howarth started with real whale sounds and processed them, running them backward and forward, fast and slow, piling layer upon layer until he had filled all 24 tracks of his tape recorder. The result was used throughout the shoot. During postproduction, however, the complex sounds were scrapped in favor of a single whale song, processed through a harmonizer

JOYCE KAVITZ



Richard Morehouse of the New York City Ballet uses the Mac to bring more fidelity and flexibility to the company's orchestral accompaniment. For its annual *Nutcracker* performances, for example, the NYCB orchestra used to follow a recording of a boys choir for certain dances. Today Morehouse uses a sample file he fine-tuned in *Sound Designer* and stores in the Mac to "play" the choir on his Kurzweil.

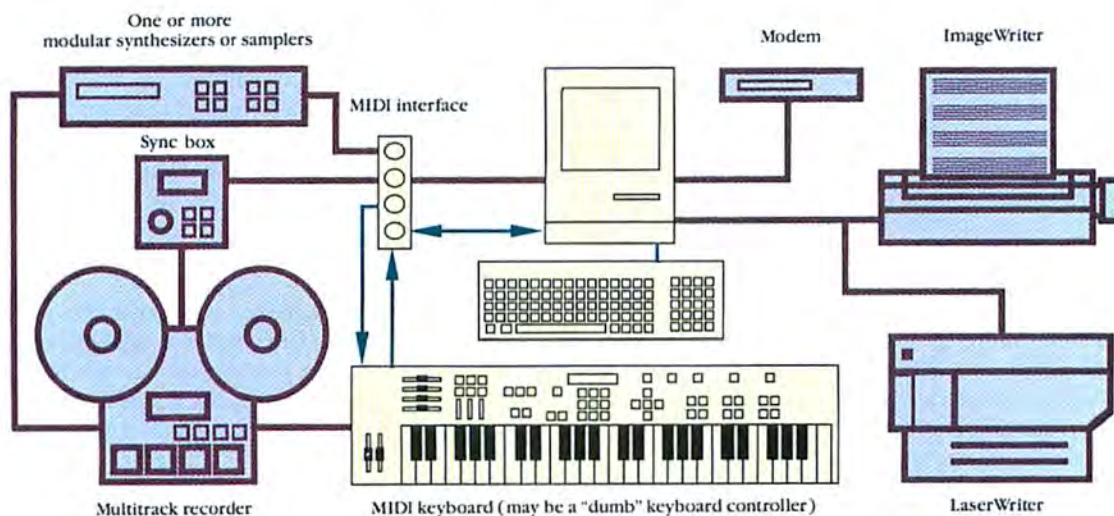
Basic Studio Setup

Two essential hardware peripherals form the nucleus of any Mac music setup. The first is a MIDI-compatible sound-generating device (either a synthesizer or a sampler). Instead of a keyboard with built-in sound capabilities, many people opt to use a "dumb" MIDI controller keyboard in conjunction with modular sound-generating devices. The second re-

quirement is a MIDI interface that permits the Macintosh to communicate with the soundware.

Depending on the application, a printer, a multitrack tape recorder, digital signal processors (such as a reverb), a MIDI "through box," or a SMPTE (Society of Motion Picture and Television Engineers) Time Code synchronization device may be included in the link.

Once the basic requirements are met, systems are expanded by the addition of more synthesizer or sampling modules, signal processors, or memory. Everything else can be done in software: MIDI sequencing, sound-sample editing, patch editing, conventional music notation, and even many types of sound synthesis.



using feedback and recorded onto a monophonic track. In the end the elaborate working version was important only in helping the director find out what he didn't want. Howarth, who is sometimes known as Mr. Warp Drive, sees this as just one of many routes a designer must sometimes travel to zero in on the right sound, since directors are often unsure of what they want or are unable to describe it.

Because he's both a composer and a sound designer, Howarth is keenly aware of the drawbacks of pioneering a relatively new field. Sound designers, for example, aren't eligible for the royalties composers enjoy. "There's no union category for sound designers," Howarth laments, "but I may get some royalties from sounds that are included in CD ROM libraries." Howarth adds that when he has a sound creation he especially wants to protect, "I just call it music and file a tape of it with a Sound Recording form at the copyright office."

Performance

In performance applications the Macintosh is used primarily as either a sound storage device or a sequencer. When it acts as a sequencer, the Mac reads MIDI data stored on disk as a sequence and uses it to play MIDI instruments. This type of application is often used when—for financial or other reasons—there aren't enough musicians to play all the parts.

Using the Mac for storage is far more common. Since the RAM in most synthesizers and samplers is not sufficient to hold the large number of patches, soundfiles, MIDI configurations, and other sound information necessary for a lengthy performance, this data is loaded into the Macintosh. At the right time, an assistant keys the Mac, which loads the data into the appropriate devices.



The elaborate MIDI configuration used by Neil Young and company on their "Crazyhorse '87" European tour enables the band to more easily reproduce the sound of its latest album.

Crazyhorse '87

Bryan Bell recently used both types of Macintosh applications in an elaborate performance configuration he designed for Neil Young's "Crazyhorse '87" European tour. Bell has worked at various times as a programmer, engineer, mixer, or consultant for Herbie Hancock, Carlos Santana, John McLaughlin, Earth Wind and Fire, Al Dimiola, and producer Narada Michael Walden.

Bell was originally hired for the Crazyhorse tour to design a MIDI setup that would re-create the sound of the band's latest album. To this end he created a patching system that routes MIDI data so that everyone in the band can play everyone else's MIDI equipment. Signals coming from the various MIDI controllers are routed to synthesizer and sampler modules by four

MIDI patchers. Not all the MIDI controllers are synthesizers—one is an upright piano that has been modified to send MIDI, and some of the guitars are equipped with pitch trackers. (Pitch trackers convert audio signals from acoustic instruments into MIDI data. To do this, the software must determine a note's frequency and then send out the appropriate MIDI code, all on the fly, in real time.)

Along with designing the MIDI network, Bell became involved in designing sounds and patches for Young. For the analog and digital synthesizers, Bell used various patch editors and librarians from Opcode Systems. Because Bell's setup uses so many different synthesizers, Dave Oppenheim (the "Op" in Opcode Systems) created a special patch librarian that puts all the patches in a single library file.

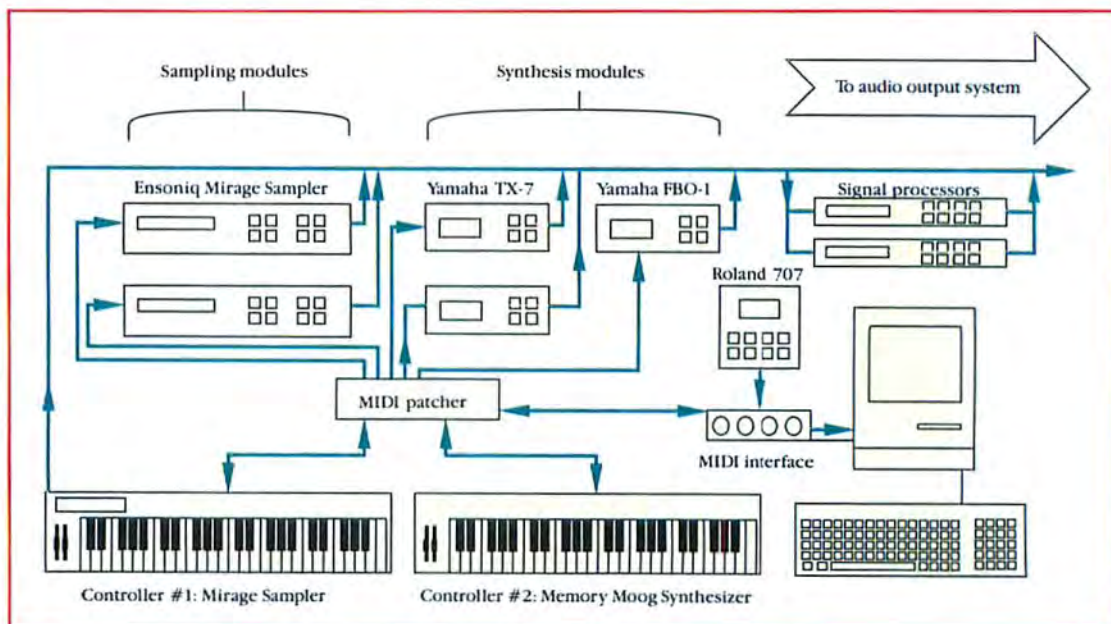
Many of the samples used in Bell's system were made directly from the album's master tapes. When you're faced with the need to re-create the sound of a specific record, it's a great advantage for the drummer to be able to trigger identical sounds by striking MIDI drum pads. (Besides triggering sampled sounds, the drum interfaces to a new type of timing device, the Kayler Human Clock, which converts the drummer's beat into a MIDI timing pulse that synchronizes the sequencers and patch changes. The Human Clock enables the band to control the tempo of the sequencers rather than vice versa.)

Cabaret Mac

Not all performance schemes are as complex as Bell's configuration for the Crazyhorse tour, which takes an entire day to set up. Jeremy Roberts recently designed a system for cabaret singer Eileen Valentino that can be hooked up in ten minutes and dismantled in six.

Figure 1

Jeremy Roberts's performance configuration expands the elementary system (see "Basic Studio Setup") by adding extra synthesis and sampling modules to two keyboard controllers that themselves are sound-generating devices. The centrally located MIDI patcher directs the controller output to the appropriate modules.



Valentino usually travels with an orchestra of 18 musicians, but the stage on which she was performing at the Trump Castle Casino, in Atlantic City, had room for only three. Roberts's solution is a slightly expanded version of the arrangement in "Basic Studio Setup": he uses a Macintosh-controlled rack of nine (mainly modular) synthesizers to accompany the human drummer, bass player, and guitarist (see Figure 1). This setup, which took two months to prepare, puts the Macintosh on stage with the band, and puts Mark of the Unicorn's *Performer* MIDI sequencer in control of several samplers and synthesizers.

Because the order of the songs in each 45-minute show changes from time to time, Roberts has had to devise some innovative strategies for loading the appropriate files into the samplers and the correct sequence files into the Macintosh.

He uses *Automac* to create macros that open and close sequence files. For the first song of the night, he runs a macro that sets up a RAM cache, begins a start-up application, and loads files into the cache.

The *Automac* macros that load the various sequences search for files by number. This means that changing the order of the set merely requires changing the leading number in the sequence file name. The macros are set up to close the current sequence and open the next one. "Say we have just finished our third song," explains Roberts. "Assuming the last patch is loaded, I will already have popped the disks out of the samplers—the disks are all color-coded, and each sampler has its own color. I load each of the boxes with my left hand while I hit Option-4 with my right hand. This closes the third sequence and opens the fourth sequence. Hitting Enter on the numeric keypad starts the next song even before the Mac has had time to finish drawing the screen. On a hopping Saturday night, the singer might get ahead of the click track, so I use the asterisk key to advance *Performer*'s tempo in single increments."

The Macintosh is used for other tasks as well. All Valentino's musicians read music printed with Mark of the Unicorn's *Professional Composer*. The ImageWriter stays in the dressing room, and every night when the order of the show has been decided, 36-point set lists are printed in *Microsoft Word*. This task is simplified by *Word*'s glossary, which stores all the necessary information. Most nights, Roberts takes the Mac back to his room to log on to the Performing Artists' Network (PAN) or the MacMusic BBS.

Film Scoring

The film and video industries use a timing protocol known as SMPTE (Society of Motion Picture and Television Engineers, or "Semp-tee") Time Code to synchronize film, video, or other devices. The protocol's effective resolution is about half a millisecond, enabling engineers to move to locations on SMPTE-stripped audio or video tapes with great precision.

Unfortunately, SMPTE is not directly compatible with MIDI, the language of the music world. To get

Studio of the Future

With considerable foresight regarding the impact of microcomputers on the music industry, the Record Plant recently opened Stage L on the Paramount Pictures lot in Hollywood. Stage L includes four studios, each with a Macintosh that can control just about any sound-generating or processing device one could desire. The rooms are equipped with state-of-the-art SSL computer-automated mixing boards and multitrack digital recorders.

The idea is similar to that behind desktop publishing centers, where Mac users with previously prepared documents rent time on expensive LaserWriters. Both Chris Stone, owner of the Record Plant, and Ed Freeman, MIDI and software consultant for Stage L, are strongly committed to the new generation of composers who will arrive with disk in hand, having done most of their work on the Macintosh in small home studios.

around this problem, many film composers now use the Macintosh in combination with a synchronization box to synchronize MIDI devices, such as synthesizers, with SMPTE information. Configurations like the one in Figure 2 enable composers to precisely correlate synthesized or recorded music events with selected on-screen events (*hit points*).

The Mac also enables composers, who can rarely afford their own SMPTE equipment, to save on studio time by working out their preliminary scoring at home. New Mac programs such as *Cue*, from Opcode Systems, take SMPTE information about the location of hit points and translate it into standard musical timing terms, such as beats per minute. The programs then print out staff paper that shows the number of beats and measures between hit points; the composer uses this custom staff paper as a scoring framework.

Opera in the Eighties

When the author, Christopher Yavelow, is not MIDI consulting, writing about computer-assisted composition, or downloading the *Professional Composer* files his students send to his electronic-mail box, he composes opera. This spring when he used his Macintosh and Kurzweil 250 to create and perform the first act of the opera *Countdown*, it may have been opera's closest encounter yet with the world of computer technology.

Countdown, which is set in an underground NORAD missile command center, was commissioned by the Boston Lyric Opera Company as part of an intensive 12-day composer-librettist collaboration project

sponsored by Opera in the Eighties and Beyond, under the auspices of Opera America and The National Endowment for the Arts.

Every day Yavelow received new text from the librettist (award-winning screenwriter/playwright Laura Harrington) and went home to compose new music at a Macintosh, cutting and pasting operatic leit-motifs with *Performer*. The sequencer controlled a Kurzweil 250 configured to be a "symphony orchestra in a box." The orchestral score was automatically reduced to piano transcriptions for rehearsal using *Professional Composer*, and these were printed each night while everyone was asleep. The singers received new music for rehearsal every day, along with a tape of the orchestra parts produced by the Kurzweil.

The piece was finally performed by the Boston Lyric Opera Company accompanied by a Macintosh, which controlled the full symphony orchestra score output in real time through a Kurzweil. A Roland SBX-80 sync box was used to keep everything together, even through changing tempos, accelerandos, and rallentandos.

"Everyone was astounded," says Yavelow, referring to the productivity made possible by the Mac. "Usually, when Opera in the Eighties funds these intensive projects, it ends up with an aria or a short scene. Without the Mac, a whole act would usually take six months to a year to prepare."

—Joe Malazzoni

Omnimax

Pat Hollenbeck recently worked with Oscar-winning film composer John Williams on the music for *New England Time Capsule*, a film sponsored by Lotus and created for the opening of the Boston Science Museum's new Omnimax theater. "Williams operates at a level where, if he wants real strings, he can afford them—and lots of 'em," laughs Hollenbeck, adding "computers might just slow him down." But Hollenbeck is no stranger to synthesizers and computers, and the Macintosh was a welcome tool for his part of the collaboration (see Figure 2).

The Stephen P. and Marian G. Mugar Omni Theater is the largest of twelve Omnimax theaters in the country. The theater houses a 360-degree dome screen 76 feet in diameter along with a 27,000-watt, 84-speaker, 12-channel sound system. Extra-large film (ten times normal size) is projected at very high speeds through a 180-degree fish-eye lense powered by a 15,000-watt water-cooled xenon arc lamp.

The music for the opening of this high-tech showcase was built up in stages onto 48 tracks (two 24-track recorders were "locked" together using SMPTE time code and made to function as a single machine). Musicians participated in several sessions—one for the

brass, then the winds, then the strings, and finally the harp. They performed while listening to a *click track* through headphones. Everything stayed in synch because the click track remained in a constant relationship to a SMPTE stripe on a videotape copy of the film. When it was necessary to add the synthesizers (12 Yamaha TX816 modules, 2 Emulators, an Ensoniq Mirage, a Korg 800, and a Kurzweil 250), the click track was converted into MIDI Sync via a Roland SBX-80 synchronization box. This MIDI Sync pulse controlled the sequences, which had been recorded on the Macintosh with *Performer*. Subsequently, the sequences controlled all the synthesizers.

The 48-track analog tape was mixed down to 13 tracks, and a mixing console was set up in the theater to do a final live mixdown that would take into account the acoustic properties of the Omni Theater. The soundtrack was never actually recorded onto the Omnimax film; instead, it was recorded onto special 35mm magnetic film, which was in turn electronically synchronized to the Omnimax film. Except for the last step, the Omnimax scenario for getting sound on film is becoming more and more commonplace.

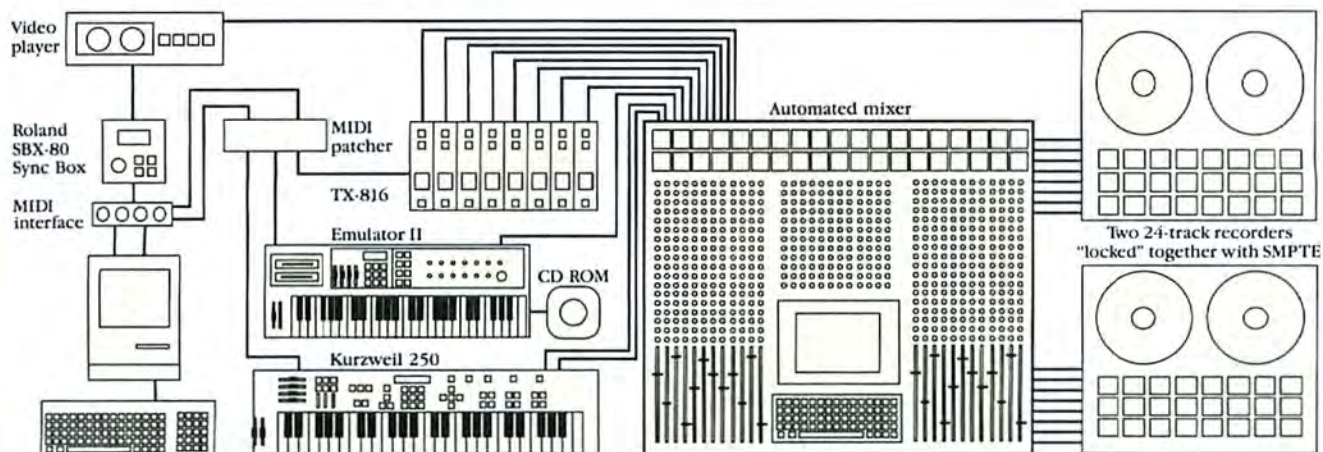


Figure 2

A typical recording studio setup for the Williams/Hollenbeck collaboration. A click track loaded into the SBX-80 converts SMPTE Time Code into MIDI Sync, which permits a Macintosh running *Mark of the Unicorn's Performer MIDI sequencer* to "chase" the video and analog tape. This, in turn, guarantees that sampled and synthesized material transferred to analog tape will be in sync with earlier tracks of musicians who performed while listening to the original click track.

Real Time

Unlike the highly structured mathematical approach to film synchronization necessary for the Omnimax project, the method Patrick Moraz recently used while composing for *The Stepfather* represents a marriage of high-tech with the real-time styles of traditional film composers, who conduct musicians while watching the movies for which their music is created. Moraz is better known as the keyboardist for the Moody Blues and, before that, for Yes. In some ways he is the complete Mac musician, using the computer in a wide variety of performance, composition, and studio applications. A Mac will figure prominently in the setup for his solo "Human Interface" tour this summer.

In *The Stepfather*, Moraz used a Mac in a link reminiscent of the Williams/Hollenbeck hookup described earlier. For the 62 cues punctuating the 48 minutes and 11 seconds of music in the psychodrama, Moraz used both the internal dedicated hardware MIDI sequencer of the Kurzweil 250 and *Performer*. He recorded important hit points into a Roland SBX-80 synchronization box by tapping on one of its front panel pads while viewing the film. This recorded information was subsequently used to synchronize the tempos of the sequences with the action on the film.

Finally, when the film company asked for lead sheets (melody lines with chord symbols) for copyright purposes, all the hardware-resident sequences were loaded back into *Performer* for conversion into notation by *Professional Composer*.

Is It Live . . .

The long-promised wonders of technology are now well-established fixtures, used on a daily basis by professional musicians. The next area in which the pros are taking a serious interest is interactive composition. Tools that allow composers to zoom out and deal with entire musical ideas, rather than individual notes, are beginning to appear. New sequencers such as Passport Design's *MasterTracks* represent musical material in a graphic format that permits composers to work from greater levels of abstraction.

Perhaps the most important recent musical developments capitalize on the Mac's ability to make thousands—sometimes millions—of decisions in the space between two notes. This ability to automate compositional decisions within user-defined limits is beginning to produce commercially available "intelligent instruments." Notable explorations of this territory include Laurie Spiegel's *Music Mouse* (an expert system for composing, published by Opcode Systems) and Intelligent Computer Music Systems' *M* and *Jam Factory*.

These and other tools made possible by the computer revolution are already calling into question common ideas about music and musicians, blurring time-honored distinctions and redefining traditional roles. Not that long ago, Neil Young's plaintive vocals and soulful guitar were as unambiguous as a smoldering draft card. Today Young's concertgoers are hard-pressed to tell real live music from what's produced by the Mac. How audiences and artists will respond as computerization becomes more common, and whether this trend will lead to better—or simply more—music remains to be seen. I have no doubt, however, that we are in the midst of one of the most interesting periods of music history. Keep your ears open. □

Reviews

A Portable Finder

DiskTop 2.0

Desk-accessory Finder alternative. **Pros:** Contains all standard desktop file functions; can perform operations on several files at once; initiates a "quick-launch" to another application. **Cons:** Takes up a good deal of disk space. **List price:** \$39.95 (includes LaserStatus and Widgets). **Requires:** 512KE. **Copy protection:** None.



How many times have you wanted to perform a housekeeping function—copy or delete a file, move a file to another folder, create a new folder—when you're working in an application? You'd prefer to take care of the chore on the spot, rather than make a trip back to the desktop. Similarly, if you use a standard *Switcher* set all day long and need to open another application, if you must free up space on a disk to save a file, or if you can't find a particular file, you'll find yourself returning to the desktop. Fortunately, CE Software's *DiskTop* offers virtually all of the Finder's functions, and quite a bit more, in a single desk accessory that can be opened from within an application.

Disk Statistics

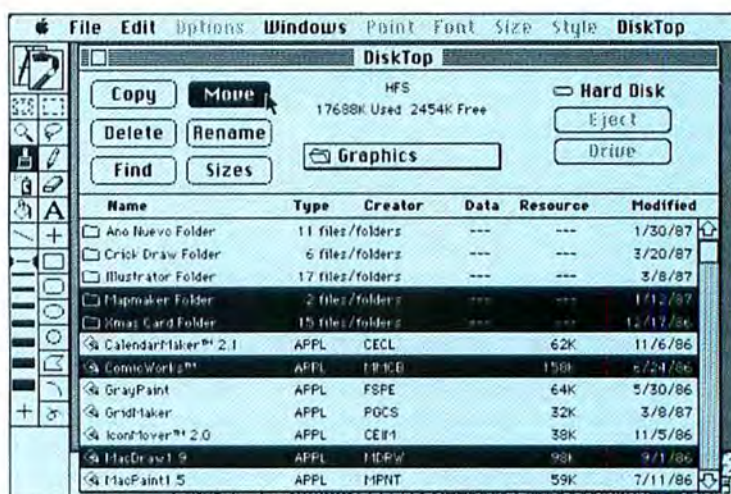
When you first select *DiskTop* from the Apple menu, the window displays up to eight floppy disk or hard disk icons. Alongside each icon are the disk's vital statistics: HFS or MFS, total disk space in use, and free disk space remaining, as well as total RAM in your Mac and amount not currently in use. A Trash Can is used to eject (or unmount) disks, just as it is on the desktop. The window also contains buttons for erasing or renaming entire disks and a Find button to initiate a file search of any or all displayed disks; a dialog box displays the path to each file (the route from disk to folder to file) matching the search criteria.

Double-clicking on a disk icon displays disk information (HFS or MFS, used and free space) and a scrollable list of files, folders, and applications. If you open a folder, the list displays the contents of the folder. Files and folders can be displayed by name, type, creator, file size, or date last modified.

DiskTop displays eight buttons that perform a variety of operations on disks, files, or folders (see "File Management with a DA"). The Drive and Eject buttons function just like their file-selection-box coun-

terparts. Once a file, folder, or group of files or folders is selected, you can use the Delete, Rename, Move, and Copy buttons. The Delete button performs the equivalent of putting a file in the Trash Can and then emptying it (once you confirm your decision). The Rename button requests new folder or file names one at a time. Copy and Move work on all selected files or folders at once, moving or copying them to another folder or disk. The Find button initiates a search for files or folders. To determine if you have enough room to copy a group of files onto a disk, use the Sizes button to compute the amount of disk space taken up by all the selected files and folders.

DiskTop not only lets you manipulate files without quitting an application, it saves you a trip to the desktop when you do quit. If you double-click on an application or document in the files list, *DiskTop* quits the current application (allowing you to save your work first) and opens the se-



File Management with a DA

DiskTop lets you work within any file without leaving an application. You can move, copy, rename, and delete files, make new folders, find lost files, and more. Here, several files and folders are being moved to a new folder on a hard disk.



lected application or document. (In the few programs that resist this time-saving method of bypassing the desktop, you can quit the program manually, and *DiskTop* will immediately take over and launch the selected application.) To make this process even more convenient, you can place up to 20 commonly used applications or documents in the *DiskTop* menu. Then you can just select your destination from the menu.

Bonus Applications

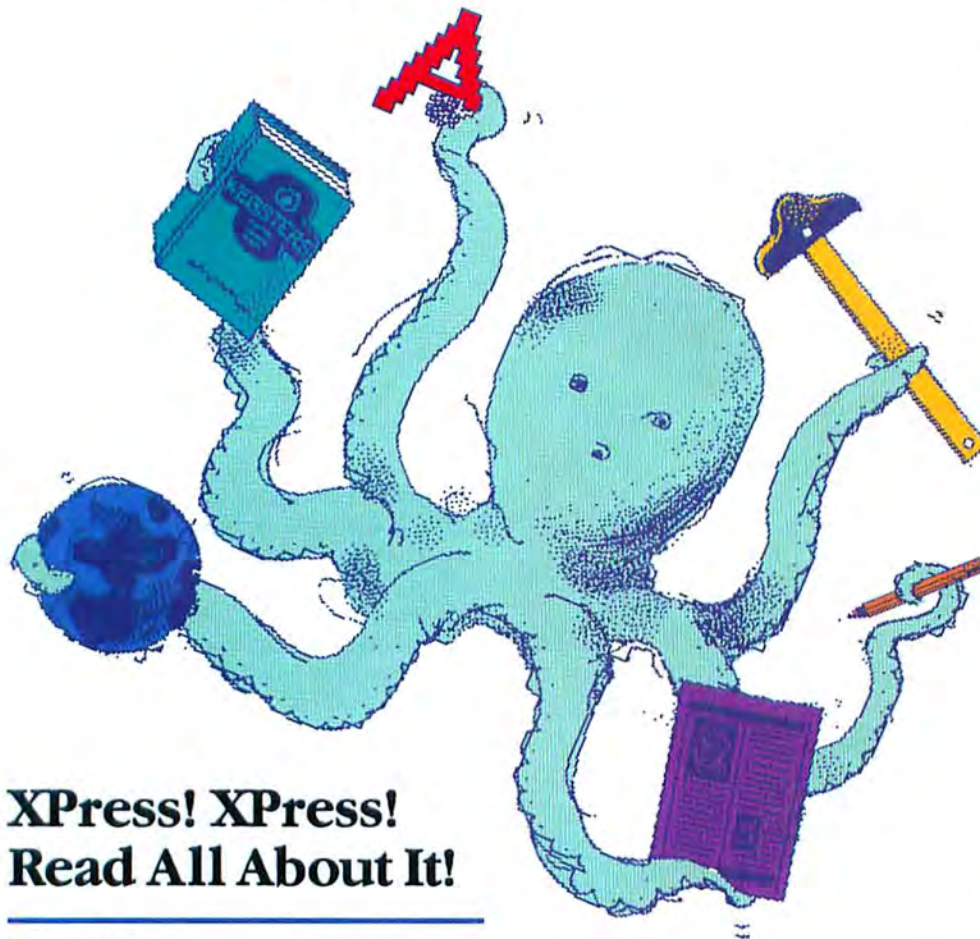
Like all of CE Software's products, *DiskTop* is shareware, which means that you can get a copy (from a friend, a shareware disk library, or a bulletin board) and try it out prior to purchase. If you decide to buy *DiskTop*, you'll receive a disk with the latest version of the program, a comprehensive manual, and two bonus programs

not available to nonpaying customers. One of these, *LaserStatus*, is a desk accessory that tells you if a shared LaserWriter is busy before you attempt to print. *LaserStatus* can also reset the LaserWriter, download fonts or PostScript files to the LaserWriter, and determine how much RAM is available in the LaserWriter and what downloadable fonts are currently stored there.

The other bonus program, an application called *Widgets*, is a pastiche of useful but largely unrelated utilities. *Widgets*' capabilities include changing the creator for all files of a given type (useful for changing all *MacPaint* files to *FullPaint* or *Mac- Billboard* files, for example); changing the size of the System heap (handy if your System file is stuffed with fonts and desk accessories); renaming and redefining ImageWriter paper sizes; creating bit-map files from PICT files; and turning any part of a *Paint* file into a Start-up screen. You can also use *Widgets* to turn off the mechanism that makes the LaserWriter print a test page each time you turn it on, and to print "Laser Thumbnails," tiny versions of all the *Paint* files in a selected disk or folder.

All in all, the *DiskTop* package is an excellent value. Its only significant drawback is that it requires about 49K of disk space. While you may find some of *Widgets*' different elements more useful than others, you'll probably adopt a Widget or two; for example, I've found *Laser Thumbnails* to be an excellent way to catalog clip art files. And *LaserStatus* is a great utility for anyone who puts the LaserWriter through its paces. But most important for me, *DiskTop* has replaced desk accessories like *DiskInfo* and *HFS Locator*, which used to be indispensable elements of my Apple menu. There is, in my opinion, no better file-management desk accessory. —Robert C. Eckhardt

See *Where to Buy* for product details.



XPress! XPress! Read All About It!

XPress 1.01

Desktop publishing program. **Pros:** Powerful blend of interactive and batch pagination features; virtual memory system with full-featured word processor; spell-checker; extensive typographic controls; precise layout tools; unlimited text wrap, and spot color assignment. **Cons:** Lacks global formatting, indexing, vertical justification; can't cut or copy and paste graphics directly from one page to another without added steps; wrapping causes incorrect hyphenation. **List price:** \$695. **Requires:** 512K. **Copy protection:** Limited to three hard-disk installations.



Quark's XPress is a desktop publishing program that integrates word processing, graphic design, and page composition capabilities. It outperforms other second-generation desktop publishing programs by combining the interactive style of *PageMaker* with the batch pagination power of *ReadySetGo* 3.0 and some new tools previously found only in expensive publishing workstations. XPress is versatile enough to be used for large projects requiring automated batch pagination as well as for smaller, single-page layouts.

Handling Text

XPress's word processor is as flexible as any stand-alone word processor and performs better than those found in other desktop publishing programs. It includes a fast 60,000-word spelling checker, search-and-replace capability, and both automatic and manual hyphenation.

XPress has an impressive array of text design tools—kerning, tracking, scaling, screening, coloring—that can be used in unlimited combination. You can justify text

with any combination of interletter and interword spacing. To kern (adjust interletter spacing), just move the cursor and add or subtract space by $\frac{1}{100}$ -em increments.

With the tracking (global kerning) feature you can adjust interletter spacing within a highlighted word, paragraph, page, or document. Use horizontal Scaling to copyfit text (headlines, for example) by stretching or compressing it horizontally from 25 to 400 percent.

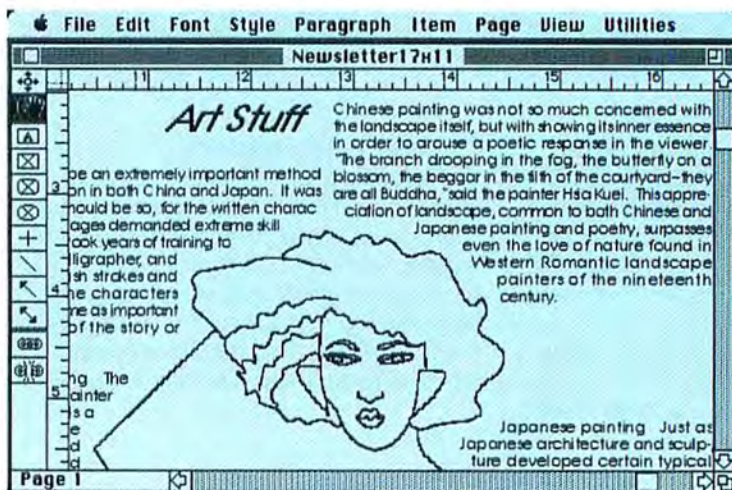
The program controls paragraph spacing, indents, and leading in $\frac{1}{1000}$ -point increments. You'll find XPress's tab controls more convenient than *PageMaker*'s, since you can easily display the ruler that shows the tab sequence.

You get a wide range of font sizes: from 2 to 500 points, compared to the 4- to 127-point range offered by most programs. Text can be screened in 6 shades of gray, with any one of 7 spot colors assigned. You can even insert *PostScript* commands and programs in an XPress document by using *PostScript Escape*.

If you're an experienced word processor or typesetter, you'll appreciate XPress's keyboard equivalents for all menu commands. You can kern letters, track spacing, center text, and change font sizes without ever leaving the keyboard.

Page Composition

Those familiar with desktop publishing know that *PageMaker*'s interactive style has become a standard in page composition. It's a familiar environment for pasteup artists: they can paste in text, graphics, lines, and borders, or draw directly on the page. But although *PageMaker* is best suited for single-page layouts and newsletters, its layouts can be difficult to manage, since there's no way to group the different layout elements.



High-End Versatility

XPress has an efficient stand-alone word processor that can automatically wrap text around regular and irregular shapes.

With *XPress*, though, you build pages as you would with *ReadySetGo* 3.0—by drawing frames to hold either text or graphics. You compose complex single-page layouts—logos, advertisements, brochures—in easily managed sections. *XPress* automatically groups multiple frames within a parent frame and treats them as a single unit when repositioning them.

XPress provides two ways to modify layouts: you can resize or reposition text or graphics frames from either the page or a dialog box. Instead of drawing borders directly on the page, you add them from the Frame menu. Frames can be lines, screens, or a selection from the Frame Editor, which consists of a library of borders and a FatBits-like editing tool.

XPress blends interactivity and batch pagination by specifying default pages (style sheets) and using the automatic page-insertion feature. With batch pagination, you can pour in an entire text file hundreds of pages long simply by placing the first column. Even on large jobs (such as books, catalogs, and manuals) *XPress* functions as an effective production manager because the number of files that can be opened at once and the size of files are limited only by disk space.

In the default page you can specify frame type, position, borders, or background, but text attributes—typeface, style, and size—must be assigned in your word processing file. Since you can't tag attributes, global formatting is impossible. This is probably *XPress*'s single most serious drawback. For example you cannot simultaneously change the size or style of all chapter headings as you can in *Ragtime*. *XPress* also slows down when editing long files because the text reflows each time you save new changes.

XPress automatically places text a pre-set distance from the column guide. You can import *MacPaint*, *MacDraw*, or *MacDraft* graphics, as well as *MacWrite* and *Microsoft Word* text, without losing your format settings. Graphics can be automatically placed within a frame, hand-cropped, proportionally sized, or moved.

Graphics and Printing

Because text automatically wraps around either a text or graphics frame or an arbitrary (irregular) shape, *XPress* gives you unlimited variation in layout design.

XPress at a Glance

General features

- Interactive tools
- Batch pagination
- Modifications with the mouse or from dialog boxes for greater precision
- Virtual memory system
- Automatic page insertion
- Automatic grouping within frames
- Online help
- Page importing from other *XPress* files

Word Processor

- Keyboard equivalents for all functions
- Search and replace
- User-definable tab fills
- Page-numbering formats that allow sectioning
- Control of interletter and interword spacing when fully justifying text

Page Layout

- Automatic grouping of frames
- Automatic text flow from column to column and from page to page
- Text wrapping around arbitrary shapes
- Font sizes: 2- to 500-point
- Text screening in 6 levels

- Color text
- Page size up to 36 by 36 inches
- Rulers with horizontal scale in inches and vertical scale in picas
- Step and Repeat command
- Frame library and frame editor
- Automatic or manual kerning in units of $\frac{1}{100}$ em
- Tracking in units of $\frac{1}{100}$ em
- Horizontal text scaling from 25 to 400 percent
- Leading in $\frac{1}{1000}$ -point increments
- Display of graphics in free-form windows
- Precise cropping of graphics by specifying numbers in a dialog box
- Arrows of any width, screen, or color; numerous broken-line patterns

Printing

- Color separations with optional registration marks
- Rough printing without graphics
- Printing negatives and mirror images
- Fine-tuning of printer resolution

Make sure you fully edit text before performing a word wrap, though, since the program may crash or incorrectly hyphenate when you're editing text that's wrapped around an arbitrary shape. Another of *XPress*'s flaws is its less-than-elegant method of cutting, copying, and pasting graphic elements (frames or lines). It has a Duplicate command and a Step and Repeat function for manipulating graphics, but unfortunately, they work only within a single page. Moving text between pages is an equally cumbersome process: you must first draw a text frame on the new page and then paste in the text. To match column widths, for example, you would record text-frame specs (size and position) from the

Modify window, re-create the text frame, respec the frame, and then paste in the text.

The Duplicate command functions like a macro, reducing the number of keystrokes required in the copy and paste routines. The Step and Repeat command lets you set horizontal and vertical offset positioning and the repeat count, automating repetitive work like drawing lines on a business form. Page sizes can be up to 36

by 36 inches with a manual mode that lets you display rulers with picas horizontally and inches vertically.

XPress also has features for maximizing the quality and productivity of *PostScript* printers. Resolution is maximized by matching the gray screen resolution of halftones or scanned graphics (lines per inch) with printer resolution (dots per inch). You can assign spot colors to text, graphics, or borders for later output as color separations, with optional (printing industry standard) registration marks. You can even speed up the proofing process by printing documents without their graphics, using Rough Print.

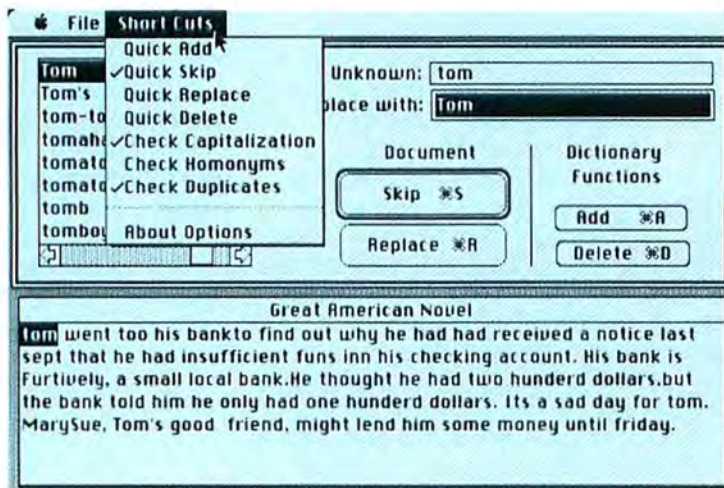
XPress's application-based bit-map smoothing routine is up to 10 times faster (and noticeably smoother) than typical printer-based smoothing routines. And *XPress* places no size restrictions on graphics to be smoothed—unlike *PageMaker* and the Apple *LaserWriter*, whose limits are easily reached.

Despite some annoying bugs and a cumbersome copy-protection scheme that should be abandoned, *XPress* is still an impressive program. Its interactive tools are capable of subtle manipulation, and batch pagination simplifies handling large documents. And in future releases, Quark plans to add global formatting, a snap-to-baseline function for vertical justification, automatic table-of-contents generation, and an index. With its powerful word processor and comprehensive page-layout features, *XPress* will give you maximum flexibility for electronic layout, whether you're creating a single-page ad or a full-length illustrated novel. —Mike Krell

See *Where to Buy* for product details.

The Short Menu

With *Spellswell*'s Short Cuts menu, you can activate or disable some of the program's customized features.



Check It Out

Spellswell 1.3j

Spelling checker. **Pros:** Runs fast; two dictionaries, one large; some special options. **Cons:** Cannot check interactively; does not suggest replacement words. **List price:** \$74.95. **Requires:** 512K. **Copy protection:** None.



The updated version of *Spellswell* from Working Software (formerly Greene, Johnson) improves on this stand-alone checker. In addition to retaining formats while checking *MacWrite 4.5* and *Microsoft Word 1.05* documents, it now works with *Microsoft Works*, *Lotus Jazz*, and *More*. (*WriteNow* and *Word 3.0* will be added in the next release, which should be available by the time you read this.) *Spellswell*'s main dictionary has been increased to 93,000 words, and it's stored on a separate disk. The program disk includes an abridged form (60,000 words). If you're working with only 400K and one disk drive, you probably have to use the smaller dictionary, which occupies only 187K. (The larger dictionary takes up 283K.)

Options and Short Cuts

Spellswell checks apostrophes, abbreviations, and hyphenation against its dictionaries, allowing such words as *Feb.*, *won't*, and *self-employed*. It will flag double-word errors when you mistakenly type the same word twice, and it includes an option for checking homonyms, which many spelling checkers do not.

The program also retains capitalization wherever it occurs and even requires

it for proper nouns, such as days of the week, or for capital letters in an abbreviation like *Ph.D.* You can test your document specifically for capitalization errors by using the Check Capitalization feature.

You can turn off any of these options with the Short Cuts menu, which enables the program to run faster and take up less disk space. In addition the Short Cuts menu allows you to bypass features that otherwise function automatically: Add, Skip, Replace, and Delete (see "The Short Menu"). It is particularly useful to disable the Replace and Skip dialog boxes, which normally appear after each item and ask you whether you want to replace (or skip, depending on the button you clicked) all occurrences of the word just checked. These dialog boxes make the program frustratingly slow when you have to click twice for every entry and decide on "all" instances of typos that will probably never occur again. Holding down the Option key while clicking the Replace button temporarily substitutes Replace All or Quick Replace for the option permanently selected.

Not Smart Enough

Spellswell moves rapidly indeed when given the chance because, when sufficient disk space remains, it holds your document in RAM rather than checking each word against the dictionary individually. You only have to wait when opening the program, as it reads, sorts, checks spelling, and resorts the document.

Unfortunately, the speed of version 1.3 is offset by a major flaw. Rather than suggesting substitutions for misspelled words, the program simply finds the nearest alphabetical listing. For example, to replace *terribly* it located *tergiversation*, although the dictionary contains *terribly*. This happens because *Spellswell* sorts mistakes according to the first two or three letters in the words. In addition the program can't deal with transposed characters, a major source of spelling errors for typists. To correct *ot*, *Spellswell* located *Othello*, the dictionary word that would follow *ot*. You must either scroll to find *to* or type in the word in the Replace With box. You can scroll through the entire dictionary, but it seems to take forever to find a correction similar to the

misspelled word. The next version of *Spells-well* will address this drawback with a Guess button that opens to a list of alternative words. While version 1.3 offers increased speed and a larger dictionary, the next release will probably be the one to buy. —Jeffrey Bartlett

See *Where to Buy* for product details.

The Perils of Normandy

Patton vs Rommel 1.05

War strategy game. **Pros:** Well-researched, playable game that takes many factors of battle into account. **Cons:** Without editing, the beginner level can be more difficult than the expert level. **List price:** \$39.95. **Requires:** 512K, second disk drive recommended for saving games in progress. **Copy protection:** Not copyable.

“It was summer 1944. The Allies had a beachhead at Normandy but were taking a pounding. On July 25, Operation Cobra began. Patton’s 3rd Armored moved through St. Lo and got behind the German lines. By August 16, Avranches, Coutances, Bayeux—they all had fallen. The Germans were beaten.”

Although Patton never met Field Marshal Rommel in Normandy, it makes for an interesting game scenario. *Patton vs Rommel* from Electronic Arts, the latest creation by game designer Chris Crawford, lets you explore how events might have transpired, had the charismatic generals actually opposed each other in World War II’s most famous campaign. Like Crawford’s other simulation games, *Patton vs Rommel* is well researched and complex. You manipulate armored and infantry divisions, decide where to concentrate bombers, contend with terrain, and decide when to attack and retreat. Generally speaking, you must make trade-offs between maneuverability and firepower. But despite the game’s complexity, the fundamentals are easy to grasp, and it is quite playable.

Order of Battle

The game begins with Allied and German divisions deployed across from each other. Individual divisions are represented by square icons. As Allied commander you



At the Front

Players enter orders in the small window at the bottom of the screen. By double-clicking on the white tank icon at the top left in this screen, you enter orders for Patton’s 3rd Armored Division. Cloudy weather lets you attach one squadron of air support to a single division.

must quickly overwhelm the enemy and obtain a positive score by occupying towns or destroying enemy troops. As commander of the Germans your challenge is to slow the Allied advance and keep the score negative. You have until August 16.

At the beginning of a turn you give each division its marching orders. The program supplies statistics on how many soldiers, tanks, or artillery units are available for combat. Up to ten types of commands let you control each division’s movement and its disposition for combat; you can chain commands to create a series of actions for each unit.

When the battle begins, your forces attempt to carry out their orders. Some attacking troops will advance successfully, and others will be forced to retreat. During the battle you can change orders for divisions close to the commander’s unit. Your prompt response to changing conditions can mean the difference between winning and losing.

Strategy

Attacking where your opponent is weakest is an age-old military adage. As the Allied commander you must break through at St. Lo and Lessay and get mobile armored units behind German lines. Be careful to guard against enemy divisions, which occasionally pop up out of nowhere and attempt to retake captured towns. Similarly, as German commander you can expect a strong attack at these points. Try to prevent Allied progress without making costly counterattacks.

Patton vs Rommel’s major drawback is its lack of options at the beginner level, which actually makes it harder to play than at the intermediate or advanced levels. You can make the game easier to play by using

the edit function to change a division’s strength, but the edit function is only available at the advanced level. Another pain is that because the program takes up a lot of disk space, battles in progress must be saved to another disk.

But such annoyances are minor compared with the game’s overall fun. It took me about ten battles to win at the beginner level. After that I was nearly invincible; but the challenge was then to secure a major victory instead of a minor one. Such challenges should provide players plenty of war stories before they tire of battle. —Robert Buderl

See *Where to Buy* for product details.

Easy Ways to Excel

Excellent Exchange

Excel applications. **Pros:** Saves time and money over creating your own applications; inexpensive compared to stand-alone packages. **Cons:** Fewer features than stand-alone programs. **List price:** Templates, macros, and tutorials \$1 to \$100; Guided Tour, Check Book, and Personal Budget \$15 each; 15-program sample disk and catalog \$4. **Requires:** 512K, external drive, Microsoft Excel. **Copy protection:** None.



If you’ve purchased *Microsoft Excel*, and you either don’t have the time to figure out how to program an application or hesitate to hire a programmer, one of Heizer Software’s *Excellent Exchange* programs may be what you need.

Reviews

The more than 250 applications include programs for accounting, business, finance, education, engineering, and manufacturing. Heizer Software sells individual programs through its mail-order catalog; retail stores carry template collections. The collections are grouped by subject category (Introductory Tutorials, Advanced Tutorials, Utilities, and Personal Resources); each one includes over 10 templates and costs \$50.

Developing an *Excel* application from scratch can be a frustrating affair, taking days for an inexperienced programmer. *Excellent Exchange's* ready-made programs relieve you of many development headaches (although most people will have to do some relatively easy customizing) and let you get on with using *Excel*. Heizer also offers a number of tutorials.

Although the programs are written by free-lance developers, each is edited by Heizer Software. The eight examples I reviewed had the same general format and seemed to be free of documentation errors and bugs. Each package contains the name, telephone number, and office hours of its developer; the price of the software includes an unlimited number of support calls.

Excellent Exchange offers a wide array of task-specific templates and macros. Three fairly general programs that are among its most popular products are Guided Tour of Excel, Check Book, and Personal Budget.

Taking the Tour

Guided Tour of Excel is a relatively painless way to learn *Excel's* menu options. This two-hour training program gives you hands-on experience with each option, from the simple commands New and Open to the more complex Precision as Displayed and R1C1. The explanations

are clear, and the program illustrates how each function works and lets you practice using various functions.

The tour uses a split screen in which the tutorial shares the screen with a sample worksheet (see "Two Sides of the Tour"). You have to remember to alternate between activating the tutorial (to scroll

through it) and activating the worksheet (to carry out the instructions). Additionally, when the tutorial requires that you choose a complex selection from a dialog box, the dialog box obscures part of the instructions, forcing you to cancel the dialog box, reread and try to memorize the instructions, then access the dialog box again. But this juggling is still easier than shifting your gaze back and forth between the screen and a manual.

Guided Tour of Excel is far from being a soup-to-nuts tutorial. It does not explain how to set up a worksheet, nor does it provide a complete understanding of complex worksheet manipulations, such as the use of functions, macros, and text strings. Instead, it teaches you routine manipulation of worksheets and provides a foundation for learning more complex applications.

A Steady Balance

If balancing your checkbook is not among your favorite pastimes, Check Book is an easy-to-use alternative. The program is set up much like the standard register that comes from the bank with your



Two Sides of the Tour

Guided Tour of Excel uses a split screen for instructions and practice.

File Edit Formula Format Date Options Macro Window					
A1					
Guided Tour Worksheet					
	A	B	C	D	E
1		Projected Expenses			
2					
3		Jan	Feb	Mar	TOTAL
4	Rent	200.00	200.01	200.00	600.01
5	Tel	80.00	90.00	75.00	245.00
6	Heat	50.00	55.00	60.00	165.00
7	Light	20.00	30.00	25.00	75.00
8	Misc	10.00	15.00	19.00	44.00
9		360.00	390.01	377.00	1127.01
10		xxxxxx			
11		xxxxxx			
12	Apples			1	5
13	Beans			2	6
14	Cake			3	7
15	Dates			4	8
16					
17					
18					
19					
20					

Guided Tour

Welcome to the Guided Tour of Excel!

This program is designed for new Excel users who want to become productive with Excel without spending long hours studying the two Excel manuals before first starting.

It's design is based on the premise that many things can best be learned by doing them.

You'll get a taste of everything Excel has to offer and actually use each feature yourself to do something.

You'll still need the manuals after the tour, but hopefully more for reference than for detailed study.

In taking this tour (designed to last about two hours) we'll touch on virtually all of Excel's main features. A simple worksheet

checks. After you enter data, you can choose to have Check Book arrange your checks and deposits in a number of ways, including by check number, by date, and by descending amount or descending deposit.

Check Book contains several special functions. The Type section provides a powerful means of classifying checks and deposits into categories that you determine. For example, you can choose the letter *D* to denote deductible expenses and *N* to denote nondeductible expenses. You can then subdivide the categories at several levels. This procedure enables you to produce both broad reports, such as all deductible payments, and narrow ones, like mortgage payments.

The Summary section gives you a simple summary of all checkbook activity, including number of payments, number of deposits, and balance. In conjunction with the Criteria section, it can provide a summary of the kinds of transactions you specify. An Extract section allows you to display and/or print all items specified in the Criteria section. These reporting features give you a lot of flexibility in summarizing income and expenses.

Proving Your Worth

If you need to know the state of your personal finances each month, Personal Budget can help. Input into the program is relatively straightforward: you type in up to 45 expense items and about 5 income items. It should not take you much longer than 20 minutes to enter information, but gathering and adding up various records can increase the time you spend by hours.

Once the figures are keyed in, Personal Budget keeps a running summary based on two ways of looking at your financial situation. *Net worth* is the total value of everything you own, including cash, minus what you owe. *Cash flow* is the amount of ready cash (or liquid assets) you have on hand. Net worth is a measure of long-term financial stability; cash flow is a measure of short-term health.

The expense and income items that you type in monthly are summarized by the software under the Total Income and Total Expenses columns. Total Income minus Total Expenses becomes Net Worth Change. The program then takes all cash transfers, like the part of your mortgage payment that actually reduces principal, and subtracts that from Net Worth Change to give you Cash Flow Change. This lets

you assess the changes in your net worth as well as determine whether you will be able to make a payment next week. Personal Budget also provides cumulative monthly summaries and quarterly and annual reports.

Actually, it wouldn't be hard for even relatively inexperienced *Excel* users to set up a program like this for themselves. But since Personal Budget is so inexpensive, why bother?

The Sum Total

The main advantage of *Excellent Exchange's* tutorials is that there are so many of them: the current catalog lists 22, and more are promised. This large selection allows you to define very specific areas of study, such as Font Sort and Date/Time/Calendar function.

Once you've committed yourself to investing \$395 in *Excel*, these templates and macros can save you both time and money. Since *Excel* is the basis for each, after you've learned to use one application, learning the next is much faster. And you can purchase these supplementary applications at a fraction of the price of equivalent software packages. These advantages make the templates an attractive alternative to stand-alone packages. —Lawrence Stevens

See *Where to Buy* for product details.

A Programming Language

APL Plus System for the Macintosh 1.0

APL language system. **Pros:** Completely implements the APL language for the Mac environment. **Cons:** Awkward to use on floppy-drive-based system. **List price:** \$395. **Requires:** 512K. **Copy protection:** None.



APL Plus System for the Macintosh, from STSC, is a full-featured APL language interpreter that takes advantage of standard Macintosh features such as the Hierarchical File System (HFS), the Macintosh Toolbox, the Clipboard, and the Scrapbook. Based on the *PortaAPL* System developed by Portable Software, *APL Plus* is compatible with the STSC implementation for the MS-DOS environment, which allows relatively easy conversion of applications and programs.

```
Ovr 'PRIMES1'
▽ Z←PRIMES1 N
[1] A Find primes up to N
[2] Z←(2=+÷0=(N)÷.1N)/N
▽
```

```
program primes;
CONST
  first = 2;
  max = 100000;
VAR
  sieve : PACKED ARRAY [first..max] OF boolean;
  leftin, range, factor, multiple : 0..max;
BEGIN
  read(range);
  FOR factor := first TO range DO
    sieve[factor] := true;
    leftin := range - first + 1;
    factor := first - 1;
  REPEAT
    factor := factor + 1;
    IF sieve[factor]
    THEN
      BEGIN
        writeln(factor);
        multiple := 1;
        WHILE factor * multiple <= range DO
          BEGIN
            IF sieve[factor * multiple]
            THEN
              BEGIN
                sieve[factor * multiple] := false;
                leftin := leftin - 1;
              END;
            multiple := multiple + 1;
          END
        UNTIL leftin = 0
      END
    END
  UNTIL leftin = 0
END.
```

APL, Pascal, and Prime Numbers

Compare these two programs for finding prime numbers—a standard Pascal program (bottom) and an APL Plus program that uses some tricks to achieve extreme compactness.

APL: The Language

A complete implementation of the APL language, *APL Plus* provides a powerful interactive programming environment for the development of large-scale applications. These are limited only by available memory to a maximum of 4 megabytes.

Critics of the language often gripe that the acronym *APL* stands for *a peculiar language*, while APL fans claim it stands for *a productive language*. A quick glance at the figure "APL, Pascal, and Prime Numbers" shows the language's strengths and weaknesses. APL notation is unique and unfamiliar, but allows for exceptionally

compact solutions to programming problems. In fact, one scientific publishing firm is said to have written its entire office-management system (mailing-list manager, bookkeeping system, and text editor) in *four pages* of APL code. A good APL programmer can produce impressive results in record time, but newcomers will have to invest some time learning the fundamentally different approach to programming that the language requires.

The power of APL is built upon the array as the basic data element, and a set of array-manipulating functions of remarkable scope. Consider, for example, the simple task of finding the minimum value in an array of numbers. A typical program in BASIC or Pascal would require a loop to input the numbers and then a procedure to compare each number with the preceding one to determine the smaller value. After all the numbers had been input and compared, the program would finally yield the smallest value. While that program segment might require eight or nine lines, in APL you could get the same result with a single-character command. That's because the language is based on these short commands, each with the power of a mini program.

Most APL programmers do quantitative analysis and work on custom solutions for complex problems. Financial analysts and statisticians are typical users. In fact, several textbooks on statistical computing assume the availability of an APL interpreter for use in classwork, and mainframe versions of APL are popular in large government and industrial organizations that process mountains of data.

APL Plus: The System

APL Plus comes on two 400K disks, but you'll find 800K drives more convenient. Besides the interpreter itself, APL Plus contains a disk of "workspaces" for programmers, featuring sample and tutorial programs. An APL workspace contains variables, defined functions, and control information for an APL session. There is even a workspace for machine-level Mac access by APL and the Macintosh 68000 Development System (MDS) from Apple.

Three excellent volumes of documentation are supplied with the software: a language reference manual, a user's guide for Macintosh-specific information, and a tutorial optimistically entitled "APL Is Easy!" The tutorial guides the reader from basic definitions to exploring such topics as

table lookup functions and the *ravel* function, which converts a matrix into a vector. The package also includes a set of stick-on keytop labels for the Macintosh keyboard. The labels greatly simplify finding the special symbols (defined with Option and Shift-Option combinations) used in APL functions. A desk accessory also shows the APL keyboard layout.

Installation of the system is simple, and double-clicking the APL icon places you (and the keyboard) in the APL interpreter. In operation, APL behaves much like BASIC, with both an immediate execution mode and an interpreted mode. The difference is, the power of APL far exceeds that of BASIC.

In "APL, Pascal, and Prime Numbers," you can see the extreme power of the APL operators in defining functions. The Mac APL interpreter's execution speed is comparable to that of the *APL Plus System* interpreter running on an IBM PC. Interpreted programs are always slower than the best compiled versions of the same programs (APL is faster than BASIC and much slower than C)—the trade-off in APL is the ease of doing complex programming.

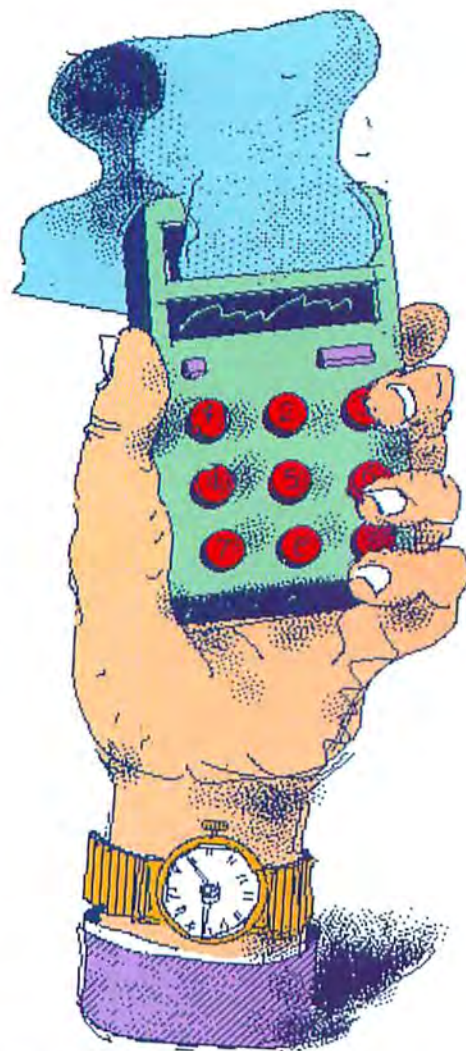
The only problem I encountered involved HFS paths and seems hardly worth complaining about. After I increased the default font size (to 20 points) from within the CONFIG workspace, the interpreter was unable to open files stored deep within other folders. The required path was simply too long to fit within the APL interpreter window. Returning to the original 10-point font size solved the problem.

APL Plus contains a complete communications package for accessing other APL systems. It supports speeds of up to 9600 baud, as well as the import and export of APL workspaces using the standard Workspace Interchange Convention. This standard allows the interchange of APL workspaces between different machines (such as an IBM mainframe and a Macintosh).

All in all, this product is highly recommended for Mac users who need the extensive analytical facilities of the APL language. STSC's APL interpreter is an excellent implementation of this peculiar and powerful programming language.

—Terry Ward

See *Where to Buy* for product details.



Billing Your Clients

Project Billing 1.21

Time- and expense-billing system. **Pros:** Detailed reporting; flexible searches; calculates interest rates on overdue balances. **Cons:** Deviates from Mac interface; data structure and entry counterintuitive; multiple data files prone to loss. **List price:** Version 1.35 \$695. **Requires:** 512K. **Copy protection:** None.



Many consultants and other professionals have a hard time getting their monthly invoices out on time. But while timely billing is essential to timely payment, managing the billing process also means tracking your accounts receivable and expenditures: who is to be billed and why. In this respect, a project billing program must function both as an accounting application and a database. *Project Billing*, by Satori

Software, is just such a package, and it's targeted for architects, designers, and consultants of all kinds. (For attorneys, Satori sells a similar product called *Legal Billing*.) It allows you to store client information, define projects, and apply time and expenditures to those projects. A range of invoices and reports can be generated, and you can print mailing labels.

Codes, Projects, and Actions

Daily data entry occurs in two overlapping windows, the Project and Action windows, to be manipulated later through numerous menu options. To use the program, however, you must first define your action and employee codes. Like a chart of accounts in an accounting program, you define actions in three categories: credits, expenses, and services. Simple actions might include items like "Payment Received," "Meetings," or "Blueprint Services." These are numbered for future shorthand reference when posting data to a project account. When defining an action you can enter a percentage—for marking up certain project expenditures—that's calculated automatically when it's time to generate an invoice or report. Markups can be global or specified for individual items, and they can be edited in the record field as well. Taxable actions can be flagged for the automatic addition of local sales tax. There's a limit of 63 action codes, which may be confining for a larger firm with diverse tasks to perform or with multiple project phases, each containing several actions.

After action codes, you set employee codes—up to 99—by number, name, hourly cost, and billing rate. This limit seems sufficient until you consider that some individuals may each require several codes for tasks billed at different rates. You can also edit actions or employee information after it has been entered.

Once this information has been defined, project account data with accompanying actions can be entered. Client information, project name, and billing options are entered in the Project window. Preestablished budgets for either services or expenses can be noted here, as can the amounts expended so far (in case you're starting up *Project Billing* during the middle of a project). Below these user-definable fields are the current charges

outstanding, the prior balance, and any applicable credits for services or expenses. The program itself completes these fields.

Options in the Project window include an automatic expense markup and interest rate for amounts past due. This feature is available in both the Project window and the Entry window for time and expense codes. Consequently, if you accidentally enter a percentage in both windows, the program adds them together, effectively doubling the markup. This problem could have been eliminated with an override function.

A key option enables you to link multiple projects for a single client, so that a consolidated bill can be printed. Another option, called Work In Progress (W.I.P.), allows you to maintain information about a project for more than a month. Like many accounts receivable programs, *Project Billing* normally prints invoices once a month and then clears the "action slips" you've entered for that bill. W.I.P. enables you to maintain a running record of all charges over the course of a project.

The Action window is where most of the action takes place (see "Entering Data"). Satori has used *clairvoyant* data-entry fields to speed the entry of information. You need only type in a few characters in the project field, and the program will search for the closest match. If one is found, related client and project information is automatically entered for you. To refresh your memory, you may also scroll through a listing of available codes and names for projects, employees, or actions in each field. Additionally, a fixed cost for time or expenses (or both) can be entered automatically or manually. Fractional hours are supported, with a limit of 99.99 hours

for any individual action slip. A third option—a timer that runs while you're completing a task—would be more useful as a desk accessory, since having to load *Project Billing* each time it's used is cumbersome, even with *Switcher*.

Searches and Reports

Searching and reporting are clearly *Project Billing*'s strong suits. The menus offer a broad range of predefined reports, and invoices may be printed with a variable amount of detail on charges. Searches for particular records can be defined by numerous parameters. Report categories allow you to review expenditures and revenues for projects, employees, or individual actions. Reports and invoices can be sent to a printer, to screen for instant review, or written to disk as text for use with a word processor. To avoid writing final bills prematurely (and clearing the action slips for the month), you can print a draft bill for review purposes. *Project Billing* has the un-



The Reports Menu

This provides many options and occasional confusion. The Project window shown here is a typical example of the information you capture with Project Billing.



Entering Data

Clairvoyant data fields speed the entry of project information in the Action window.

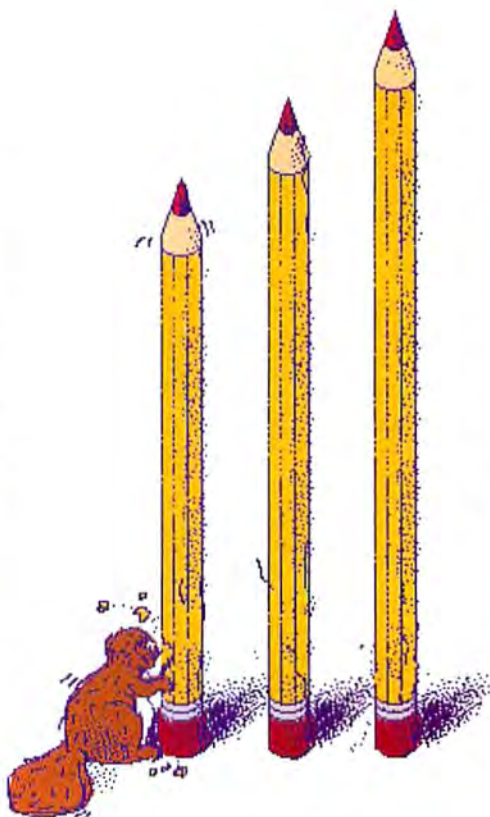
mistakable character of a sister product from Satori called *Bulk Mailer* and in fact can print mailing labels and envelopes, an important convenience.

On the negative side, *Project Billing* departs from the Mac interface conventions. The menu bar is organized so that printing functions, normally housed under the File menu, are under Reports, (see "The Reports Menu"). Under the File menu are commands for opening the various data files. An Entry menu lists windows for entering such information as a mailing address and the percentage charged for sales tax in your area. Other menu items allow the user to define searches, to format the information in reports, and to sort the entire database by date, project expenses, credits, or even by employees. Since you must choose among so many options, placing some of these standard settings in sub-windows or dialog boxes below the main menu would have simplified the program's appearance and ease of use.

Strengths and Weaknesses

Other project billing programs include *Professional Billing* from Chang Labs, which integrates with a general ledger; and *Office Productivity System (Ops)* from Applied Micronetics, which integrates with BPI's General Ledger module and is a multiuser application. Each has its strengths and weaknesses, which have been referred to in previous *Macworld* reviews. However, none of these programs allows for real-time entry of expense information while within another program, via a desk accessory. Such a feature would add significantly to the value of a time-billing application, particularly if it's a multiuser system supported on AppleTalk. *Project Billing* can be configured for use on AppleTalk with network programs like *MacServe* or *TOPS* by placing the application and its data files in a volume that can be served around the net. Keep in mind that, unlike *Ops*, this doesn't enable multiple users to access *Project Billing* concurrently, but it does provide a simple way of accessing the program from numerous workstations in sequential fashion.

For all of its reporting and printing capabilities, *Project Billing* is a little rough around the edges. The program's divergence from the standard menu and interface conventions used by most Macintosh applications is annoying. Furthermore, editing the data tables—such as action or employee codes—is done through multiple



nested windows, rather than directly through the tables. As a result, the program's design is in certain ways counterintuitive. Additionally, because you're limited to 1200 projects and 3500 action slips with either a hard disk or an 800K drive, further expansion would require another set of data files in a separate folder with its own program software to sustain another *Project Billing* system. Finally, the multiple data files it creates make the program more susceptible to information loss than a program using a single integrated data file. (*Ops* by Applied Micronetics has the multiple data files too; *Professional Billing* by Chang Labs creates a single file.)

On the positive side, valuable features such as automatic interest calculation and markup of reimbursable expenses eliminate some tedious accounting tasks. *Project Billing*'s thorough reporting capability and ability to export data give it the basic versatility to work in many situations, although at the time this was written, it could not be integrated with any general accounting system. *Project Billing* performs many necessary functions, but for \$595 it should be a much more polished product.—*Mark Winter*

See *Where to Buy* for product details.

Made to Specifications

MacSpec 2.0

Word processor for specifications. Pros: Automatic numbering of sections; flexible numbering scheme; ability to hide objects; print preview function. **Cons:** Imprecise layout tools; inability to make global changes; no Undo function. **List price:** \$199.95. **Requires:** 512K. **Copy protection:** None.



Some types of documents, like technical specifications, just aren't suited to general-purpose word processors like *MacWrite*. Because such documents are so highly structured, most of your time is spent formatting instead of writing. *MacSpec*, from LM Software, is a specialized word processor that automatically deals with the details of layout, letting you concentrate on content.

Tables of Contents

Specifications are typically composed of numbered sections, related to one another in a hierarchical scheme familiar to anyone who has used an outlining program. With *MacSpec*, you design a specification by building a table of contents (see "Organizing the Document"). Adding a section to the table of contents is easy. You place the cursor where you want to insert the section and select New from a pop-up menu. But positioning the rectangular cursor can be tricky—a horizontal arrow would have been better. *MacSpec*'s flexible numbering scheme enables you to represent up to eight section levels individually by number (1.2.1) or by letter (1.b.1). Each time you add or delete a section, the numbers of all succeeding ones change accordingly.

Laying It Out

You design the sections in a layout window by positioning three objects that represent the section's elements—number, title, and body (see "Section Layout"). Icons at the bottom of the layout window control the type of section (text or graphic), line spacing, text justification, and tabs. The gray rectangle icon is used to prevent an object from appearing in the printed document, a useful feature that lets you easily hide sections that may not be appropriate for a given document version without deleting them altogether.



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





(12 monthly issues) of *Macworld* for only \$24. I'll save \$23.40 off the annual cover price of \$47.40, a savings of almost 50%. (That's \$6 off the regular subscription rate of \$30.)

SAVE EVEN MORE!

- ☐ \$37.90 for 2 years (24 monthly issues)
- ☐ Payment enclosed
- ☐ Bill me later

Name

Company

Address

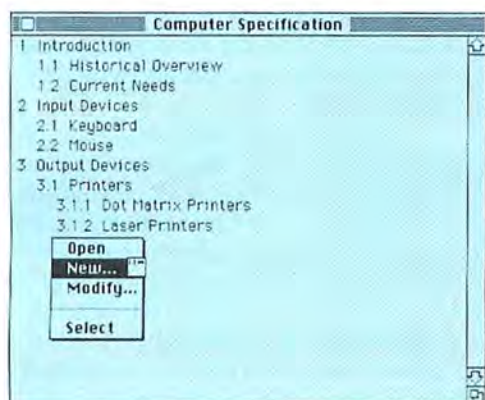
City, State, Zip

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

Unfortunately, the layout process suffers from several design flaws. To move an object, for example, you have to select one of the tiny "knobs" on its corners—but not the one at the bottom right, which is used for sizing. And precisely positioning an object isn't easy, even with the horizontal and vertical rulers; at the very least, some sort of alignment tools (like *MacDraw*'s) should have been provided. A more serious problem is the way new sections take on the layout of preceding sections of the same level. If you decide to change a formatting attribute, such as replacing section titles with italics instead of boldface, you have to go through the document and manually change each title. Font attributes of section numbers aren't inherited at all, but instead always revert to 12-point Geneva.

Words and Pictures

Once you've built the table of contents and laid out the section elements, you begin entering the contents (text or graphics)

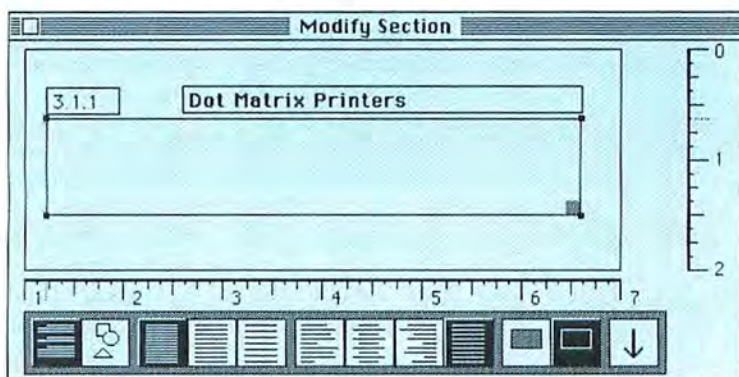


Organizing the Document

You set up and reorder sections in the table of contents window. A new section is added by choosing *New* from the pop-up menu. To change an existing section's layout use *Modify*. Choosing *Open* lets you edit the section's contents.

Section Layout

The section title is in bold type, the text single-spaced and fully justified. Subsequent sections at the same level automatically inherit this format. If you change the format later, however, changes will not be reflected automatically throughout the document.



in a separate window. *MacSpec* won't let you mix text and graphics in the same section, nor can you change a section of one kind into the other, even after deleting the contents. Text editing follows standard Macintosh guidelines, but there's no way to set a section's default font attributes. Also, the Undo function isn't implemented at all, and there are no Find or Change commands. *MacSpec* doesn't include a built-in spelling checker; the manual suggests that you save a text-only copy of a document to check it. I was able to use an interactive spelling checker (*Thunder*, from Batteries Included) without difficulty.

Customizing page headers and footers is similar to laying out section elements. You use up to six different objects (text, chapter, date, page, document name, and specification title) and can design even and odd pages. Sections can be grouped into chapters, each with its own prologue and epilogue containing a chapter number and text.

Setting page margins and printing are straightforward procedures. There's even a handy page-preview function to display a document on the screen as it will appear when printed. The 48-page manual is well written, but lacks an index.

There are a few minor inconsistencies in *MacSpec*'s design. In the header and footer windows, for example, objects are deleted by dragging them into the Trash Can; elsewhere, you remove objects by selecting them and choosing Cut or Clear from the Edit menu.

Spec Sheet

For creating simple technical specifications, you'd be better off using an outliner like *Acta* in conjunction with a word processor. For complex documents, particularly engineering, architecture, and military specifications, *MacSpec* lets you set up

a rigid format that others can easily follow—but its word processing capabilities fall short of a full-featured word processor, and its layout tools are imprecise. If you can live with *MacSpec*'s quirks, though, there's nothing else quite like it available.

—Franklin Tessler, M.D.

See *Where to Buy* for product details.

Seize the Data

Data Desk 1.04

Statistical analysis package. **Pros:** Easy-to-use exploratory data analysis tool; excellent use of the Macintosh interface. **Cons:** Limited multivariate capabilities. **List price:** Professional version 1.06 \$175 (student version \$38; library licenses available). **Requires:** 512K, 800K of disk storage on one or two drives (student version will operate on single-drive, 128K Macintosh). **Copy protection:** None.



Data analysis is both an art and a science—the art of discovering patterns in data, the science of applying calculations to derive the needed figures. *Data Desk*, a statistical analysis package from Data Description, stresses the art aspect. It uses the Mac's graphics to provide an overview of your data—a way to discover what the numbers mean before you launch into calculations.

Data Desk includes a full complement of basic analysis tools, including random-number generation, probability distributions, simple inference, two-sample tests (confidence intervals and t-tests), one-way and two-way analyses of variance, contingency tables, and correlation and regression (both simple and multiple). What the program lacks are functions for complex multivariate analysis, including factor and cluster analysis, a general linear model, and advanced models of analysis of variance. *Data Desk* can't replace full-featured multivariate statistical packages like *STAT80*, *StatView 512+*, and *SYSTAT*; professional statisticians will need a second package for calculations. *Data Desk* does provide easy exploratory analysis, to suggest an approach before serious calculation starts.

Data Desk views data analysis through graphs to afford painless, interactive development of an analysis. You can display data in histograms, scatterplots, box plots, and 3-D rotating plots. Graphing a variable immediately reveals the outliers (exceptionally

large or small occurrences), robust statistical measures (occurrences that don't fall within assumptions), and residuals in a data set.

By manipulating the graph, you can bring out relationships you might not otherwise see. Narrowing the scale of a histogram window, for instance, increases the y-axis scale, accentuating differences between data. You can rotate a 3-D plot to find out whether a set that clusters along two axes stays equally close when viewed along the z-plane. If your graph shows a relationship among a particular set of cases, you can simply box the cluster of points and rebuild the graph using just those values or use a simple menu command to create a new selector variable using that group. The interface puts the data at the tip of your mouse pointer, presents it in context, and makes relevant information instantly accessible.

To edit or enter data you open the icon that represents a variable, revealing a text window that holds the values. Open variables are displayed in rows across the screen;

on how and when to use various statistical techniques and includes exercises in using each tool. In addition, excellent example data-files are included on the *Data Desk* disks. After program setup, professional statisticians will probably refer to the manual only in the rare instances when the use of the program is not immediately clear from the desktop.

A student version of *Data Desk*, containing all the statistical measures covered in a typical one-year undergraduate statistics course, is available from Data Description or from Kinko's Academic Courseware Exchange (\$38). This version lacks the data importing and exporting and 3-D rotating plots found in the professional version and is limited in data-set size to 15 real-data variables and about 1000 total numbers. (The professional version's capacity is limited only by storage, though the program slows to a crawl when using data sets with more than about 2000 values.) The scaled-down student version can run on a single-drive 128K Mac.

Variable Interest

Opening a number of variables creates a table of the data set. To enter data, you place the insertion point and type. When you press Enter, the insertion point moves to the corresponding row in the next variable's window.

Car	Weight	MPG
Audi 5000	830	20.3
Volvo 240 GL	140	17.0
Saab 99 GLE	795	21.6
Peugeot 694 SL	410	16.2
Buick Century Special	390	20.6
Mercury Zephyr	070	20.8
Dodge Aspen	620	18.6
AMC Concord D/L	410	18.1
Chevy Caprice Classic	840	17.0
Ford LTD	725	17.6
Mercury Grand Marquis	955	16.5
Dodge St. Regis	870	19.2

opening a few variables creates a table of the data set (see "Variable Interest"). When you scroll one window, the corresponding windows scroll with it, so you can view the entire set of data for each case. The program's Compute menu offers instant summary reports of a variable. By default, a summary report displays the mean, the standard deviation, and the number of values for the selected variable. You can choose from a host of other values to report, including measures of center, spread, and order.

Included with *Data Desk* is an excellent 220-page guide that is structured more like a textbook on basic statistical analysis than a software manual. It provides brief tutorials

It's a measure of *Data Desk*'s quality that it successfully straddles both markets, supplying sophisticated data analysis in a form neither too basic for professionals nor too difficult for statistics beginners. The key is the program's transparent interface. Without the clutter of the complex command syntax common to most data analysis packages, you can get straight to the issue at hand: what do these numbers mean?—Terry A. Ward

See *Where to Buy* for product details.

Fast Relief for Your Security Headaches

Hard Disk Partition 1.5

Hard disk partitioning system. **Pros:** Password and read-only protection; simple desk-accessory operation; partitions are nearly identical to ordinary disks. **Cons:** Does not adequately protect against theft or deliberate destruction of files. **List price:** \$54.95. **Requires:** 512K, serial or SCSI hard disk, Finder 5.2 or later version.

Copy protection: None.

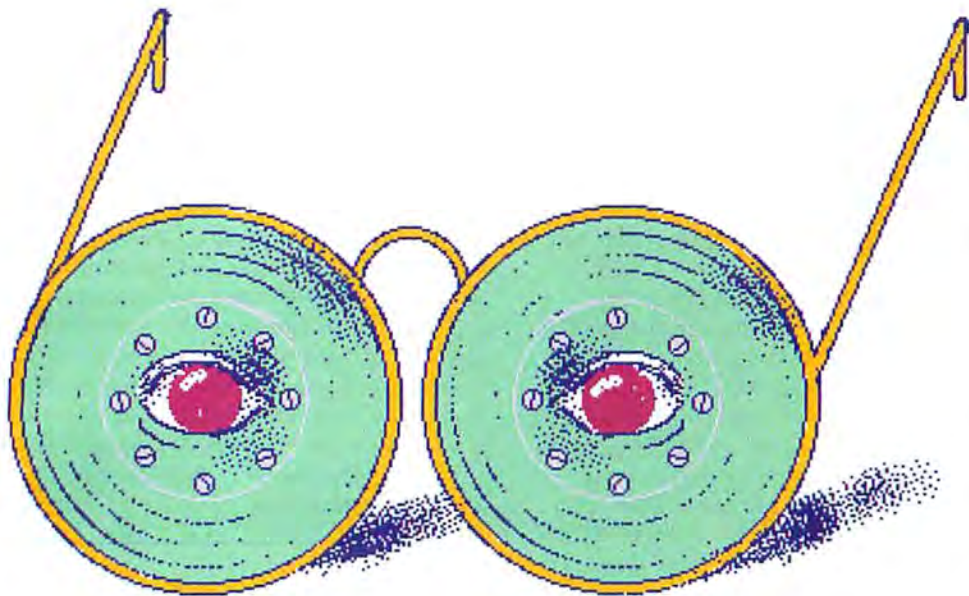


Simple, cheap, and effective—that just about sums up *Hard Disk Partition* from FWB Software. It's an easy-to-use but powerful desk accessory that lets you partition your hard disk to protect it from unauthorized use and to organize disk space more efficiently. *Hard Disk Partition* is designed to handle the most common file-security problem: one Macintosh used by several people.

The *Hard Disk Partition* system consists of two parts: the desk accessory itself, which does most of the work, and the Auto-mounter program, which allows you to specify partitions to be mounted automatically at system start-up. Partitions created using *Hard Disk Partition* have their own disk icons on the desktop and behave just like real hard disks; even the Macintosh Open File dialog can't tell the difference. In fact, *Hard Disk Partition* is so easy to learn that anyone who knows how to use a Mac can master it in just a few minutes. You get exactly what you expect; no obscure but important little tricks, no exceptions to the rule—even the documentation is simple and clear.

Password-protecting a partition is simple: just click on the Info button in the *Hard Disk Partition* Desk Accessory window, click on Password, and start typing. Once a partition is password protected, it can only be mounted (or its password changed) by someone who knows the password. Making a partition read-only is equally simple. This type of partition is great for databases and other frequently accessed files that should only be altered by authorized users.

Password and read-only protection effectively prevent accidental data loss and casual theft. Passwords don't show up on the



screen when they're typed, and starting the system from a floppy disk does not give you access to protected partitions the way it does with some other less secure protection programs. However, I did discover a significant crack in the armor that leaves files open to theft and deliberate destruction. Since partitions are actually invisible locked files, file-utility programs such as *MacTools* see them as both files and disks. When a partition is viewed as a file, it can be made visible, allowing it to be unlocked, copied, moved, or deleted by the Finder. When a partition is viewed as a disk, individual files within it can be copied or deleted using the file utility.

Getting It Together

When a hard disk is new and has a lot of empty space, its files are stored in physically contiguous blocks, which makes disk access relatively efficient. However, as you add new files and delete old ones, large blocks of space get used up and gaps of varying sizes occur between files. Finally, when there is no longer enough contiguous space to store a file, it's stored as a sequence of file fragments scattered around the disk wherever free space is still available. A partition created by *Hard Disk Partition* is not just a special directory of files scattered around the disk; it occupies a physically contiguous segment of the hard disk. Moving a file into a partition involves actually writing a copy of that file to a physically separate area of the disk. While the use of contiguous disk space increases disk efficiency, it also means that when you no longer have enough unused contiguous space to create a partition, you'll be forced

to do some disk housecleaning using either a backup/restore or a defragmenting program. Although you might prefer to partition all your files, using *Hard Disk Partition* isn't an all-or-nothing choice. You can divide up some files and leave others alone. Disk space not specifically allocated to a partition remains in the nonpartitioned area of the disk, and its files appear in the disk's standard Mac window.

Hard Disk Partition can cause a problem, though, if you try to unmount a partition that contains an open file; that often results in a system crash. An appropriate error message would obviously be preferable, but since no files are lost or damaged, it's really just a minor annoyance.

Hard Disk Partition runs on any hard disk, including the serial drives that require special boot-up programs, such as the Paradise and the old MacBottom. FWB Software has even provided a special version of the Automounter that operates with those disks. Furthermore, I have yet to find a program that is incompatible with *Hard Disk Partition*. It can even create MFS partitions that work with the few programs that have yet to be updated to the Hierarchical File System.

While *AppleShare*, *TOPS*, and *InfoServe* (as well as the soon-to-be-released new products from 3Com and other vendors) also provide file security, none of

them were designed to do what *Hard Disk Partition* does: provide reasonable file security within a multiuser/single-machine environment. *Hard Disk Partition* protects files from accidental loss or damage, theft, and destruction by the average user—but just don't expect it to thwart the hacker intent on getting into your files.

—Larry-Stuart Deutsch, M.D.

See *Where to Buy* for product details.

Gender-Specific Leather and Lace

Leather Goddesses of Phobos
release 59

Interactive fiction (standard level with a few extra challenges). **Pros:** Witty writing and plot; comes with pair of 3-D glasses. **Cons:** No scrollbar to previous text. **List price:** \$39.95. **Requires:** 128K. **Copy protection:** None.

Moonmist 4.0

Interactive fiction (introductory level). **Pros:** Excellent script and overall presentation; provides female and male viewpoints. **Cons:** No scrollbar to previous text. **List price:** \$39.95. **Requires:** 128K. **Copy protection:** None.



Infocom's *Leather Goddesses of Phobos* and *Moonmist* are two high-quality but very different kinds of games. Both are excellent examples of text-only interactive fiction. *Leather Goddesses of Phobos* exudes an endearing galactic tackiness with its introductory 3-D comic book and scratch 'n' sniff card.

Leather Goddesses opens with an urge to go to the (scratch 'n' sniff spot #1) bathroom—Ladies or Gents—to determine a player's gender. Its lewdness is designed to appeal to both sexes. *Moonmist*, on the other hand, is a well-bred gothic romance that offers an introductory level of interaction primarily for girls between the ages of 9 and 16. (It also has a mode of play for boys.) What these two very different story games have in common are exceptionally good writing, inventive plots and puzzles, consistency of mood and attitude, and, I feel, respect for female players.

Laughable, Smellable Lewdness

Leather Goddesses of Phobos has three playing modes: tame, suggestive, and lewd. Despite its suggestive title, *Leather Goddesses* is neither sexist nor truly offensive. Its humor punctures the pretensions of the fantasy adventure genre. Be you hero or heroine, your quest is not for a magic wand and a sacred scroll; you're after some cotton balls, a length of rubber hose, and an outlet for your unspeakable lust. It's much more tongue-in-cheek than tongue kiss.

Your defeat of the *Leather Goddesses of Phobos* is a campaign likely to take months, for all the planet hopping and visits to Cleveland that are involved. The amusing and well-drawn 3-D comic book included with *Leather Goddesses* contains certain clues. At certain locations players have the option of sampling a smell. While some of the smells on the scratch 'n' sniff card are not instantly recognizable, players can take unparalleled pride in owning the Smell-O-Vision of interactive fiction.

Gothic Gollies

Cowritten by a former Nancy Drew/Hardy Boys author, *Moonmist* succeeds in emulating the classic youth mystery novels. Its puzzles and challenges are inventive and playful, and they complement the story without requiring advanced leaps and bounds of logic.

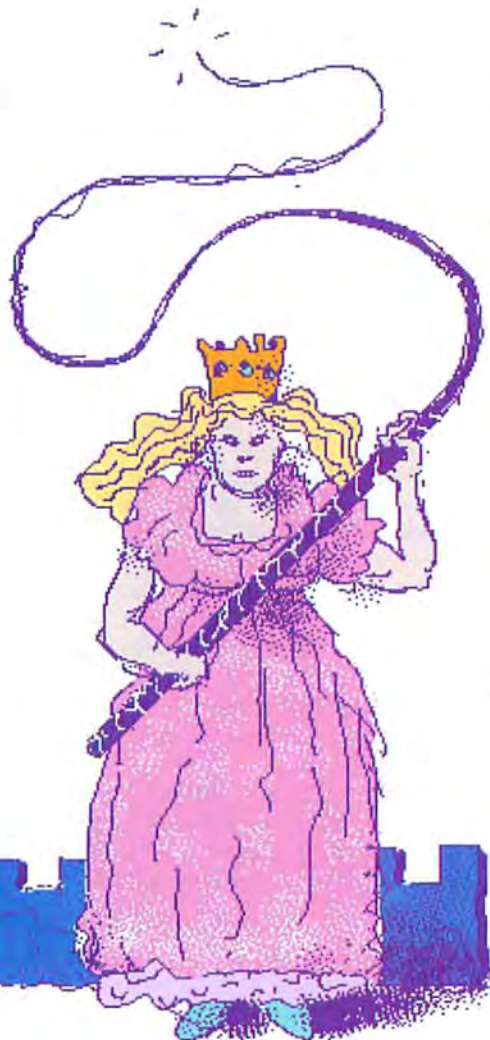
Interactive adventure games generally reflect the marketplace's domination by male-oriented products. *Moonmist* is one manufacturer's answer to this discriminatory imbalance. *Moonmist's* gothic mood is created by "handwritten" letters, a diagrammatic tourist brochure, and an 11-page collection of tales that opens like a real book to a Victorian-style frontispiece. *Moonmist* features excellent pen-and-ink drawings reminiscent of an old-fashioned illustrated novel. The characters have names like Deirdre and Lord Jack, and they act differently and seek varying treasures in different versions of the story. There are four variations of *Moonmist*, each different enough so that repeated plays will still be enjoyable.

Invisible Ink and Literary Values

One problem with Infocom's format is the lack of any scrolling. If you don't print the text continuously, you will have to slow down and take careful notes. Sometimes that is just not as much fun as plunging ahead recklessly. Whichever way you go, there are puzzles along the way that may stop you.

As a last resort, inexpensive hint books printed in invisible ink are available. A latent image marker supplied with each book reveals the answers only to specific questions. Because neither program offers graphics, a lot is packed into 128K, including disk space to store multiple games. Both games are excellent for those who welcome the creative involvement offered by interactive fiction that emphasizes literary or satirical values. —Keith McCandless

See *Where to Buy* for product details.



High-Power Communications

inTalk 2.11

Communications Software. **Pros:** Supports a wide variety of file-transfer protocols and emulates more types of terminals than any other Macintosh communications program; maximizes performance of many high-speed error-correcting modems; offers programmable function keys and automatic command sequences. **Cons:** Slower to load than most other popular communications programs. **List price:** \$199. **Requires:** 512K.

Copy Protection: None.



Several good general communications programs exist for the Mac: *MacTerminal*, *Red Ryder*, and *MicroPhone* immediately come to mind. The main strength of these programs is the ability to perform routine tasks well. But what if you want to do something a little out of the ordinary? Such as look at the radar weather maps available on CompuServe, use a high-speed error-correcting modem at peak efficiency, or append received information to an existing text file? *inTalk* from Palantir Software (formerly *inTouch*) is a file-transfer and terminal-emulation program for the Mac that has more than just standard features: *inTalk* emulates eight terminal types (more than twice as many as other Mac communications programs) and offers five binary-file-transfer protocols—two designed for Mac-to-Mac transfers and three for Mac-to-other transfers—for greater flexibility. (The program also includes special support for high-speed modems with built-in error correction.) *inTalk* provides convenience features (such as a clock/online timer, a built-in text editor, and a command language) that make communication easier. The built-in text editor is similar to *AppleLink's* and enables you to create memos and short documents without going offline; command language scripts can automate repetitive communications tasks.

Protocols and Modem Support

In addition to standard text transfers, *inTalk* offers an array of binary-file-transfer protocols (see "Protocols for Binary File Exchanges"). Binary protocols, necessary for sending information more complex

than ASCII text, are limited in other programs to two choices: a Mac-to-Mac binary protocol and Xmodem, a generic standard. *inTalk* offers an array of protocols that make successful file transfers between dissimilar computers more likely and more efficient. The *inTalk* protocol is designed to maximize performance when using high-speed error-correcting modems for binary file transfer between Macs; it leaves error correction to the modem and simply blasts data out the port at high speed. This special protocol also enables you to make unattended file transfers and works with *MacTerminal*'s binary protocol. *inTalk* lets you choose from Xmodem (also known as Modem7), Crosstalk, and Yterm protocols to transfer binary data that won't require Mac format again; these protocols transfer only the data fork. Xmodem and Crosstalk protocols are widely used by MS-DOS computers; Yterm transfers binary and text data from Macs to IBM mainframes and DEC VAXs.

Although designed to work with modems that use the Hayes AT command set, *inTalk* can be tailored to work with non-standard modems. Users enter the necessary command sequences via the Settings menu. The developers of *inTalk* built in special support for MNP error-correcting modems and PEP high-speed modems, like the DCA Fastlink and the Telebit Trailblazer.

inTalk is unique among Mac communications programs in its support for PBX-based data networks, such as Northern Telecom's Meridian SL-1. *inTalk* provides the long break signal (a break longer than 1.6 seconds) required for direct RS-422 connection to such systems, which are used in many offices. (The break signal is an ASCII control character used by many computers, especially mainframes, to interrupt or control certain communication processes.)

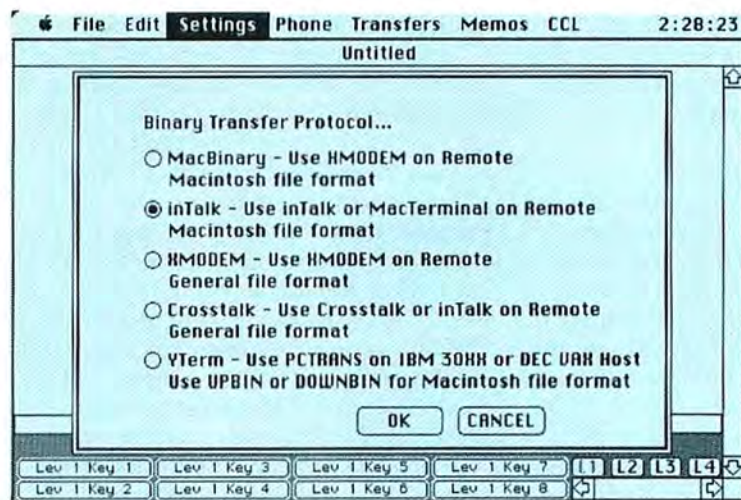
Other Features

inTalk's Communication Command Language (CCL) offers support for complex communication tasks by allowing users to automate repetitive command sequences, such as mainframe log-on dialogs. Similar to but more powerful than either *MicroPhone*'s script ability or *Smartcom II*'s Autopilot, CCL has many more commands and offers greater control over the communications process. For example, CCL allows you to specify the length of the break sig-



CompuServe Graphics

inTalk is the only Mac communications program that emulates VIDTEX, CompuServe's special graphics terminal, enabling you to display or print weather maps, news photographs, graphs, and charts from the information service.



Protocols for Binary File Exchanges

inTalk supports five different binary-file-transfer protocols. The MacBinary and *inTalk* protocols are primarily for Mac-to-Mac transfers. Xmodem, Crosstalk, and Yterm allow binary data to be exchanged between a heterogeneous array of Macs, PCs, and mainframes.

nal in tenths of a second. Because of *inTalk*'s built-in clock, a CCL script can program communication to take place at a certain time (such as 2 a.m.). The program comes with several sample scripts. Experienced BASIC users will find that CCL is not difficult to learn or work with. There are a number of debugging features that facilitate script development. *inTalk* also has a built-in text editor, which allows you to view, create, and modify text files without leaving the program.

inTalk has 32 on-screen function keys you can program to send any sequence of characters, including CCL scripts. As with *MicroPhone* and *Smartcom II*, the *inTalk* disk includes files preset for communication with the major commercial information services (Dow Jones News/Retrieval, CompuServe, The Source, etc.).

Because of its many features, *inTalk* is somewhat slow to start up and exit. The Macintosh watch icon does not appear while the program is loading, so you have no visual cue that the loading hasn't finished. If you are impatient and begin typing before *inTalk* is ready, the program simply ignores your keystrokes.

inTalk is a rarity: you don't have to give up features offered by its competitors to get those you need. Despite its many features, the program is quite easy to use; the manual is also well written. Because of *inTalk*'s support for increasingly popular high-speed error-correcting modems and its extensive array of terminal-emulation and file-transfer options, this program is likely to be the only communications program you'll ever need. —Nanci Hamilton

See *Where to Buy* for product details.

Making It Big

inLarge 1.0

Screen-image enlargement software. **Pros:** Very easy to install and customize; includes the ability to automatically scan down or across the screen. **Cons:** Not compatible with some "screen blankers" and games. **List price:** \$95. **Requires:** 512K. **Copy protection:** None.



For people with impaired vision, even the high resolution of the Macintosh screen sometimes can't compensate for its small size. Large-screen external monitors that magnify the display have been available for some time, but they're expensive and require modifying the Mac. *inLarge*, a clever utility from Berkeley System Design, solves the problem by magnifying the screen through software.

Seeing Is Believing

To install *inLarge*, you simply run the application that comes on the program disk. Once installed, *inLarge* remains active until the Mac is rebooted. The documentation is concise and clearly written. In consideration of its intended audience, the *inLarge* manual includes a version in 24-point type, as well as one in small print for use with a closed-circuit TV system.

inLarge enlarges everything on the Mac's display 2 to 16 times. As you move the cursor, a different part of the enlarged screen comes into view inside a selection rectangle called the *inLarge* frame. (see "Magnification 2"). The scrolling action is smooth, and the magnified display is easy to work with once you get used to it.

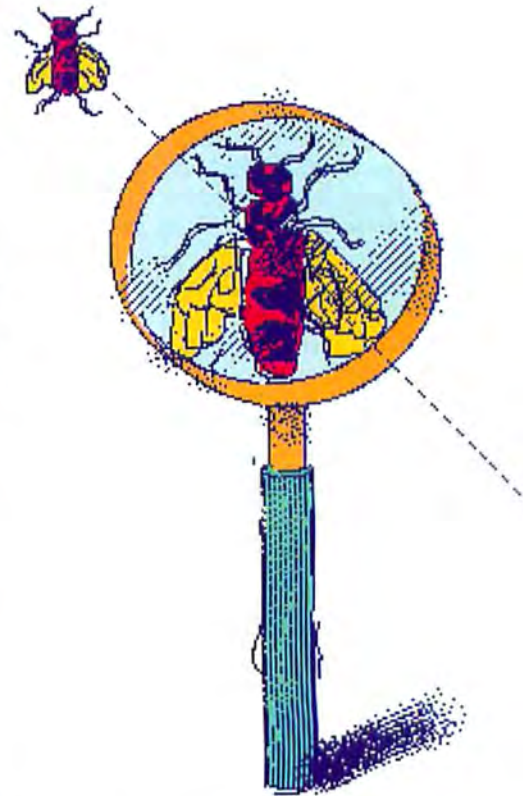
You control *inLarge* by pressing the Option key, which causes an icon to appear at the bottom right of the Macintosh screen. To set the degree of magnification, type a number between 2 and 16. You can choose to magnify the entire screen or just a small part of it. Pressing Option and then *o* turns *inLarge* off and on; typing *i* after the Option key reverses black and white (white letters on a black background are easier to read for some people with poor vision). People with visual-field defects can supplement the enlarged cursor with a full-frame crosshair by typing Option followed by *c*.

More Options

inLarge offers a number of advanced features that make the program very useful. The Lock feature lets you concentrate on one part of the screen. To activate Lock, move the cursor to the area you're interested in and press Option followed by the letter *l*. When you move the cursor away, the *inLarge* frame follows only as long as the mouse keeps moving. Once the cursor stops, the view snaps back to the original region. In a spreadsheet, for example, you can lock *inLarge* onto a column of figures and move the cursor to the scroll bar to scroll up or down. When the cursor reaches the scroll bar and stops moving, the column of numbers reappears. Scrolling continues as long as you hold the mouse button down, even though the scroll bar itself is no longer in view.

Scan is another powerful feature; to activate it, position the *inLarge* frame at the beginning of a block of text or graphics, type Option, and then type *s*. Gently moving the mouse vertically or horizontally causes the magnified area to pan in the same direction—the more rapid the initial mouse movement, the faster the rate of scan. When the frame reaches the edge of the screen, scanning stops. If you double-click the mouse, the view shifts back to the starting point and scanning resumes. This function is especially useful for reading lines of text without moving the mouse.

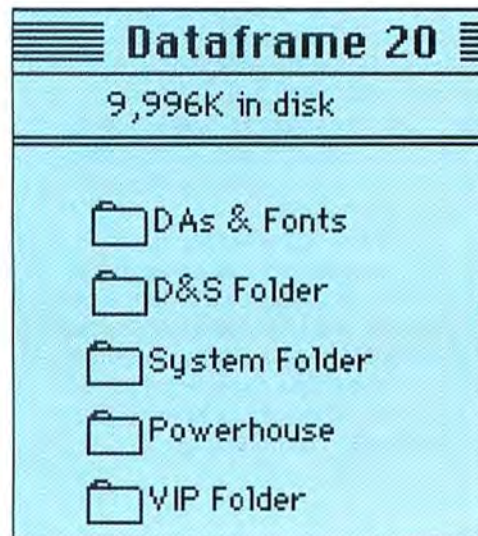
inLarge isn't compatible with some screen blanker utilities (like the public domain *AutoBlack*), and the results of magnifying some games are interesting, to say the least. When *inLarge* is turned off, the screen response is somewhat sluggish, but



since *inLarge* can be easily removed by rebooting, this isn't a serious problem.

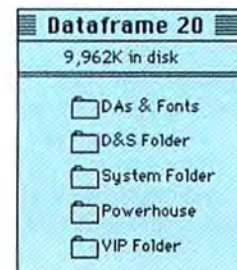
inLarge is an elegant, inexpensive way for people with impaired vision to enjoy the Mac's user interface without resorting to expensive add-on monitors. If it works with your applications (and I suggest you try them before buying), *inLarge* is truly a sight for sore eyes. —Franklin Tessler, M.D.

See *Where to Buy* for product details.



Magnification 2

inLarge lets you magnify your screen display up to 16 times. The desktop on the left is 2 times its original size (shown below).





YES, THEY TOO ARE HAYES COMPATIBLE.

Our idea of "Hayes Compatible" has nothing to do with other modems and everything to do with personal computers. Which is the reason why Hayes modems are compatible with over 100 different personal computers, including all Apple® computers.

For the Apple II, II+, IIe, IIC and IIGs, we offer the Smartmodem 2400™ and Smartmodem 1200™. Or the internal Smartmodem 1200A™, a modem that plugs into Apple expansion slots for fast, economical 1200 bps operation. And our new Smartcom I®, powerful menu-driven software with autodial/autoanswer and XMODEM protocol, brings out the best in both Apple computers and Hayes modems.

Our Smartmodem 2400 and Smartmodem 1200 are also compatible with all versions of the Apple Macintosh™, including the Macintosh Plus, Macintosh SE and Macintosh II. There's even a specially bundled package for the Macintosh that contains a Smartmodem 1200, modem cables and Smartcom II® software. Smartcom II is our award-winning software specially designed to take advantage of the power and graphics capabilities of the Macintosh.

Last but not least, there's another feature that Hayes 2400 and 1200 bps modems offer that will make them even more compatible with Apple computers, and that's a new low price.

Hayes®

Starting August to have 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.

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

11, it won't be any easier 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 fea-

tures, 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 a demonstration, call your Authorized Apple Dealer. For the dealer nearest you, call (800) 255-2550. If you buy Ready, Set, Go! 3.0 between June 1-August 11, you get a free upgrade. For details, call Letraset at (201) 845-6100.

Letraset®
✶ ESSELTE

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

Circle 652 on reader service card

POWERFUL TIME BILLING & MAIL LIST FOR YOUR MAC!

NEW
from Satori Software

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



\$895.

\$1295. Legal Billing II +
- Multi-user version

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

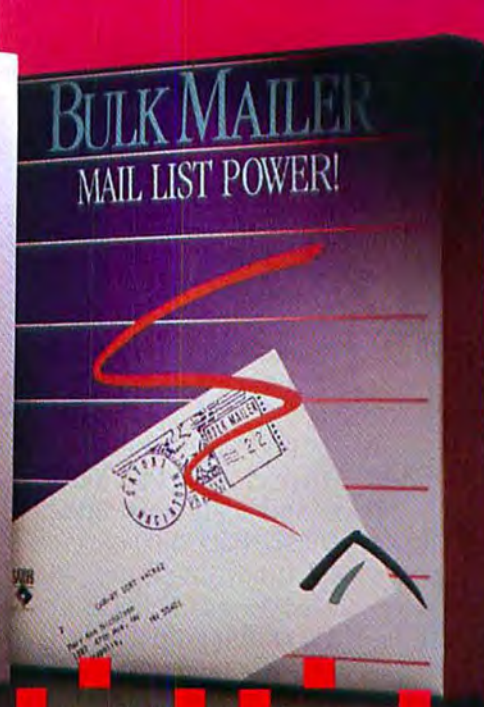
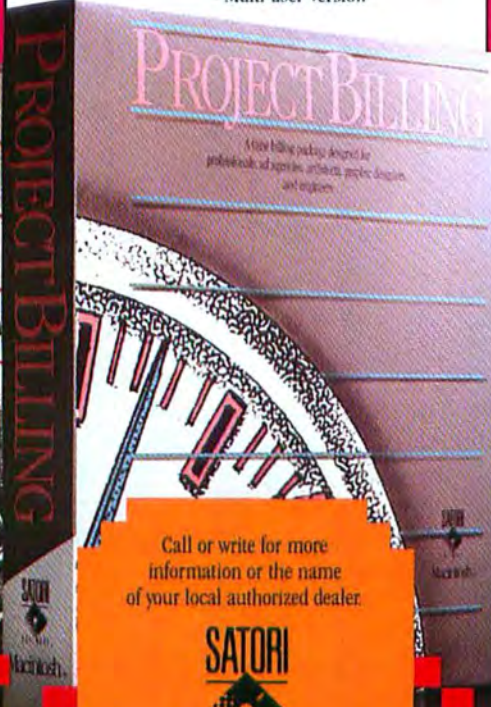
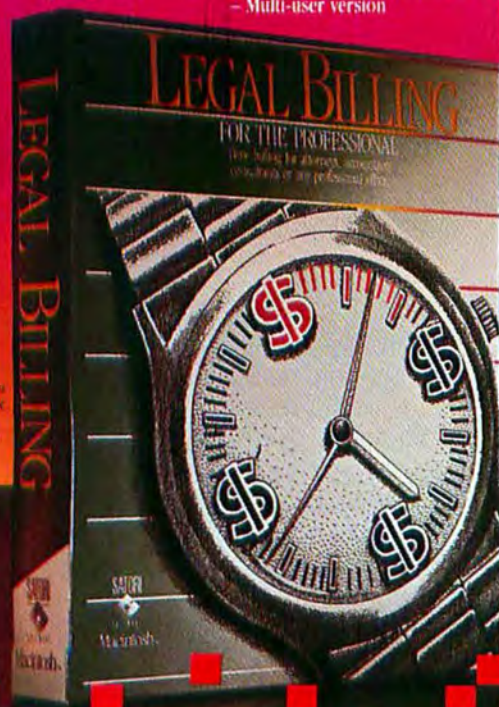
Bulk Mailer is a powerful program specially designed for managing lists. **Bulk Mailer** does everything you want in a mail list program, including duplication elimination, zip and alpha sorts, 1 to 4 up labels printed, easy-entry defaults, multiple label format, plus much, much more.

This is the only program to offer all these features:

- ▶ Duplication elimination
- ▶ Zip or alpha sort
- ▶ Car-ri sort or zip + 4
- ▶ 1 to 4 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

\$125. 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



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

New Products includes Macintosh products that have been formally announced but not yet evaluated by *Macworld's* editors. All prices are suggested retail prices. Please call vendors directly for information on availability.

SOFTWARE

Air Warrior An interactive, multiplayer aerial-combat game from Kesmai Corporation. Available on GEnie. 512K minimum memory. Free with subscription to GEnie. GE Information Services, 800/638-9636 ext. 21.

C.A.T. Relational database that integrates contact, activity, and time management. 512K minimum memory; Mac Plus recommended. \$399.95. Chang Labs, 408/246-8020.

CineWrite Word processor and storyboard program designed specifically for advertising, film, and TV production. You can use preset, two-column script formats or create your own. Storyboarding features include the ability to use drawn, scanned, or digitized visuals and match them with corresponding scenes and shots. Also matches shots with visuals of camera setups, angles, and blocking diagrams. Lets you play back with wipe effects in real time, so you can see your production before shooting starts. 512K minimum memory. \$495. Developed in France by Parisoft; distributed by Max3 in the U.S., 213/276-7682.

Coloring Book & Clip Art Software Two volumes of full-page clip art, including illustrations of dinosaurs, dogs, cats, and horses. Volume I or II \$12.95; both for \$24. Bede Tech, 216/631-4214, 800/772-4536.

Course Builder Visual programming language that lets you use text, graphics, animation, and sound to design interactive courseware. 512K minimum memory; external drive recommended. \$299. Tele-Robotics International, Inc., 615/690-5600.

Douglas CAD/CAM A low-cost printed-circuit-board layout and manufacturing system. 512K minimum memory; requires 1200-baud modem. Basic system \$95; with ImageWriter or LaserWriter printing option \$395; with option to drive various other printers and pen plotters \$525. Call for quotes on manufacturing. Douglas Electronics Inc., 415/483-8770.

Eureka: The Solver Solves inequalities, plots graphs of functions, converts units automatically, and solves equations that include derivative operator and proper integrals. Includes standard trigonometric functions, as well as logarithmic, exponential, statistical, and financial functions. Designed specifically for the scientific, engineering, business/financial, and educational communities. 512K minimum memory. \$295. Borland International, 408/438-8696.

Financial Decisions One hundred twelve stand-alone *Excel* templates for financial managers and investors. Eight modules include Appraisals, Bonds, Depreciation, Investments, Lending, Mortgages, Sales, and Savings. 512K minimum memory. \$45 per disk. GenMicronics, 603/664-9020.

Great Plains Network Manager Enables customers to use the Great Plains Accounting Series on more than one workstation si-

multaneously while protecting the integrity of the accounting information. 512KE minimum memory; requires *AppleShare*. \$395. Great Plains Software, 701/281-0550.

HeartLab Simulation software that teaches cardiac auscultation. Package includes a sound filter and headphones. 512K minimum memory. \$149. Harvard Medical School Decision Systems Laboratory, 617/732-6508.

Kieran Integrated software for children aged 2 to 6. Five interactive programs emphasize such areas as the alphabet, counting, telling time, and computer skills. Functions are completely mouse-driven, and instructions are given by a synthesized voice. 128K minimum memory. \$39.95. Ohm Software, 401/253-9354.

LaserPaint Complete PostScript graphics and text environment for creating camera-ready artwork. Includes modules for drawing, painting, writing, and pasteup. Produces automatic color separations on the LaserWriter. 512KE minimum memory. \$495. LaserWare, Inc., 415/453-9500.

MacInTax Planner Supplement to *MacInTax 1986*. This five-year income-tax planner reflects the Tax Reform Act of 1986. Allows "what if" calculations for maximizing investment decisions. Transfers data easily from *MacInTax Planner* to *MacInTax 1987*. 128K minimum memory. \$79. Soft-View, 805/388-2626.

MacShammes Fully integrated synagogue management system. Includes membership profiles, a Yahrzeit module that translates dates from the Hebrew calendar

(continues)

Sign up for MACWORLD Expo And save enough

Head for
**MACWORLD
Expo/Boston**
August 11-13
Bayside Exposition Center.
And step on it.

Hail the nearest taxi and roll on over to MACWORLD Expo/Boston, the original Macintosh computer show.

Test drive an extraordinary array of hardware, software and peripherals firsthand. Weave in and out of traffic. Stop

at hundreds of exhibits. Attend dynamic seminars and workshops run by industry experts. Tune up your Macintosh skills. And more.

In three days, under one roof, you'll pick up tips, tricks, techniques, do's, don'ts, how-to's and what's news that would otherwise take weeks to collect. And if you register before July 22, 1987, you'll save \$5. Enough to pay for cab fare.

Keep your hands on the wheel, Mac.

MACWORLD Expo/Boston is a hands-on, do-it-yourself show. It's exciting. It's challenging. It's fun. And it's fruitful.

Create professional-quality busi-

ness graphics—on the spot. Compose your own newsletter, ads and brochures. Try your hand at desktop engineering and design. Send or receive messages from Mac to Mac. Witness the power of the latest Mac programming environments. Do all this and more in just three short days.

There's something for everyone. It doesn't matter whether you're a seasoned hack or just out for your first drive. After three days, you'll be chock full of information on what Macintosh can help you do. In the office, in the lab, at school or at home.

There's literally something for everyone—including special programs

Our exhibitors list. (As of April 1, 1987.) A who's who of people who design, develop and produce hardware, software and peripherals for Macintosh. 3Com Corp., Abaton Technology Corp., Addison-Wesley Publishing Co., Adobe Systems, Inc., Advanced Computer Graphics, Advanced Elec. Support Prod., Inc., Affinity Microsystems, Ltd., Aldus Corp., ALSoft, Inc., Alsys Corp., Ann Arbor Softworks, Apple Programmer's & Developer's Assoc., Ashton-Tate, AST Research, Inc., Avanteq, Inc., Bering Industries, Inc., Berkeley Macintosh Users Grp. (BMUG), Blackhole Technology, Inc., Blowhard Industries, Blyth Software, Inc., Borland International, Boston Computer Society, Boston Publishing Systems, Inc., Bravo Technologies, Inc., C.I. Tech International, Inc., Cambridge Electronics, Inc., Capilano Computing Systems, Ltd., CasadyWare, Inc., CE Software, Centram Systems West, Inc., CHA Services, Inc., Chang Laboratories, Inc., CMS, Cognition Technology Corp., CompuServCo, Compu-Teach, Inc., CompuCover, Computer Expressions, Computer Museum, Computer Shoppe, Computer Shopper Magazine, Computer Ware, COMTREX, Ltd., Consular Corp., Cortland Computer, Cricket Software, Inc., Data Tailor, Inc., DataSpace Corp., Dayna Communications, DEST Corp., Digital, Etc., Inc., Dove Computer Corp., Dynamac Computer Products, Inc., Dynamic Graphics, Inc., E-Machines, Inc., E.I. duPont de Nemours & Co. (Inc.), Educomp, Erez Anzel Software, Ergotron, Inc., F.C. Brooks & Co., F.L.I., Farallon Computing, Ferranti-Dege, Inc., First Desk Systems, Inc., Flexware, Forethought, Inc., General Computer Co., Great Plains Software, Great Wave Software, Hayden Books/Howard W. Sams & Co., Hayes Microcomputer Products, Inc., Heizer Software, Hewlett-Packard Co., High Performance Systems, Inc., I/O Design, Inc., ICOM Simulation, Icon Concepts The Magazine, IDAC, Inc., ImageWorld, Inc., Infosphere, Inc., InfoWorld, Innovative Data Design, Inc., Intelitec, Internet, Invention Software, Jasmine Computer Systems, Kensington Microwave Ltd., Kent Marsh Ltd., Kinetics, Inc., KMW Corp., Kroy Sign Systems, Language Processors, Inc., Language Systems Corp., Laserware, Inc., Layered, Inc., Letraset U.S.A., Levco, Linotype Co., Living Videotext, LoDOWN, Logic eXtension Resources, Lotus Development Corp., Lundeen & Associates, Mac Buyer's Guide/Redgate Comm. Corp., MacBriefs, MacMemory, Inc., Macropac International, MacTutor, MacUser Magazine/Ziff-Davis Pub. Co., Mainstay, Manx Software Systems, Inc., Meta Software Corp., Micah Storage Systems, Micro Planning International, MicroGraphic Images Corp., Microsoft Corp., MicroStore, Mindscape, Inc., Mirror Technologies, Monogram Software, Inc., Nantucket Corp., National Association of Dsktp. Pub., National Instruments Corp., Northeast Data Processing Supplies, Odesta Corp., Office Talk, Orange Micro, Inc., Palantir Software, Panamax, Paragon Concepts, Inc., PC World Communications, Inc., PEAK Systems, Peripheral Land, Peripheral Systems, Inc., Personal Bibliographic Software, Inc., Personal Computer Peripherals Corp., Personal Training Systems, Practical Computer Applications, Inc. (PCAI), Pro Plus Software, Inc., Prometheus Products, Inc., Quark, Inc., Radius, Inc., Relax Technology, Ribbon Land, Rodime, Inc., Peripheral Systems Div., Satori Software, Scott, Foresman/Little Brown, Silicon Beach Software, Inc., SmethersBarnes, SMS, SoftView, Software Discoveries, Inc., Solutions, Inc., Spectrum Holobyte, Springboard Software, SuperMac Technology, Symmetry Corp., Systat, Inc., T/Maker Co., Tacklind Design, Inc., Target Software, Inc., TeleRobotics International, Inc., The Macneal-Schwendler Corp., The Madison Line, The Rest of Us, THINK Technologies, Inc., TML Systems, Inc., TPS Electronics, Typesetting Service Corp., Unicom, Washington Apple PI, Ltd., White Pine Software, Inc., WordPerfect Corp., Working Software, Inc., Ziyad, Inc. And there are more to come! MACWORLD Exposition/Boston is the original Macintosh computer show. It's sponsored by MACWORLD, the Macintosh™ Magazine, a member of the CW Communications/Inc. family.

"MACWORLD Expo/Boston!"



MACWORLD EXPOSITION

BOSTON

New Products

to the modern-day civil calendar, an accounts-receivable program, and an English/Hebrew word processor. 512K minimum memory. \$995. Davka Corp., 312/944-4070.

Market Master Processes sales leads and creates automatic follow-up at regular intervals. Generates personalized form letters, call schedules, and scripts, and has an override capability for special mailings. Produces envelopes and labels. Provides full activity reporting. 512KE minimum memory. \$275. Breakthrough Productions, 619/281-6174.

MathType Tool for creating mathematical equations to be incorporated into word processing and desktop publishing documents via the Clipboard. Works either as a desk accessory or a stand-alone application. You can edit and extract equations previously developed with *MathType*. 512K minimum memory. \$149; demo disk \$10 (applicable to purchase). Design Science, 213/433-0685.

Medical Dictionary for Spellswell Over 35,000 words and abbreviations, including anatomical, medical, dental, psychiatric, nursing, and veterinary terms, phar-

maceutical drug names, major drug trade names, major pharmaceutical company names, and chemical names. Only for use with *Spellswell*. \$99.95. Working Software Inc., 408/375-2828.

MenuFonts Desk accessory that displays font names in their own fonts in the pull-down Font menu. 512K minimum memory. \$15. Beyond, 602/323-4547.

MergeWrite Designed to be used with *MacWrite* as a mail merger for creating personalized form letters. Accepts data from *RecordHolderPlus* and other data managers. 128K minimum memory. \$49.95. Software Discoveries, Inc., 203/872-1024.

Monogram Exporter Enables *Dollars and Sense* users to export data to text files. 128K minimum memory. \$15.95. Star/Monogram Software, Inc., 213/533-1190.

Point 'n' Click Inventory and invoicing system. 1MB minimum memory; requires external drive. \$295. FineGrove Ltd., P.O. Box 11863, Tel Aviv 6116, Israel. No phone number listed.

Practica Musica Teaches basic music skills through melodic dictation, ear training for intervals, and harmonic theory. Uses digitally sampled sound. 512K minimum memory. \$125. Periscope Press, 805/564-2518.

Quick Ceph Diagnostic system for orthodontists that helps evaluate X-rays and conduct cephalometric analysis. Includes Ricketts, Steiner, Tweed, McNamara, Downs, Jarabac, Björk, Frontal Analysis, and User-Defined Analysis. Also includes treatment simulations. 512KE minimum memory. Software license \$895, annual upgrade fee \$195, digitizer \$895. Orthodontic Processing, 714/370-2357.

QuickDex A Rolodex-like desk accessory. Includes a database of 900 area codes and zip codes for major U.S. cities. 512K minimum memory. \$24.95. Greene Inc., 408/375-0910.

Scientific Desk Performs mathematical and scientific functions, including error analysis, elementary and special functions, linear algebra, solution of nonlinear and differential equations, interpolation, op-

(continues)

This ad was wildly brilliant, funny, and powerful. Until the lights went out.

There's no telling how good this ad would have been if I had remembered to save it. Well, never again. The next day, I installed **AutoSave™**, the desk accessory that automatically saves your work. As often as you like. Because it's better to be saved than sorry.

AutoSave™ \$24.95
1-800-342-6243

Visa and MasterCard accepted.
Or visit your local dealer.

Distributed by Magic Software, Inc., 1706 Galvin Road, Bellevue, NE 68005

Circle 767 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 place your cursor on 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

Special Introductory Offer \$49.95
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 \$49.95 (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.
Macintosh is a trademark of McIntosh
Laboratory, Inc. and is used by Apple
Computer, Inc. with its express permission.

Microlytics, Inc., 300 Main Street, East Rochester, NY 14445 (716) 377-0130

Dealers please call **(800) 828-6293**



NEW!



YOUR MOST COMPACT MEMORY SOLUTION

RELIABLE Data Cell's superior hardware/software with complete error correction capability gives you unsurpassed reliability. Our high quality, low noise fan and thick aluminum scratch resistant heat sink case reduces VLSI hot spots and promotes long life.

VERSATILE Data Cell's compact size allows operation on top of or next to your Macintosh. Data Cell is available in two colors. We have microscopically matched our paint to Macintosh's beige and platinum colors.

FRIENDLY Data Cell comes fully formatted and ready to boot. Software features include a full defect mapping initializer, backup utilities and a head parking routine. Optional spooling and backup software also available.

CONVENIENT Power switch and SCSI address selector are located on the front panel for easy access. Data Cell is functional in either 110V or 220V modes. Saves you from constantly 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

Tech South Inc.
A Bell South Company
Tucker, Georgia
(404) 939-9379

Circle 736 on reader service card

SEND INFO ON:



- ☐ 20MB ☐ 30MB ☐ 40MB
☐ 80MB ☐ 120MB ☐ 160MB
☐ OTHER _____



- ☐ 40MB TAPE
☐ 40MB DISK/40MB TAPE
☐ OTHER _____



- ☐ 0.30GB ☐ 0.45GB
☐ 0.60GB ☐ 40MB TAPE
☐ OTHER _____

NAME: _____

COMPANY: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE NO.: _____

NuDATA



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1902 SANTA CLARA, CA

POSTAGE WILL BE PAID BY ADDRESSEE

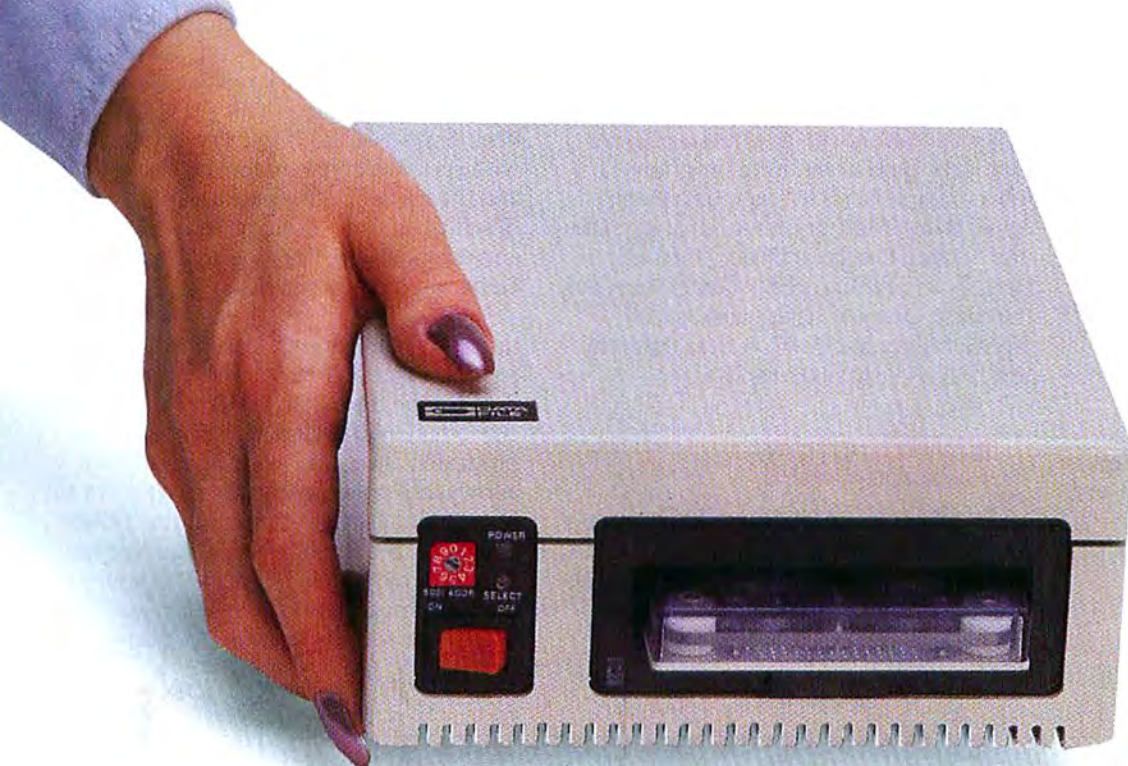
NuDATA

3206 Scott Blvd.
Santa Clara, CA 95054-9904



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

Tech South Inc.
A Bell South Company
Tucker, Georgia
(404) 939-9379

Circle 737 on reader service card

New Products

timization, differentiation and integration, integral transforms, data handling, approximation and data fitting, and statistical and probability functions. 512K minimum memory; fixed disk recommended. Annual site-license fee \$750; annual license fee for a single machine \$300; limited license \$350. C. Abaci, 919/832-4847.

Scoop Desktop publishing program that includes a full-featured graphics package, built-in *MacLightning* spelling checker, and a complete WYSIWYG text editor. Enables you to wrap text around or fill irregularly shaped graphics. Offers automatic hyphenation and automatic slanting of margins, fractional font sizes, and automatic and manual fractional kerning. 512K minimum memory. \$495. Target Software, 305/252-0892.

Sentinel Data security software that displays locked files as locked icons on the desktop. Features password protection and two levels of file encryption. 512K minimum memory. \$74.95. SuperMac Software, 415/964-9694.

Terrapin Logo Uses windows and pull-down menus. Graphics windows support multiple turtles, each of which may be

given its own shape, pen size, and pen pattern. Users also have access to many Macintosh QuickDraw routines. Programming features include multidimensional arrays, property lists, strings, stream I/O, automatic load-on-call, and extended CATCH and THROW primitives. 512K minimum memory. \$79.95; 10- or 20-packs for \$399.95 or \$699.95, respectively. Terrapin, Inc., 617/492-8816.

WOS/CTB/McGraw-Hill Fund Accounting A multiuser fund accounting program. Allows multiple Macs to share data using *AppleShare*. 512K minimum memory. General Ledger, Purchase Order Voucher, Payroll, and Billing \$5995; General Ledger, Purchase Order Voucher, and Payroll \$4995; Billing \$1295. WOS Data Systems, Inc., 913/843-8101, 800/843-8101.

HARDWARE

BackPak 40 This 40MB hard disk permanently attaches to the back of the Mac Plus; acts like an internal drive without the noise of a fan. It is 1½ in. thick and weighs 3 lb. \$1299. Jasmine Technologies, Inc., 415/621-4339.

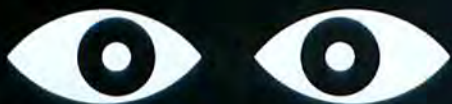
8110-A Gateway Enables the Mac to access IBM host computers. Provides protocol conversion and file transfer for up to eight asynchronous devices. Emulates an IBM 3274 cluster controller unit. \$2850. Case Communications, Inc., 301/290-7220.

HyperDrive FX/40 An external 40MB SCSI hard disk for the Mac Plus, the Mac SE, and the Mac II; designed to function as a personal hard disk and as a file server with both *HyperNet* and *AppleShare*. Comes with spooling software for the ImageWriter and the LaserWriter, a backup utility, a set of self-diagnostic routines, and a SCSI cable and terminator. \$1799; one-year warranty. General Computer Corp., 617/492-5500.

Inspector Debugging board for the Mac SE. Users can set breakpoints using an address range from 2- to 16MB, or trap on any combination of read data, write data, or program instruction fetch. Special mode allows trap on write-outside range from an instruction-inside range. Features include event counter, memory cycle counter, full 8-bit programmable I/O port. Trap output available for oscilloscope trigger, or can be used as an address decoder for add-on

(continues)

IT'S TIME
TO GET OUT
OF THE DARK.

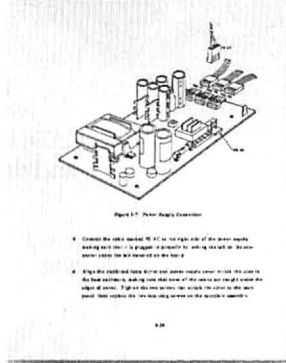
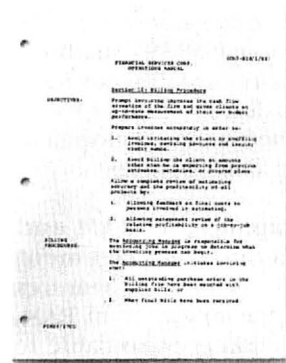
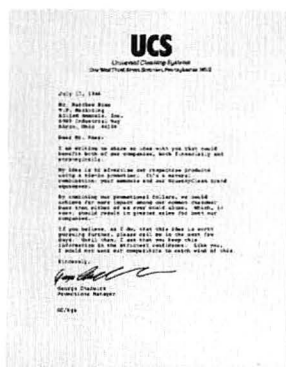


Open your eyes and see just how many subjects are covered in the new edition of the Consumer Information Catalog. It's free just for the asking and so are nearly half of the 200 federal publications described inside. Booklets on subjects like financial and career planning; eating right, exercising, and staying healthy; housing and child care; federal benefit programs. Just about everything you would need to know. Write today. We'll send you the latest edition of the Consumer Information Catalog, which is updated and published quarterly. It'll be a great help, you'll see. Just write:



Consumer Information Center
Department TD
Pueblo, Colorado 81009

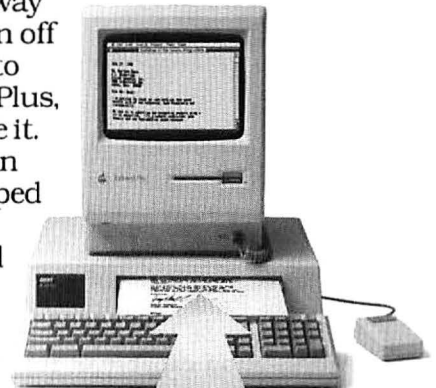
SIX REASONS TO TEACH YOUR MAC TO READ.



If these look anything like the papers piling up in your office, you need PC Scan Plus™, the new intelligent scanner from DEST.

It's the fastest way to get information off your desk and into your Macintosh™ Plus, where you can use it.

You see, PC Scan Plus can read a typed page into your Macintosh's word processing program, completely formatted, in less than a minute.



PC Scan Plus works with MacWrite™, Microsoft™ Word, and the others. It can read most office typescripts, including dot matrix, with accuracy no other scanner can touch.

What's more, if you're a desktop publisher, PC Scan Plus can do even more.

Besides words, you can scan photographs, line art, logos and other images into all the top desktop publishing software. PageMaker™, Ready, Set, Go!™ and the rest.

And if all this isn't reason enough to take a closer look at PC Scan Plus, just give your in-box a quick scan.

Then call us for a free brochure or a demo.

DEST

800-538-7582
In California, 408-946-7100.

There's no smarter, faster input device than PC Scan Plus. It can read words, illustrations or photographs into your Macintosh word processing or desktop publishing programs in seconds. At the click of a mouse. And it can do the same for an IBM® PC.

© 1987, DEST Corp. PC Scan Plus is a trademark of DEST Corp., not to be confused with PC Scanner, a product of Caere Corp. Other names indicated by ™ or ® are trademarks of their respective manufacturers.

Circle 615 on reader service card

See it at Boston
Macworld Expo
Booth #834

NOW UNDER \$1500!

**Prodigy SE™ in your
Macintosh SE™ computer.
Plug in the power.
Now under \$2000.**

Levco's Prodigy SE transforms your Macintosh SE into a high-performance workstation capable of running software up to *100 times faster*. By boosting the speed of Macintosh applications, the Prodigy SE will save you thousands of hours and dollars. Prodigy SE plugs into the Macintosh SE's internal expansion bus, and features specialized hardware options.

68020 processor
boosts software speed
Prodigy SE's true 32-bit,
16 MHz 68020 processor
effectively doubles the
clock speed and data path of the Macintosh SE.
Standard applications run 4-8 times faster,
revolutionizing the productivity of desktop
publishers, consultants and business users.

Math co-processor crunches numbers faster
Calculation-intensive software runs up to *100*

times faster with the
optional 68881 math co-
processor, creating an ideal
workstation for data analysis,
CAD/CAM, software development
and desktop engineering.

Expandable RAM and Memory Management

Prodigy SE features
one megabyte of RAM,
and is expandable to
32 megabytes. The
optional 68851
paged Memory Manage-
ment unit provides the
Macintosh with virtual
memory capabilities pre-

viously available only on mini or mainframe
computers.

The complete system from a single source

As an authorized Apple® VAR, Levco provides com-
pletely bundled Macintosh systems, authorized
Apple service and product warranty.



Authorized Value Added Reseller

Macintosh and Macintosh SE are trademarks of Apple Computer Inc.



Levco
6160 Lusk Blvd.
Suite C-203
San Diego, CA 92121
(619) 457-2011

Circle 493 on reader service card

New Products

hardware prototyping. Includes cable extenders and source code. Seawell Microsystems, Inc., 206/938-5420.

The Jam Box/4 Combination hardware/software package that synchronizes MIDI sequencers to SMPTE time code. The interface is rack mounted, and includes 4 MIDI ins and 4 MIDI outs. Controlling software installed as desk accessories within the sequencer program. 512K minimum memory. \$399. Southworth Music Systems, 617/772-9471.

Jasmine SCSI Hard Disk Series Jasmine 40MB \$999, Jasmine 50MB \$1159, Jasmine 160MB \$3499. Jasmine Technologies, Inc., 415/621-4339.

MegaDrive High-speed SCSI drive with 10MB 5¼-in. removable cartridges. Hard-sectored so you can reinitialize without losing data. \$999; MegaFloppy \$39.95; 3-pack \$109.95; includes flip storage case. Jasmine Technologies, Inc., 415/621-4339.

Monochrome Video Board Offers screen resolution of 1024 lines × 1024 dots × 1 bit. The video adapter enables users to connect the Mac II to any standard monochrome TV monitor or any monochrome monitor offered by Apple. Under \$500; call for exact pricing. Jasmine Technologies, Inc., 415/621-4339.

MultiTalk Serial device server that allows any Mac connected to AppleTalk to share three asynchronous serial peripheral devices. 512K minimum memory. \$699. Abaton Technology Corp., 415/463-8822.

PhD 82MB removable/fixed-disk subsystem. 20.5MB removable cartridges. Access time approximately 25 milliseconds. \$5495. Century Data Systems, 714/632-7500.

PL20, PL30 Tough Drives Automatic head lifter. New Turbo Driver software increases SCSI data transfer rate. Comes equipped with utility software for multipartition support, HFS/MFS support, desktop accessory mounter, file locator, and formatter. Includes a backup program with file, folder, volume, and incremental backup capabilities. An optional bracket attaches the drive

(continues)

The Desktop Publishing Conference

A Seybold Seminar and Exposition

"The event of the year." You heard about last year's Seybold Desktop Publishing Conference. More than 100 new products were introduced, including Ventura Publisher and Aldus PC PageMaker. Steve Jobs declared that Hewlett-Packard was "brain damaged" for selecting the DDL page description language. IBM revealed its desktop publishing strategy. Users blasted vendors for not offering support. Everyone agreed they had not seen so much enthusiasm and excitement in years.

The 1987 Conference will be even better: a lot of new players in the market; a raft of exciting new products; serious work being done by serious users.

The seminar will explore the key issues in this rapidly changing field. Presentations by industry leaders and pioneering users are followed up with tough questions from the Seybold staff and no-holds-barred discussion.

Wed. - Fri., Sept. 9 - 11, 1987. \$595.

The exposition will fill the 75,000 sq. ft Convention Center and include virtually every vendor from IBM, Apple, Xerox, Hewlett-Packard, Aldus et al. to dozens of innovative new entrants from all over the world. This is the event that will once again define an industry.

Thurs. - Sat., Sept. 10 - 12, 1987. \$25.

Free to seminar participants.

For registration information, contact:

Seybold Seminars
6922 Wildlife Road
Malibu, CA 90265
(213) 457-5850



The Next Generation of Macintosh Graphics Software Has Arrived.

LaserPaint, The Integrated Graphics Workshop

Drawing

Full featured PostScript illustration program
Circles, squares, curves, arcs & spirals
Filling of shapes with patterns or screens
Positive & negative masking
Custom dashed lines, line joinings, & line cappings
Line widths from 1/4 point (1/300")

Painting

Full editing of imported bit-maps at 600 dpi
Airbrushing at 600 dpi
Adjustable Airbrush "rate of flow" and "diameter"
Grey scales & fountains
Configurable pens, brushes & markers
Drawn objects used as hard masks or soft shields
Eight zoom positions in any mode

Writing

Runaround text justified inside or around any object
Text on any defined path: lines, circles, objects
Full kerning & positive or negative leading
Font sizes up to 511 point
Full editing: multistyle, multisize and multifont

Import/Export

Import Bit-maps from Paint programs
300 dpi scanned images in TIF format
Text files from word processors
Use the scrapbook & clipboard
Export pure Postscript text files
EPS, Encapsulated Postscript files
Edited, enhanced & modified bit-maps

Color Separations

4-color process or line-color
Automatically on LaserWriter or Linotronic
Printers registration marks for alignment
Automatic adjustment for coated/uncoated paper
Color enhance & separate imported bit-maps
Drawing, page or poster size output

Layout/Paste-up

Multi page working surface: eight 8.5 x 11 pages
Configurable or standard column guides
Artwork may cross page boundaries
Automatic printer's registration marks
Positive & negative printing capabilities
Printers Overlays and job sheets

All in One

Draw, Paint, Write & Paste-up
Professional quality camera ready output
New capabilities never before seen on a Mac
Print at resolution & speed of any Postscript device
Compatible with Mac Plus, Mac SE, Mac II, Radius & big screens
Online help screens & detailed manual/tutorials
Configurable to user's personal preferences

For additional information see your local computer dealer or call:

800-367-6898 (Toll free)

415-453-9500 (In Calif)

Suggested retail price: \$495.

LaserWare, Inc.
P.O. Box 668
San Rafael, CA 94915

LASERPAINT™

The Integrated Graphics Workshop
DRAW • PAINT • TEXT • PASTE-UP

New Products

case to the Mac for easy transport. PL20 \$999, PL30 \$1295. Peripheral Land Inc., 415/967-6259, 415/657-2211.

ACCESSORIES

Free (and Almost Free) Software for the Macintosh By Robert Eckhardt. Illustrated 432-page paperback book describes over 1000 public-exchange software programs. \$19.95. Crown Publishers, Inc., 212/254-1600.

Macinware SE A padded Cordura carrying case designed to accommodate the Macintosh SE with keyboard, an Apple SCSI/Hard Disk 20 or hard disk drive with similar dimensions, and an external disk drive. Available in navy blue or slate gray. \$129.95. I/O Design, Inc., 215/524-7277.

MacTilt SE Raises the Mac SE 4 in. above your desk surface. Provides 30° tilt and 360° rotation. Adjusting your Mac SE can reduce glare and ease eye, neck, and back strain. Ergotron Inc., 612/854-9116, 800/328-9839.

The New MacTable Redesigned to support heavier equipment. The four platinum-gray surfaces are completely interchangeable for optimum use by both right- and left-handed operators. An optional cabinet features a divided locking drawer that holds up to 100 disks and a rear shelf that holds 5000 sheets of printer paper. \$269; add-on cabinet \$129. ScanCoFurn, 206/881-5751.

Printer Muffler 80, Printer Muffler 132 Molded from durable, high-impact styrene, lined with sound-absorbing foam. Transparent lid. Stands elevate the printer and muffler and create an area for paper storage underneath. Printer Muffler 80 \$59.95, Printer Muffler 132 \$79.95. Kensington, 212/475-5200, 800/535-4242.

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



WHAT EVERY DESKTOP PUBLISHER NEEDS IS A PHOTOGRAPHIC MEMORY.



TAKE A PICTURE. ANY PICTURE.

It can be a photograph, artwork, a technical drawing. Feed it into the Microtek Intelligent Image Scanner, and it's on your computer screen almost instantly. Then you can edit, paint, and cut and paste it, and reproduce the sharpest image your laser printer can handle.

MACINTOSH OR IBM COMPATIBLE.

The Microtek Scanner can be used with either system. And naturally, it works with the most popular publishing software for both.

INCOMPARABLE VALUE.

For a scanner this sophisticated, you'd expect to make a heavy investment. But the Microtek Image Scanner is less than the cost of a laser printer and can pay for itself in no time.

It's simply the best way to improve your publishing image. For more information call 800-654-4160 (Inside California 213-321-2121).

MICROTEK

16901 S. Western Ave., Gardena, CA 90247.

Circle 585 on reader service card



WE'VE JUST QUADRUPLLED THE EXISTING SPEED LIMIT OF THE MACINTOSH SE.

When Apple named a new version of the Macintosh™ it chose "SE" for System Expansion. Now General Computer introduces the best means for the SE to fulfill the promise of its name—through an aptly named product of our own.

It's called HyperCharger 020™, an enhancement board that delivers performance far beyond the capabilities of an SE alone.

Which means now you'll be able to process much more data much more quickly. Because HyperCharger's 68020 processor will run most Macintosh software four times faster (give or take a few whets/sec).

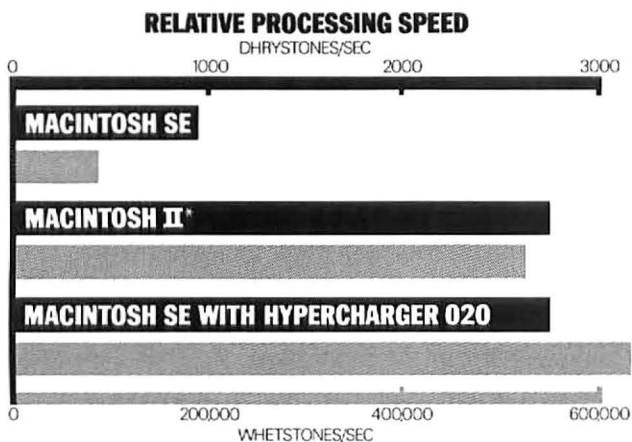
You'll be able to see data more easily. Because HyperCharger is equipped with an expansion port that lets you add The Big Picture™ large screen monitor.

And you'll find it infinitely easier to do serious number crunching. Because HyperCharger comes with an extra megabyte of RAM (expandable to four) and an optional coprocessor that performs such calculations up to an astonishing 30 times faster.

In short, HyperCharger delivers the performance of the substantially more expensive Macintosh II.

And it does so within the existing limit of the SE's footprint, saving desk space and preserving its portability.

Which is all the more reason to proceed—observing all local speed limits—to your authorized General Computer dealer. For the name of the dealer nearest you, call (800) 634-9737.**



*Measured on pre-production Macintosh II. **In Illinois, call (800) 854-9737. In Canada, (800) 263-1405. © 1987 General Computer Corp. HyperDrive and the General Computer logo are registered trademarks of General Computer Corp. HyperCharger 020 is a trademark of General Computer Corp. The Big Picture is a trademark of E-Machines, Inc. Apple is a registered trademark of Apple Computer, Inc. Macintosh is a trademark of Apple Computer, Inc.

Circle 143 on reader service card



Quick Tips

Answers to your questions

by Lon Poole

Recently I was talking to the head of a company that manufactures SCSI disk and tape drives sold under several different popular brand names. This behind-the-scenes guy requested anonymity, but he knows SCSI inside and out. He warns that it is very important to turn off all SCSI devices before changing connections.

The SCSI port is actually a connection to an active bus, much like the NuBus slots in a Mac II or the slots in an Apple II. No one would think of adding or removing cards in those computers without first turning off the power. But many people think that because you plug a cable into the SCSI port, it is just another kind of serial port. In fact, plugging and unplugging SCSI devices while the power is on creates transient voltages that damage the delicate circuitry in the Mac and in many peripheral devices. It's not a question of whether damage occurs but of how much damage occurs, so shut down properly and switch off all devices before changing the cabling.

No ID

A program can identify what type of Macintosh it's running on, as I described in the April 1987 *Quick Tips*. But Brad Pierce of Sherman Oaks, California, claims that my answer missed the point of the question. Does the ROM contain an electronic serial number that uniquely identifies each logic board? No, individual logic boards do not have electronic serial numbers. If you need to identify particular Macintoshes, you'll have to come up with another scheme, such as a password, a key disk, or a custom device that attaches to a serial port.

A Mac Abroad

Headed overseas with your Macintosh system? Don't leave home without a multi-outlet power strip. That's the advice of

Andy Williams, who has been living in West Germany since November 1986. After reading my comments in the March 1987 issue about using a Mac outside the United States, he wrote to report his experiences. He carried his system as checked baggage, first bagging the Mac and the ImageWriter in soft carrying cases and then packing each in separate cardboard boxes, surrounded by foam. The excess baggage cost extra, but it was worth it, he claims. He suggests you contact the customs service at your destination well before you depart, to see what documents you'll need in order to avoid paying an expensive duty (for details on obtaining a carnet, see "The Macintosh Passport," *Macworld*, November 1985).

ImageWriter II and IBM PC, Take 3

The "Making Connections" table in the January 1987 *Quick Tips* showed how to wire a cable for attaching an ImageWriter II to an IBM PC. The table identified the connections by pin number. However, the 8-pin minicircular plug needed for the ImageWriter II bears no pin numbers. For pin numbers, see "Connections." It shows the back side of the plug, the side to which you solder the cable. The view from the

front of the plug is a mirror image of the figure, a fact that eludes and confuses some cable makers. Thanks to Philip J. Muench, of Urbana, Illinois, for noticing the missing pin-number diagram.

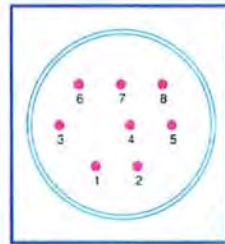
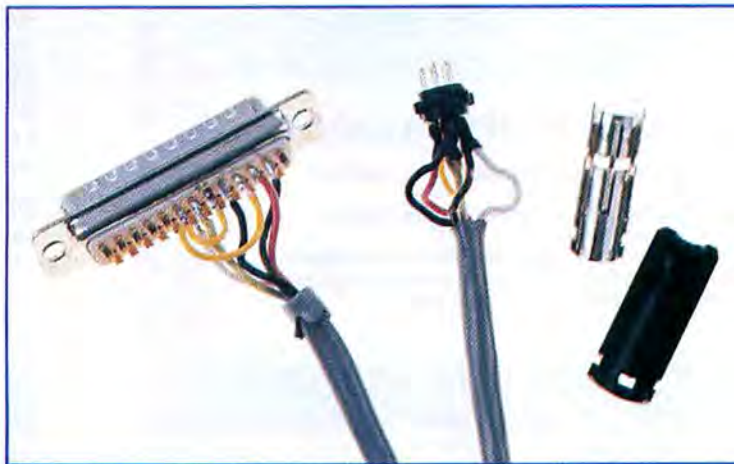
Wide Lines by a Narrow Margin

MacWrite does not let me print or write as far to the left on the page as I know the ImageWriter can print. Which word processing programs will allow me to use the full width of the page by setting margins at the extremes?

W. I. Feller
Ottawa, Ontario
Canada

According to my tests, *LaserAuthor* allows left and right margins as small as 1/4 inch on 8 1/2-inch paper, so it can print an 8-inch line (the ImageWriter's maximum). *WriteNow* and *Microsoft Word* 3.0 both let you set side margins down to 0, resulting in a wider text area than the ImageWriter can print. *MindWrite* lets you type lines 8 inches or longer. But when you

(continues)



Connections

To convert an ImageWriter cable for the IBM PC, attach an 8-pin minicircular plug.

WHY PAY MORE?



YOUR MONEYSWORTH GUARANTEE

- ★ Credit cards not charged until after your order has been shipped
- ★ Orders shipped same day on all stocked products (on orders placed by 2pm EST)
- ★ All products guaranteed to be the latest versions available
- ★ Only factory sealed and fully warranted products stocked
- ★ Never a surcharge for American Express, Visa or Mastercard

HARDWARE

AST

AST 2000	\$1,799
AST 4000	4,479

BROTHER

M-1109 Printer	\$209
M-1409 Printer	349
M-1509 Printer	349
M-1709 Printer	509
MacDriver	79

DOVE COMPUTER

MacSnap 524	\$147
MacSnap Plus 2	265
MacSnap 548	435
MacSnap Plus 4	1,425
800K Disk Drive	\$199

ERGOTRON

MacBuffer 512K	\$339
MacBuffer 1024K	525

HAYES

Smartmodem 1200	\$389
Smartmodem 2400	585
Smartmodem Bundle	419

IOMEGA

Bernoulli Box 10 x 10	\$1,394
Bernoulli Box 20 x 20	1,804
10Mb Cartridges (3 Pak)	149
20Mb Cartridges (3 Pak)	225

KOALA TECHNOLOGIES

MacVision	\$165
KAT Graphics Tablet	129

P.C.P.C.

Mac Bottom HD 21	\$869
Mac Bottom HD 45	1,299

MICROTEK

MS300A Scanner	\$1,749
--------------------------	---------

SUMMAGRAPHICS

MacTablet 6 x 9	\$275
MacTablet 12 x 12	369

THUNDERWARE

Thunderscan	\$165
TScan/Mac Plus Adpt	45

• No sales tax on orders shipped outside NY State • Please add 3% for insurance, shipping and handling (\$3.00 minimum) (Some products may have a surcharge due to weight and size restrictions) • Defective merchandise can be returned for repair or exchange (please call for R.A. no.) • Due to variety of products, we cannot guarantee compatibility

SOFTWARE

ANN ARBOR

FullPaint \$59

ASHTON-TATE

dBase Mac \$389

BLYTH SOFTWARE

Omnis 3 Plus \$265

BORLAND

Reflex (MAC) \$55

Sidekick 55

BPI SYSTEMS

General Accounting (MAC) \$149

BRAINPOWER

Designscope \$119

Statview 512+ 189

BRODERBUND

The Print Shop \$39

CAMDE

Nutricalc Plus \$165

CHALLENGER SOFTWARE

Mac3D \$119

CHANG LABS

Rags to Riches Ledger \$115

Rags to Riches Rec. 115

Rags to Riches Pay. 115

Rags to Riches 3 Pak 275

Rags to Riches Inventory 239

Rags to Riches Prof. Billing 239

CRICKET SOFTWARE

Cricket Graph \$119

Cricket Draw 165

DATA VIZ

MacLink Plus \$149

FORETHOUGHT

FileMaker Plus \$159

GREEN, JOHNSON

Spellswell \$39

HAYES

Smartcom II (MAC) \$85

INFOSPHERE

Laser Serve \$115

MacServe 229

LIVING VIDEOTEXT

Think Tank 512K \$109

More 159

LOTUS

Jazz \$279

MICRO PLANNING

Micro Planner Plus \$225

MICROSOFT

Chart \$69

Multiplan 105

File 105

Word 105

Word 3 209

Basic Compiler 119

Fortran Compiler 155

Works 175

Excel 209

Flight Simulator 30

MICROTEK

MS-300A OCR \$439

MONOGRAM

Dollars N' Sense \$95

ODESTA

Helix \$115

Double Helix 305

PEACHTREE

Back To Basics GL/AP/AR . . each \$85

PROVUE

Overvue \$159

SATORI

Legal Billing \$409

Project Billing 479

Bulk Mailer Plus \$209

SOFTWARE VENTURES

Microphone \$59

T/MAKER

Write Now \$109

Prices and policies subject to change.





Your future 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 Jefferson Blvd., Los Angeles, CA 90066.

Or call (213) 390-7923 today. Because today, McMax means business.

McMax™
means business.

 **Nantucket**®

In Europe: Nantucket Corporation (Europe) 2 Bluecoats Avenue, Fore Street, Hertford, Herts SG14 1PB Telephone 0992 554621.

Circle 633 on reader service card

How To/Quick Tips

print, it automatically shortens the lines to 7¹¹/₁₆ inches by widening the right margin.

For details about these word processors, contact the publishers: *LaserAuthor*, Firebird Licensees, Inc., P.O. Box 49, Ramsey, NJ 07446, 201/444-5700; *Write-Now*, T/Maker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0195; *Microsoft Word*, Microsoft Corp., 10611 N.E. 36th Way, Box 97017, Redmond, WA 98073, 800/426-9400, 206/882-8088 in Alaska and Washington, 416/673-7638 in Canada; *MindWrite*, MindWork Software, P.O. Box 222280, Carmel, CA 93922, 408/624-0522.

Q Text for Mainframes

Many of us have to talk to IBM mainframe computers that have archaic electronic mail systems and text editors. When I send documents to my mainframe, I am restricted to lines of 68 characters or less, and each line must end with a single Return. I write all my reports on my Mac Plus and then send them to the mainframe using *SmartCom II*. Many word processors let you set line length, but when they wrap text at the end of a line, they do not insert a Return. This causes a line overflow error on the host system.

MacWrite puts a Return at the end of every line if you use the Text Only option when you save a document. But lines that already have a Return (at the end of each paragraph) end up with two. Unacceptable.

The best solution I have found is to use *QUED* version 1.53 with the Monaco 12 font and a line length of 68. After typing, I show the invisible characters and press Return at the end of every line that doesn't already have one. It's a pain.

It's funny: I can use 24-point fonts, paste in graphics, and print on a laser printer, but I can't create simple ASCII files. Why?

Anthony J. Oresteen
Batavia, Illinois

A *Word 3.0* can save any document as plain text with exactly one Return at the end of each line. Choose Save As from the File menu, click the File Formats button, select the Text Only with Line Breaks option, type a file name, and click Save. To get 68 characters per line, set a line length of 6 inches, with a 12-point monospace (nonproportional) font such as Monaco 12 or Courier 12.

You can write documents using any word processor capable of saving plain

text, if you use the right terminal program to send the documents to the mainframe. *MicroPhone*, for example, breaks lines at whatever length you specify and can insert a single Return at the end of each line. To set this up, choose File Transfer from *MicroPhone*'s Settings menu. Then enter the line length you want in the box labeled Word-wrap Outgoing Text To and select CR (Return) for the End Outgoing Lines With option. Finally, use the Send Text command in *MicroPhone*'s File Transfer menu to send your plain text file to the mainframe.

For more information on *MicroPhone*, contact Software Ventures Corp., 2907 Claremont Ave. #220, Berkeley, CA 94705, 415/644-3232.

Q Flaky Disk Drive

I have a two-year-old 128K Mac that I recently upgraded to 512K. A few months ago it began doing strange things. Sometimes when I put a start-up disk in the internal drive, a sad face appears with the code "0F008." Sometimes a System error occurs with ID 02. But if I put the same start-up disk in the external drive, it works correctly.

The people at my local computer store could not find anything wrong with my machine. However, they admit that they have very little Mac-repair experience. Do you have any idea why my machine would have trouble starting from the internal drive and what the sad face could mean?

Connie Lull
Smith Center, Kansas

A If you can start up reliably from the external drive but not the internal drive, the internal drive must be flaky. You might be able to cure the problem by cleaning the drive with one of the commercially available drive-cleaning kits. However, the symptoms you describe are almost identical to those I experienced with my 512K Mac about a year ago, and cleaning did not help. Local repair shops said the drive might need realignment but should probably be replaced. I elected to have the Mac Plus 800K Disk Drive Kit installed. That gave me twice the disk capacity of a 400K drive, not to mention the increased performance of the Mac Plus ROM.

What have your children learned in their spare time this summer?

They could have learned how to count, the alphabet, and letter and number sequencing. They also could have developed matching, music, and basic typing skills.

KidsTime™

The best selling educational software package for your children, featuring five exciting programs.

ABKey™ Letter and word recognition is taught through visual, speech, and keyboard interaction.

Match-it™ Several games to teach categorization, words, and shapes. It can also help to improve memory skills.

Story Writer™ Your children can use the Storybook font to create and print fun stories with both words and pictures. It will also read the children's stories to them.

KidsNotes™ An introduction to the basic concepts of music and composition. Some music, including nursery rhymes, are provided for children to listen to. Children can also compose their own music.

Dot-to-Dot An old classic developed for a new generation which teaches counting and alphabet skills.



All five programs are included on the KidsTime disk.

\$49⁹⁵

suggested retail price

Contact your local software dealer or



Great Wave Software™

5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990

**Software Excellence
for All the Ages.**

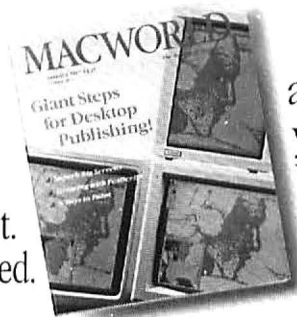
Products are trademarks of their respective manufacturers.

Circle 758 on reader service card

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

SOFTWARE

BUSINESS & PRODUCTIVITY

Ann Arbor		Software Ventures		Diskit	\$59.95
Full Paint	\$59.95	Microphone	\$59.95	Other Supremac Products Available	
Fullwrite Professional	SCALL	Springboard		Call for Price!!	
Batteries Included		Certificate Maker	SCALL	Target Software	
Battery Pack	\$27.00	Supremac Software		Memorandum	\$69.95
Bunder	\$29.00	Super Spool	\$48.95	T/Maker	
Blyth Software		Super Laser Spool	\$119.95	Write Now	\$99.00
Omnis 3+	\$279.00				

GAMES & EDUCATIONAL

API		Avalon Hill		Mindscape	
General Accounting	\$219.00	MacPro Football	\$29.95	Ba'ance of Power	\$30.00
Central Point		Broderbund		Crossword Magic	\$32.95
Copy II Mac	\$24.00	The Toy Shop	\$39.95	Deja Vu	\$29.00
Chang Labs		Print Shop	\$49.95	King of Chicago	\$37.95
Tags to Riches	\$259.00	Electronic Arts		SAT	\$45.00
Cricket		Autoduel	\$33.95	Uninvited	\$36.95
Cricket Draw	\$159.95	Chessmaster 2000	\$29.95	P.C.A.I.	
Cricket Graph	\$129.95	OGRE	SCALL	Mac Golf	\$39.95
Statworks	\$79.95	Patton vs Rommel	\$26.95	Silicon Beach	
Data Tailor		Pinball Constr.	\$26.95	Airborne	\$19.95
Rapeza	\$169.95	Scrabble	SCALL	Dark Castle	\$29.95
Digital Etc.		Sky Fox	\$26.95	Enchanted Sceptre	\$22.00
Turbo Maccoultant	\$287.00	Starfleet I	SCALL	World Builder	\$47.95
Pub-click		Ultima III	\$39.95	Simon & Schuster	
Calculator construction set ..	\$59.00	Ultima III Cluebook ..	\$ 9.95	Great Paper Airplane Kit	\$25.95
Forethought		Microsoft		Spectrum Holobyte	
Memaker+	\$159.00	Flight Simulator	\$32.95	GATO	\$28.00
Powerpoint	SCALL			Orbiter	\$34.95
Retraset					
Ready Set Go 3.0	\$239.95				
Living Videotext					
Core	\$159.00				

HARDWARE

Beck-Tech		PRINTERS	
Fanny Mac	\$79.95	EPSON	
Softstyle		All models in stock	
Macenhancer	SCALL	CALL FOR LOWEST PRICES !!!	
MODEMS		PANASONIC	
Prentice	SCALL	1091i	\$249.00
Popcorn X-100	\$251.00	1092i	\$329.00
		1080i	\$199.00

ACCESSORIES

Blohard		Flip-n-File (holds 40)	\$15.95
MACFAN	\$99.95	Kensington	
Platinum Macfan	\$99.95	Swivel	\$20.00
I/O Design		Filter	\$29.00
MAC+ Bag	\$69.95	Control Center	\$59.00
Macintosh SE Bag	\$89.95	A-B Box	\$59.00
Imagewriter Bag	\$49.95	Surge Suppressor	\$32.00
Imagewriter II Bag	\$54.95	Maccessories starter pak	\$53.00
Innovative Concepts		Mouse cleaning kit & pocket ..	\$18.00
Flip-n-File Micro (holds 25) ...	\$7.95	N2 Cables \$call for price & configuration	

EDUCATIONAL & CORPORATE ACCOUNTS:

We offer a full line of services catering to you. Including; quick turn-around, personal service, and the flexibility to serve your organizations needs. Credit Approval in 24 hrs for any organization with a good D&B rating.

To reach our Educational and Corporate Sales Department directly,

Call 1-800-533-1131
Inside PA
Call 814-234-2236

DISKS
per box
of 10

	3 1/2"	1-4	5-9	10+
SONY				
SS/DD	12.45	11.95	11.45	
DD/DD	17.95	17.45	16.95	
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	

LoDOWN CLOSEOUT
20 Meg HD
\$569.00
Limited Quantities

OPEN: 9AM-9PM M-Thurs, 9AM-6PM Fri,
10AM-6PM Sat, Noon-6PM Sun EAST COAST TIME

DON'T SETTLE FOR LESS.

tcp SHIPS IT FEDERAL EXPRESS

Software orders over \$50.00 will
be shipped **FEDERAL EXPRESS**

(yes even at these prices). You only pay TCP's standard shipping charge of \$4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. 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

**FEDERAL
EXPRESS**

TOLL FREE 1-800-468-9044

INFORMATION AND PA ORDERS 814-234-2236

**MAC
BOTTOM**



MacBottom HD21
SCSI

MacBottom 20
Serial Version.....

MacBottom 45 Now in Stock

MIRROR TECHNOLOGIES

Magnet 20X w/cable...\$699.00
Magnum 800K.....\$179.00
Magnet 40/40.....\$2295.00
Magnet 30X w/cable...\$799.00

Call for our low price on the following
Mirror Tech products

- Magnet 85x or 172x
- Magnum Tape Backups
- Fast Port Option

MICROSOFT.

The High Performance Software™

EXCEL

WORD V3.0

WORKS

**cricket
software**

GRAPH

STATWORKS

DRAW

BLYTH SOFTWARE

OMNIS 3+

Executive Asst

BERING

MOUNTAIN COMPUTER, INC. COMPANY



SINGLE 20 Meg
Removable Bernoulli - SCSI

DOUBLE 20 Meg
Removable Bernoulli - SCSI

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, COD and mail orders.
- Purchase orders are accepted from qualified corporations and institutions. Minimum order of \$500.00 required.
- No sales tax on orders outside of PA.
- Buy with confidence. We honor manufacturers warranty.

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 shipping 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.

tcp

TUSSEY COMPUTER PRODUCTS

P.O. BOX 1006
STATE COLLEGE, PA 16801

Dynamic Selection

Tip: Excel's SELECT function normally will only accept a parameter that is fixed before execution (a "compile-time" parameter), such as SELECT (A3). But a running macro often needs to select a cell dynamically (a "run-time" parameter), such as SELECT (desired_cell). This limitation is particularly restrictive because of the need to select so often.

I wrote a macro to get around the limitation by constructing the desired SELECT formula entirely from text (see "Self-Modifying Macro"). After that, the macro uses a FORMULA function to insert the constructed SELECT formula near the end of the executing macro itself. This self-modifying method of using the FORMULA function to allow run-time parameter passing should be applicable to other functions that are normally limited to compile-time parameters, such as FORMULA.GOTO.

One way to use this macro is within a macro that generates a database on a worksheet. In an income or expense database, for example, you could enter an amount in an entry-form area of a worksheet, along

	A	B
1	SelectCell	
2	=ARGUMENT("the_ref"&B)	cell to be selected is a reference-type argument
3	=SET_NAME("row_num",ROW(the_ref))	determine row number of cell to be selected
4	=SET_NAME("col_num",COLUMN(the_ref))	determine column number of cell to be selected
5	=SET_NAME("select_text",=SELECT("R"&TEXT(row_num,0)&"C"&TEXT(col_num,0)&""))	construct formula that will perform dynamic selection
6	=ACTIVATE("SelectTestMacro")	temporarily activate this macro sheet window
7	=SELECT(A10)	select a cell in macro sheet to put constructed formula in
8	=FORMULA(select_text)	put formula in selected macro sheet cell
9	=ACTIVATE("SelectTestSheet")	reactivate worksheet window
10	=SELECT("B3C4")	execute the constructed formula that was put here
11	=RETURN()	done
12		
13	TestMacro	This macro demonstrates SelectMacro
14	=SelectCell(D3)	Use macro to select cell D3
15	=RETURN()	

Self-Modifying Macro

The SelectCell macro modifies itself by constructing a text formula (cell A5) and inserting that

formula into itself using a FORMULA function (cell A8).

with a code indicating the type of expense or income. The macro would use the code to determine where on the worksheet the amount belongs, and use the SelectCell macro to select that cell. This would greatly simplify data entry for a complex worksheet.

Carl J. Madson
Menlo Park, California

Word Spacing for Tight Fits

Tip: I do résumés professionally, and I have learned a technique that saves me a great deal of time and effort when writing.

When I must maintain my horizontal margins and do not want to change the font

I am using, I can squeeze in that extra word without adding another line to my document by simply reducing the font size of the spaces between the words rather than the actual words themselves. This applies to vertical spacing too. When one more line will push you to a second page, try reducing the font size of the blank lines between paragraphs to make it all fit on one page.

Robert Battle
North Babylon, New York

(continues)

A New Method of Visual Thinking

design

\$200 + \$5 shipping

An object-oriented graphics program with many unique features that make it the best tool available for structured graphics.

Applications:

- Flow charts
- Top-down, hierarchical system design
- Presentation and publication graphics
- Organizational diagrams
- Symbolic idea processing
- Source code documentation
- Communication-networks
- Simulation and analysis diagrams

Unique Features:

- Connected objects stay connected
- Hierarchical, multi-page diagrams
- Palette of user-defined objects
- Editing on objects and groups
- Full alignment facility
- Text associated with each object
- Hypertext links across pages
- Page, document, hypertext search



Meta Software
55 Wheeler Street
Cambridge MA 02138 USA
617.576.6920

design is available for the Apple® Macintosh® 512, 512E, and Plus.

*trademarks owned by, or licensed to, Apple Computer, Inc.

© 1987 Meta Software Corp.

Call for information and pricing on our vertical products based on **design**:

design Open Architecture Development System

A programmable system that lets you develop the final application. We provide an extensive library of functions that gives you access to the internals of **design**. You write the application, link it with **design**, and you have a finished application. Excellent for implementing system design methodologies (E-R, SSD, CASE), simulation programs, graphical programming environments, and front-ends for databases, to name a few.

design+DA

A development system that lets you write Macintosh Desk Accessories which interact with a special version of **design**. These Desk Accessories are *mini-applications* which extend the functionality of **design** (for example, to control the grammar of graphics operations or to analyze the content of a diagram).

Circle 675 on reader service card

FREE ISSUE

GET A FREE COPY OF DESKTOP PUBLISHING,TM *The Bove and Rhodes Inside Report* AND A \$100 DISCOUNT

Send for your FREE copy of DESKTOP PUBLISHING,TM and get 11 more 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.

Name _____

Title _____

Company _____

Address _____

City _____

State _____ Zip _____

This offer is limited to new subscribers and is good in the U.S. and Canada. Please allow 4-6 weeks for delivery.

Order now and take advantage of these special savings.

SAVINGS CERTIFICATE

44H7B

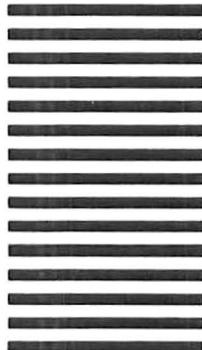


NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 22094 SAN FRANCISCO, CA

DESKTOP PUBLISHING,TM
The Bove and Rhodes Inside Report
PCW Communications, Inc.
501 Second Street, Suite 600
San Francisco, CA 94107



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
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

maxell®

Packaged 10 Per Box

	2 Boxes	5 Boxes	10 Boxes
3 1/2" Single Side	10 ⁸⁰	10 ⁵⁰	9 ⁹⁵
3 1/2" Double Side	15 ⁹⁵	15 ⁶⁰	14 ⁹⁵

3 1/2" 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
3 1/2" Single Side	10 ⁹⁵	10 ⁷⁰	10 ³⁰
3 1/2" Double Side	15 ⁹⁵	15 ⁷⁰	15 ³⁰

3 1/2" High Density "Call"

SONY, without labels or box

	50	100	400+
MAC-PAC-50's			
3 1/2" Single Side .	1.06 ^{ea.}	1.00 ^{ea.}	.92 ^{ea.}
3 1/2" 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

How To/Quick Tips

Compressed BASIC Weight Loss

Tip: Microsoft BASIC (version 2.0)

programs saved in the compressed format take up less disk space and load faster than do programs saved as text. Unfortunately, compressed programs can eventually take up much more disk space than they actually require. This happens because MS BASIC stores all variable names that have ever been entered in a heap at the end of the program. If you change or delete a variable name from the program, MS BASIC remembers the old and new variable names. Likewise, it remembers as "new" variables any variable names you mistype.

You can clear out the extraneous variables by saving the program as text, closing the program, reopening it, and saving it again in compressed format. This eliminates all unused variable names, reducing the size of the program on disk.

Andrew D. Burt
 Atlanta, Georgia

This tip also applies to MS BASIC 3.0.

Long Keyboard Cable

Tip: You can use a long phone cable for your keyboard, but you must reverse the wires in the cable. This is useful when you're showing an Excel spreadsheet on a large projection screen, for example.

Stephen Hull
 Evergreen, Colorado

You may not have the tools to install a modular connector upside down at one end of a long telephone handset cable, or the inclination to cut and reverse the wires in the middle of the cable (black to yellow and red to green). In that case, you can buy a long keyboard cable ready-made. The Berkeley Macintosh Users Group (1442A Walnut St. #62, Berkeley, CA 94709, 415/849-9114) sells a 12-foot cable for \$7. Tacklind Design (250 Couper St., Palo Alto, CA 94301, 415/322-2257) sells a 16-footer in several colors for \$8.95. Of course none of these options work on the Mac SE and the Mac II, which use a different keyboard cable and connector.

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. □

Introducing MacDisk™

High-performance hard disks from the driving force in the AT world.

For the serious Macintosh user, there's cause to rejoice. Priam's new MacDisk hard disk drives. A family of totally-integrated, high-performance external SCSI drives that allow you to tap the full power of your Macintosh Plus, SE or II.

And that offer you the ultimate in quality and dependability. How can you be sure? Priam's track record.

Priam has been building premium drives for mainframes, minis, and micros for a decade. Drives distinguished by their exactitude and endurance. Attributes that have made Priam the leading supplier of 40 MByte or larger drives dedicated to the AT.

MacDisk drives possess the same enduring qualities. No wonder then that they're specified for up to 40,000 hours MTBF. They come in 40, 100, or

230 MByte versions with average access times as fast as 20 ms. And they come complete. Ready to boot, ready to get to work.

Another reassuring feature you get with Priam's MacDisk is comprehensive and responsive service and support. Precisely what you'd expect from a company with Priam's credentials.

Ask for Priam's MacDisk at your nearest Apple dealer today. Or for more information, call 1-800-345-9242 ext. 107. In California, (714) 545-2774. In the long run, you'll be glad you did.



PRIAM
SYSTEMS DIVISION

20 West Montague Expressway, San Jose, CA 95134

Trademarks: Macintosh/Apple Computer, Inc.; MacDisk/Priam Corporation; AT/IBM Corporation.

Circle 738 on reader service card



Getting Started with Macintosh Graphics

*Bit maps and objects, rasters and pixels, and
a gallery of graphics applications.*

by Jim Heid

I have two left hands when it comes to drawing. Give me a pencil, and I'll give you a picture with proportions and perspective that would cross Salvador Dali's eyes. I can barely draw a conclusion, much less a picture. A smart-aleck ex-friend commented that my drawings were so bad you needed dental records to identify their subjects.

My affliction is a common one: I know what I want to draw, but I can't convince my hand of it. Luckily, I exercise more control over a mouse than a pencil. That small measure of dexterity enables me to create images that are at least recognizable, thanks to the large stable of Macintosh graphics programs available. Whether you want to create expressionist abstractions, floor plans, three-dimensional technical illustrations, or graphs that flatter your bottom line, there's a graphics program to match the task. This month, I'll spotlight some of them while filling you in on how graphics work on the Mac. "Dots and Beams" explains how an image appears on the Mac's screen.

A Bit of MacPaint

Perhaps the most common Mac drawing medium is a *bit-map* drawing program like Apple's *MacPaint*. Most every Mac user has dipped into *MacPaint*'s bucket, using the *tool palette* to choose between such drawing implements as a pencil, paintbrush, or spray can.

To understand how bit-map drawing gets its name, imagine a sheet of graph paper with 612 boxes from left to right, and 792 boxes from top to bottom. To draw on this sheet of paper, you must form images by blackening individual boxes formed by



the intersecting lines. To erase a mistake, you turn black boxes into white ones as needed. To change the size of an object such as a circle or a line, you must laboriously erase and redraw black boxes.

With *MacPaint*, each "box" is a bit in the Mac's memory. When you blacken a box, you store a binary *one* in the memory box that corresponds to that spot on the page, and a *picture element*, or *pixel*, goes on the screen. Areas that appear white in a drawing contain zeros in their storage slots. The entire drawing, then, is a series (or a *map*) of bits, some containing a one,

others, a zero. What about gray areas or patterns? The Mac simulates them using combinations of black and white dots, a process called *dithering*.

This method of representing drawings as a series of ones and zeros gives bit-map drawing programs some drawbacks. Once you draw a shape or create some text using the text tool, the shape or text becomes a series of bits in the electronic graph paper formed by the Mac's memory. As with the

(continues)



HOT NEW PROGRAMS!

Public Domain / Shareware Editor's Choices

Featured in MacWorld Magazine

- April '86 ☐ 86 Twelve top-rated programs!
Best of P.D.—communications,
utilities, games, D/A's \$9
- July '87 ☐ 125 Fkeys Manager, Keystoring and
selected Fkeys \$9
- April '87 ☐ 106,119 Fun! ScreenWreckers,
savers, pranks \$18
- Aug '87 ☐ 153 FileStar 1.0, DeskZap,
SuperHelp, Convert + more \$9
- **** Four-Star Rated in MacUser ****
- ☐ 7 Switcher, disk dump \$9
- ☐ 29 Red Ryder comm, wldoc (shareware) \$9

Graphics

- ☐ 104,105 Decorate with lots of borders \$18
- ☐ 116,117 Clickart, Slideshow, Viewpaint \$18
- ☐ 118 Mandelbrot: Hi res fractal design \$9
- ☐ 120 Mac-a-Mug: create millions of faces \$9
- ☐ 121 MusicPaint: nearly MacPaint + music \$9
- ☐ 145 PacPaint pictures with modem
un/compressor \$9

Communication

- ☐ 107 MacTalk—Trendy Mac Magazine \$9
- ☐ 122,123 World War IV—Setup BBS, wldoc \$18

Desk Accessories

- ☐ 102 Best of D/A's—Games, utilities term emul. \$9
- ☐ 132 Mac's Headroom—Latest craze!
More DAs \$9

Fonts

- ☐ 90 Boston II—laser quality on Imagewriter \$9
- ☐ 133 Beverly Hills—sharpest (Imagewriter I, II) \$9

Games

- ☐ 103 Best of Games—Fast action with Billiards,
Megaroids, Spacewars, etc. \$9
- ☐ 129 Zero Gravity w/ character animation \$9
- ☐ 134 Wheel of Fortune games—action,
sound, graphics! \$9

Home/Business

- ☐ 76 PageMaker—40 templates for cards, signs,
letterhead, envelopes \$9
- ☐ 109 Typing Tutor, U.S. Geog., Project Outliner \$9

Nudes

- ☐ 49 ☐ 65 ☐ 66 Adults only pictures \$9ea

Programming

- ☐ 44 XLISP: Art. Intel. Lang.—latest version \$9
- ☐ 124 Motorola 6800 cross assembler \$9

Sound

- ☐ 91,101 Install and play digitized sounds on
your keyboard (2 disks) \$18

Utilities

- ☐ 5 Code Cracking with doc., FEdit \$9
- ☐ 6,89 ResEd: edit fonts & icons, doc. \$18
- ☐ 73 CE Calendar: personalize (Shareware) \$9
- ☐ 100 Oasis—Alternate Finder, HFS Find \$9
- ☐ 130 Disk Library Database, Fast formatter
(shareware) \$9
- ☐ Book: 150 pg. directory of disks \$7.95
- ☐ 1 Yr. Membership: book, quarterly bulletins,
plus many discounts \$20
- ☐ Library: Complete set—150 disks \$795

SPECIAL OFFER!

Any 3 Disks+Book PLUS! 1 Yr. Membership
ONLY \$39.95 (+\$4 S/H)

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

Enclosed \$_____ by ☐ Check ☐ VISA ☐ MC

Card No. _____ Exp. _____

Name _____

Address _____

City _____ State _____ Zip _____

THE PUBLIC DOMAIN
EXCHANGE

CALL NOW!

800-331-8125

2074C Walsh Avenue, #109
Santa Clara, CA 95050 In CA 408-496-0624

Dealer Inquiries Invited

Circle 334 on reader service card

How To/Getting Started

Dots and Beams

If you look closely at a Mac's screen, you'll notice that its image is formed by small dots, or pixels—175,104 of them on a standard Mac display, to be specific. Each pixel has a corresponding slot reserved for it in a 22K chunk of the Mac's memory called the *screen buffer*.

When a slot contains a value of zero, its pixel is off, or white. When a slot contains a one, its pixel is on, or black. Each slot represents one bit of memory. Since one bit is mapped to one pixel (as with *MacPaint*), the Mac's display is a bit-mapped one. That brings up an interesting point: whether you're using a bit-map program or an object-oriented one, the screen image you see is always bit-mapped.

The image itself is formed by a pinpoint beam of electrons crashing into the phosphor-coated back of the screen, causing it to glow. The beam, however, doesn't hit all the phos-

phor at once. An electric current flowing through a coil surrounding the picture tube's *neck* guides the beam so that it races back and forth, drawing 342 *scan lines* from top to bottom in about 1/60 second. Of course, by the time the beam reaches the bottom of the screen, the glowing phosphor at the top is starting to fade, but you still see a full-screen image thanks to *persistence of vision*, the same mind game that makes movies appear to move.

A video display that creates a screen image using scan lines is called a *raster* display. (The term comes not from Jamaica, but from the Latin *raster*, meaning rake.) Laser printers work similarly, but instead of raking phosphor with an electron beam, they strafe a photosensitive drum with a pinpoint beam of light. The drum then attracts plastic powder that's transferred to paper.

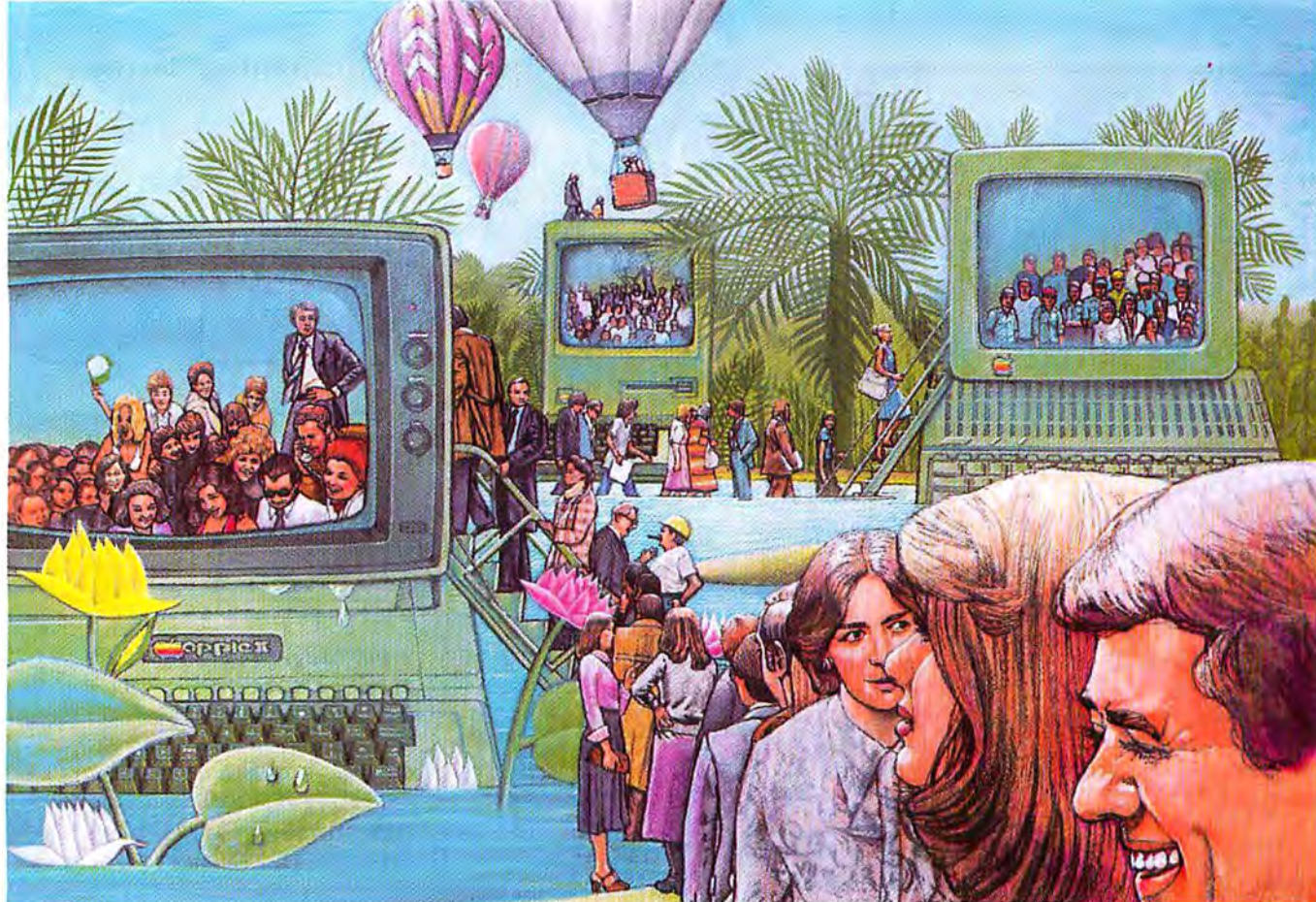
graph paper example, correcting a mistake or resizing a shape means erasing black dots and drawing new ones. That's a big limitation for text: instead of changing fonts or sizes or correcting a typo as you would with a word processor, you must re-type part or all of the text.

Printing is another problem. Bit-mapped images have a resolution of roughly 72 dots per inch (dpi), which comes close to the ImageWriter's sharpness, but falls far short of a LaserWriter's 300-dpi capability. As a result, bit-mapped graphics look coarse when printed on a LaserWriter or any other printer that uses the PostScript page-description language. (You can improve their sharpness by using the Page Setup dialog box to print them at a reduced size; or you can use the Smooth-print option, which causes the LaserWriter print driver to "sand" some of the

rough edges, though it also slows down the printing). And because text in a bit-map program is treated as a picture, not as a combination of characters in a given font and size, *MacPaint* text doesn't have the typeset sharpness of a LaserWriter font.

The 72-dpi resolution of a bit-map image may come close to an ImageWriter's, but it's 8 dots shy of an exact match, and that causes distorted drawings when you print a document containing bit-map images. An ImageWriter in Faster or Best Quality prints roughly 80 horizontal dots per inch. The result: bit maps are compressed by about 13 percent—not a lot, but enough to turn a circle into an oval. The solution: selecting the Tall Adjusted option in the Page Setup dialog box. Tall Adjusted

(continues)



USE THE BRAINS YOUR APPLE WASN'T BORN WITH.

Right at your fingertips in CompuServe's Apple® Forums.

Our Apple Forums involve thousands of users worldwide who will show you just how easy it is to get the most from your Apple or Macintosh®.

Join the CompuServe Apple II and III Forum and explore thousands of classic programs. Try our Macintosh Users Forum for information on peripherals, music, graphics, and user-supported software. Check out the Apple Developers Forum for instant updates and support. Use the Macintosh Business Forum to find out about desk-top publishing and business. And through the Apple User Groups Forum, you can meet officers of Apple organizations from around the world.

Easy access to free software, including free uploads.

Download first-rate, non-commercial software and utility programs. Upload your own programs free of connect time charges. And take advantage of CompuServe's inexpensive weeknight and weekend rates, when forums are most active and standard online charges are just 10¢ a minute. You can go online in most areas with a local phone call. Plus, you'll receive a \$25.00 Introductory Usage Credit when you purchase your CompuServe Subscription Kit.

Information you just can't find anywhere else.

Use the Forum Message Board to send and receive electronic messages. Join ongoing, real-time discussions in a Forum Conference or communicate with industry and Apple experts. Search Forum

Data Libraries for non-commercial software. Enjoy other useful services too, like electronic editions of popular computer magazines.

All you need is your Apple computer (or almost any other personal computer) and a modem.

To buy your Subscription Kit, see your nearest computer dealer. Suggested retail price is \$39.95. To receive our free brochure, or to order direct, call 800-848-8199 (in Ohio and Canada, call 614-457-0802). If you're already a CompuServe subscriber, type GO MAUG® (Micronetworked Apple Users Group) at any ! prompt and see what you've been missing.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220
800-848-8199
In Ohio, call 614-457-0802

An H&R Block Company

Mouse Cleaner 360°



- Mouse Cleaner 360°'s Magic Scrubber Ball gets your mouse squeaky clean in seconds!
- Makes messy cotton swabs obsolete.
- Keeps your mouse operating like new!!

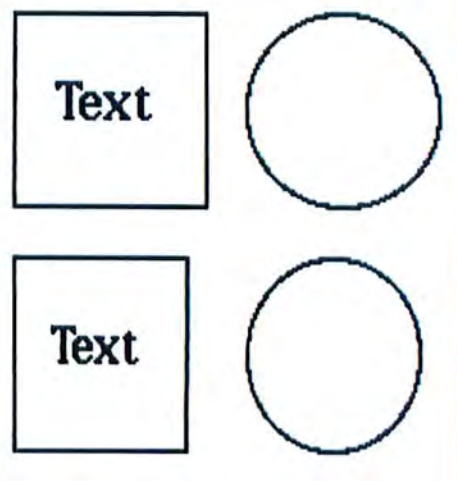
ERGOTRON inc
1621 E. 79th Street
Minneapolis, MN 55420
612/854-9116 ■ Telex #4310015

*Mouse Cleaner 360° Kit —
Just \$16.95 at your Computer, Accessory
or Office Supply Dealer.*



Circle 626 on reader service card

How To/Getting Started



A Tall Order

Because a bit map's 72-dpi resolution doesn't exactly match an ImageWriter's 80-dpi horizontal resolution, bit maps are condensed by approximately 13 percent. You can avoid the problem by using the Tall Adjusted option in the Page Setup dialog box, but that also causes text to be stretched with the graphic.

compensates for the difference in resolution, but at a price; text is widened along with the adjusted picture. A 5-inch column of text expands to over 5½ inches (see "A Tall Order"). This distortion occurs when you print a document from a program that uses the Mac's ImageWriter print driver. You won't encounter it when you print with *MacPaint*; its own printing routines compensate for the difference in resolution.

Apple used to include a copy of *MacPaint* with every Mac, a giveaway that didn't exactly provide raging incentive for other software firms to improve on the program. With the debut of the Mac Plus, Apple started charging for *MacPaint*, and more potent programs soon appeared. Foremost among them are Ann Arbor Software's *FullPaint*, Mindscape's *GraphicWorks*, and Silicon Beach Software's *SuperPaint*. And for on-the-spot drawing, there's Hayden's *CheapPaint*, a desk accessory that crams a fairly complete drawing table into the Apple menu (see "MacPaint's Successors," *Macworld*, January 1987).

Most of *MacPaint*'s successors mimic its menus and palettes and satisfy many of the cravings of *MacPaint* veterans—scroll bars for accessing other parts of a document, full-page cutting and pasting, on-screen rulers, and the ability to have multi-

(continues)

COPY II[®] MAC

**New!
Version 6:
Full H.F.S.
Support**

BACKS UP PROTECTED SOFTWARE.

Copy II Mac does more than just sector copy. Its bit copy program has the built-in power and flexibility to handle most protection schemes automatically and supports single and double-sided drives. (We update Copy II Mac as often as needed to handle new protections; you as a registered owner may update at any time for \$15 plus \$3 s/h.)

RUNS PROTECTED SOFTWARE FROM YOUR HARD DISK.

Copy II Mac makes using your hard disk as convenient as it should be. No longer will you have to use the 3½" disk with some of the most popular business software. Copy II Hard Disk allows you to transfer some programs from 400K disks to 800K disks. Call for current list.

2-Time Winner of A+ Readers' Choice Awards!

Backup utilities also available for the IBM, Apple II, Atari ST, and Commodore 64/128.

GIVE YOUR MAC MORE MUSCLE.

Copy II Mac can even repair some damaged disks and recover accidentally deleted files. System Requirements: 512 Macintosh or Macintosh Plus, 1 drive. (2 drives, all available memory and hard disks fully supported.)

Call 503/244-5782, M-F, 8-5 (West Coast time) with your in hand. Or send a check for \$39.95 U.S. plus \$3 s/h, \$8 overseas.

\$39.95

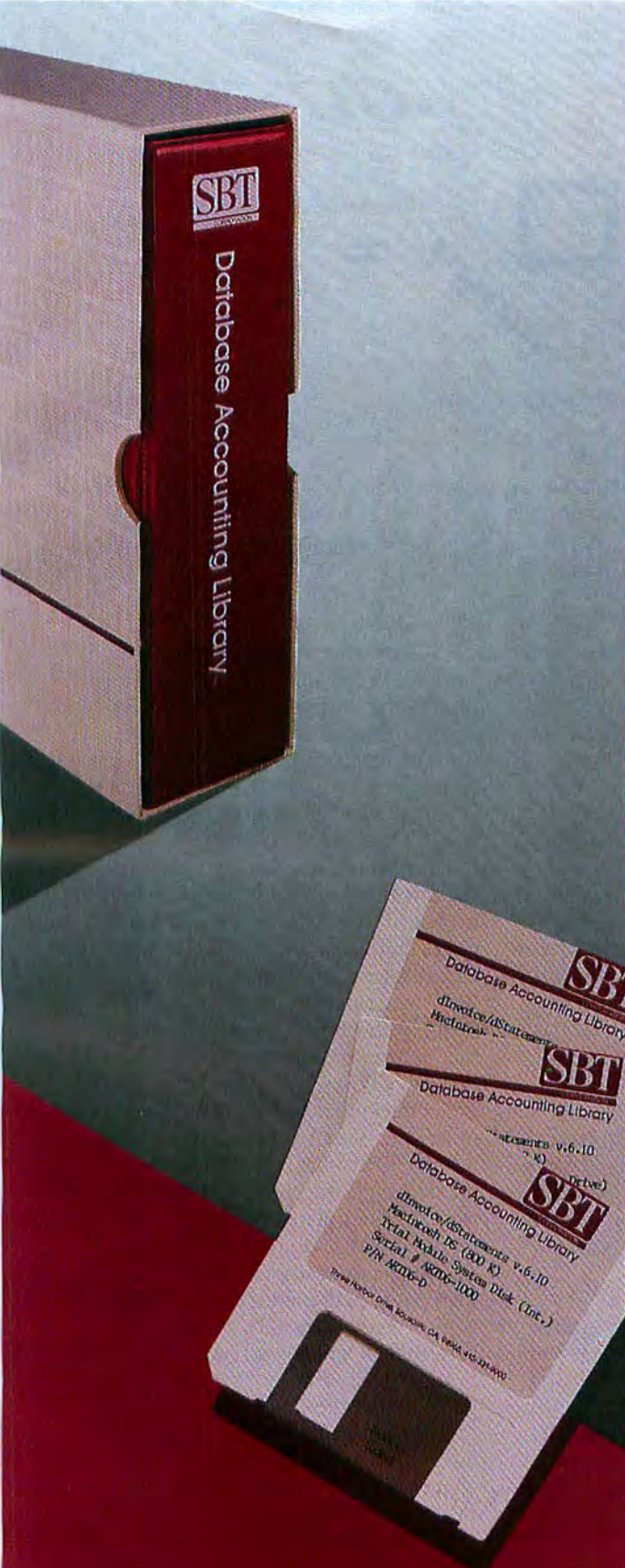
*Central Point
Software*

INCORPORATED
9700 S.W. Capitol Hwy., #100
Portland, OR 97219 MW

Now available!!!

800K drives for Macintosh: \$225.00 (plus \$10 shipping/handling). Plugs directly into Mac & Mac Plus!

Circle 607 on reader service card



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.

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
dBackup	Menu/Backup	\$ 65

One Harbor Drive
Sausalito, CA 94965 (415) 331-9900
Telex 9102404708

SBT
CORPORATION

VECTOR ELECTRONIC COMPANY

ATTENTION
HARDWARE
DEVELOPERS

WHAT'S NEW FOR MAC II & MAC SE

Open architecture.

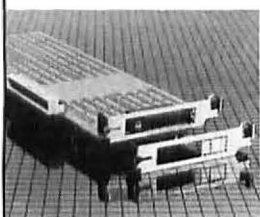
Expansion power: VECTORBORD PLUS.™

High speed prototyping boards,

test extenders and accessories.

Eight models available now.

Vector—41 years industry standard.



- High Density proto boards for DIPs and PGAs
- Multilayer power and ground planes.
- SMT caps and socket pins installed.
- Bracket w/ expandable I/O port available separately.

**Vectorbord plus™
For Mac II, too**

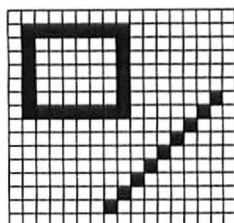
Call for brochure.

VECTOR ELECTRONIC COMPANY
12460 Gladstone Avenue
Sylmar, CA 91342
818/365-9661 FAX 818/365-5718

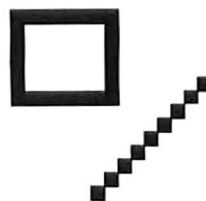
800/426-4652 In CA
800/423-4659 Outside CA

Circle 769 on reader service card

How To/Getting Started



Bit-mapped graphic



Object-oriented graphic

= FrameRect(0,0,30,30)
Line(30,20)

QuickDraw commands

Bit Maps versus Objects

A bit-map drawing program like MacPaint treats text and graphics as a series of black squares in the bit map. An object-oriented program like MacDraw stores descriptions of the graphics. The graphic looks the same on screen, but the program stores it as a series of QuickDraw commands so you can alter object-oriented drawings more easily.

ple documents open simultaneously. Both 72-dpi barrier. *FullPaint* comes with a separate application that improves a picture's resolution on a laser printer, while *SuperPaint*'s LaserBits feature lets you boost a graphic's resolution to 150 or 300 dpi. *SuperPaint* and *GraphicWorks* can also use PostScript printer fonts and have a second tier of features for *object-oriented* drawing.

Artists who are more comfortable with charcoal and watercolor than with FatBits and pen patterns may find *GreyPaint* an ideal canvas. Created by Fractal Software and sold by Letraset, *GreyPaint* has tool palettes that include a finger for smearing portions of a drawing and a water droplet that blurs and softens to create a watercolor effect. You can customize the shape and drawing characteristics of most tools, including having them run out of paint—thus producing progressively lighter images—as you drag the mouse.

A Different Objective

Object-oriented graphics programs, the best-known of which is Apple's *MacDraw*, take a different route to producing pictures. Instead of reducing everything on the page to a series of bits, they treat each item as a separate object. Draw a circle, and the program makes notations in memory saying that you drew a circle with a radius of *a* at position *b*, with a border (or *pen*) width of *c* and a fill pattern of *d*. It's as if you created an image not by blackening squares on a piece of graph paper, but by laying down rubber bands shaped like lines, circles, or boxes. To resize an object, you simply stretch or compress it as needed, instead of erasing and redrawing.

The ability to alter the drawing without a lot of erasing is one big advantage of object-oriented programs. There are others, too. Object-oriented programs don't store images as bit maps, but as a series of commands for QuickDraw, the Mac's built-in set of graphics routines (see "Bit Map versus Objects"). Thus, their images aren't *resolution dependent*; they aren't tied to a specific number of dots per inch as are bit-mapped ones. A *MacDraw* graphic that appears on the screen at 72 dpi can print on a LaserWriter at 300 dpi and on a Linotron 100 PostScript phototypesetter at 1270 dpi. And object-oriented programs store text as text, letting you exploit the sharpness and beauty of PostScript fonts.

Object-oriented programs also offer more precision, with on-screen rulers, adjustable grids that help you align items, and measuring features for creating drawings to scale. They also let you paste bit-mapped images into drawings and create drawings larger than a single 8½-by-11-inch page. In the latter case, the program prints the document by *tiling* pages—printing each page and overlapping the boundaries slightly so you can tape or paste them together.

Object-oriented drawing programs are geared to electronic drafting, but they also make serviceable layout tables for desktop publishing jobs that don't require complex text-slinging features like automatic hyphenation and the ability to flow text over numerous pages (see "Mac Pasteup Tools," *Macworld*, May 1987).

MacDraw isn't alone in its class. Imagine it on a weight-lifting regimen and you've got Innovative Data Design's *MacDraft*. Although it works much like *MacDraw*, *MacDraft* has more drawing muscle, including the ability to rotate objects in

one-degree increments and to label them with their dimensions (see "Drafting's New Compass," *Macworld*, January 1986).

The PostScript Link

If *MacDraft* is *MacDraw* with muscle, then Cricket Software's *Cricket Draw* is *MacDraw* on steroids. *Cricket Draw* builds on the foundation of *MacDraw* and *MacDraft* and is also "PostScript-aware," designed to let you tap PostScript's powerful text- and graphics-handling talents, such as the ability to rotate and shade text and graphics. (See "Rounding the Bezier Curve," *Macworld*, May 1987.)

Even more interesting is *Cricket Draw*'s ability to create a file containing the PostScript program commands that describe a drawing. Those resulting statements are more than just a peek into PostScript's workings. You can save them in a special format called *Encapsulated PostScript*, or EPS, and use them with applications that support EPS, such as version 2.0 of Aldus's *PageMaker*. That means you can produce a special effect, such as shadowed text hugging the contour of an image, and plug it into a publication as its logo.

The ultimate in PostScript power, however, may be *Illustrator*, from PostScript's creators, Adobe Systems. *Illustrator* is aptly named: it's intended for producing detailed drawings and technical illustrations (see "Illustrator: The Tracer's Edge," *Macworld*, June 1987). You first paste or scan in a bit-mapped drawing, then trace it with *Illustrator*'s drawing tools. *Illustrator* turns your tracings into PostScript code, which you can print or save in *Illustrator*, PICT, or EPS format. *Illustrator* also has many of *Cricket Draw*'s text-altering capabilities, although they're more for annotating drawings than for publication layout.

The Third Dimension

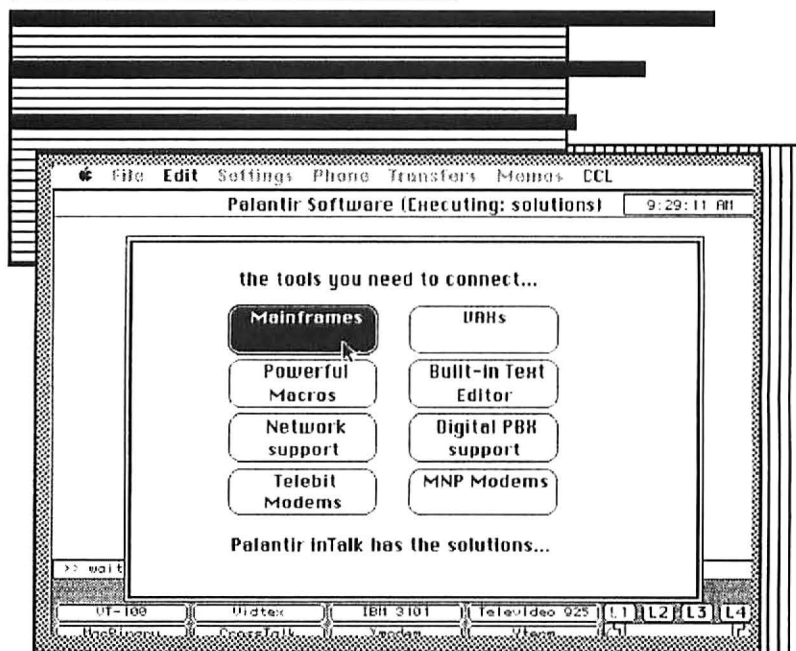
Perhaps the most fascinating graphics programs to tinker with are ones that produce three-dimensional images—or, more accurately, simulate them on the screen through perspective and shading.

For someone used to the click-the-tool-and-go ease of most Mac drawing programs, a 3-D program is a foreign land with its own language (see "3-D, Take 2," *Macworld*, May 1987). Creating a 3-D image usually involves combining *primitives*—basic shapes like cubes, cones, and spheres—with shapes you draw. But the operating styles of different 3-D programs vary enough to make generalizing difficult.

(continues)

See us at
MacWorld Boston
Booth #1334

inTalk™
for the Macintosh™



Version 3.0 available now!

With more features to support:

- Information Services
- Mac to Mac
- Mac to MS-DOS
- Digital PBX Networks
- High Speed Modems
- Mainframe Communications

Windows inTalk™ also available for MS-DOS

For the dealer nearest you call (800) 368-3797 or (713) 955-8880.

Circle 775 on reader service card

How To/Getting Started

Programs like Challenger Software's *Mac3D* and *Phoenix 3D* from Dreams of the Phoenix provide some *MacDraw*-like tools for creating custom shapes. Others provide drawing tools unique to the 3-D world. Enabling Technologies' *Pro3D* has a Lathe tool that produces *radially symmetrical* objects like candlesticks or baseball bats, and a Profiler tool that lets you laminate outlines together to produce complex shapes like houses or cars. Creating a complete 3-D scene usually means drawing separate shapes with these tools, then merging them.

After building a scene, you can rotate it, look down on it or up at it, and change the "lighting" (alter the position and intensity of one or more light sources.) Your vantage point is called the *camera view*; many programs let you examine your scene from several views at once. You can print drawings on an ImageWriter or a LaserWriter, with the latter producing dramatic shading effects. *Mac3D* and Abvent's *SpaceEdit* also support *plotters*, printing devices that output drawings by zipping special felt-tipped pens across the paper.

Some Mac 3-D programs are quite powerful, but don't picture yourself like a lab-coated technician in a tire commercial,

watching your designs spinning on screen. With the number crunching required to calculate perspective and shading, the Mac isn't fast enough to animate three-dimensional scenes as a computer-aided design workstation can. The Mac II, however, has animation potential. With its 68881 *numeric coprocessor*, a chip that takes over calculations from the 68020, the Mac II may earn a role in tomorrow's tire commercials.

If you don't have a Mac II but do have patience, you can animate three-dimensional drawings by copying different views of a scene into an animation program like *VideoWorks* or *MacMovies*. Some serious 3-D animators combine a 3-D program and *VideoWorks* with Apple's *Switcher*, and use Affinity Microsystem's *Tempo* to automate the rotate, copy, and paste process.

Picto Graphs

Future archaeologists may be unable to decipher our written languages, but at least they'll have pie charts to show where our tax dollars went. Charts and graphs from business graphics programs like Microsoft's *Excel* and *Chart*, Cricket Software's *Cricket Graph*, and Lotus's *Jazz* have become the hieroglyphics of our time. Printed as is or spruced up in a draw-

ing program, they provide at-a-glance insights into tables of yawn-worthy numbers. (See the September 1985 *Macworld* for reviews of *Jazz* and *Excel*, and "The Kingpin of Presentation Graphics," *Macworld*, July 1986, for a review of *Cricket Graph*.)

Charting programs require data in tabular form, which is one reason why they're often paired with spreadsheets. The combo works well: you can select a row of data (perhaps final sales figures for the past four quarters), choose a command or two, and the program creates a chart. Each value is a *data point*; a set of values is a *data series*. The column headings act as *category names*, which, in a bar chart, appear below their corresponding bars.

You can create additional data series—perhaps to contrast this year's sales figures with last year's—by using more than one row of values. In such cases you'll probably add a *legend*, a box near the chart that shows which pattern depicts each data series.

Combination Platters

Graphics play such a big role in the Mac environment that drawing features are popping up in all kinds of applications—in

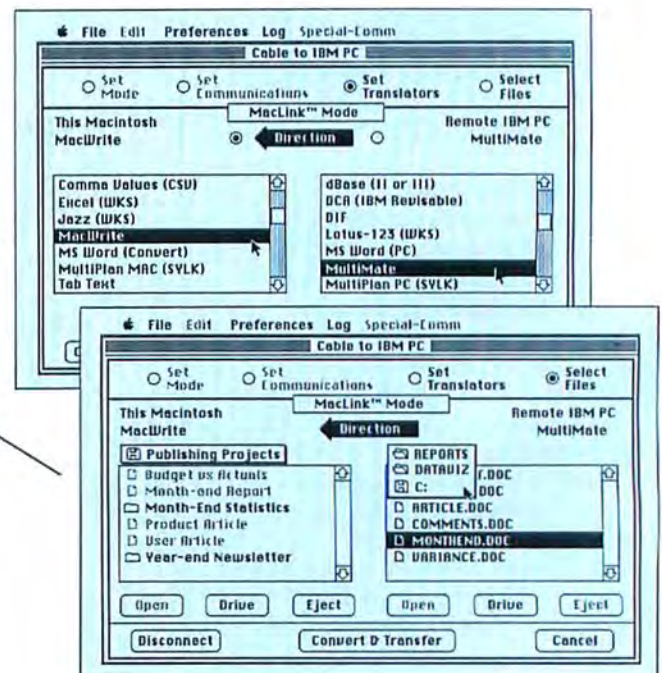
(continues)

MacLinkPlus™ ... 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



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.

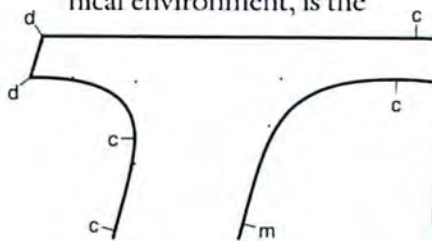
The Adobe Type Library is created in a modern setting, using sophisticated computer software. And



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

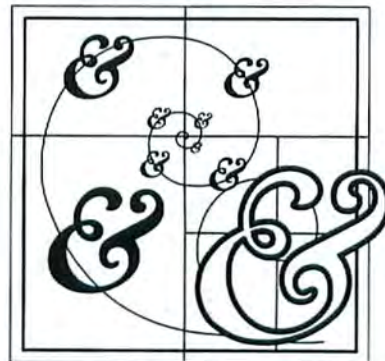


The weight, curve, and overall appearance of a letter is painstakingly examined, manipulated and refined by Adobe craftsmen using specialized software.

Craftsmanship in the electronic age.

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

How To/Getting Started

word processors like Ann Arbor Softworks' *FullWrite Professional*, which has built-in object-oriented drawing; in spreadsheets like Data Tailor's *Trapeze*, which has business graphics features (see *Reviews, Macworld*, May 1987); in integrated packages like *Jazz* and *Microsoft Works*, which offer business graphics; even in a telecommunications program, Hayes's *Smartcom II*, whose bit-map drawing window lets you interactively draw over the phone with another *Smartcom II* user.

Then there are the "identity crisis programs"—applications that, with a kitchen-sink mix of features, defy categorization. Target Software's *Scoop* combines bit-map drawing, object-oriented drawing, word processing, and desktop publishing. Laserware's *LaserPrint* integrates bit-map and object-oriented drawing with desktop publishing. Forethought's *PowerPoint* merges object-oriented drawing with a novel form of desktop publishing that lets you create graphics for overhead transparencies, flipcharts, and slide presentations.

Moving Pictures

Since graphics is the common denominator in so many Mac applications, it's a good thing we have several ways to move images between programs. The most basic

are the Mac Clipboard, which lets you cut, copy, and paste graphics and text between applications, and the Scrapbook, a desk accessory that lets you store on disk any number of pages of text or graphics pasted from the Clipboard for subsequent copying and pasting into other applications. Beyond these basics, a popular file format called *PICT* stores object-oriented graphics in the form of commands for QuickDraw, the internal routines that give the Mac its graphics talents. Many programs, including *MacDraw*, *GraphicWorks*, and *Cricket Draw* have a PICT option in their Save As dialog boxes, and most desktop publishing programs can open and place PICT files.

And then there's the EPS format I mentioned earlier. It's worth adding that an EPS file can also contain a PICT representation of the EPS file's graphic. When you bring a PICT-equipped EPS file into a program, the PICT portion can be used to show an on-screen approximation of the effect produced by the EPS file. Finally, an up-and-coming file structure is the *tagged image file format*, or *TIFF*. Hammered out by several scanner manufacturers to represent the images their wares produce, the TIFF standard is supported by *Graphic-*

Works, *PageMaker 2.0*, *The Realist*, and many IBM PC graphics and publishing programs.

Speaking of scanners, don't overlook them as a way of getting artwork into the computer (see "Hands-On Digitizing," *Macworld*, March 1987). They require an investment in cash and setup time, but they're certainly the best graphics solution for the drawing-impaired. Another alternative may be a *graphics tablet*, a device the size of a cook's cutting board, with a pencil-like stylus that replaces the mouse as the means of motion for the Mac's pointer (see *Reviews, Macworld*, March 1987). Artists find drawing with a graphics tablet's stylus more natural than with a mouse. Tracing existing art is easier, too.

Finally, if you just need a simple illustration to complement some text in a publication or advertisement, consider a library of *clip art*—ready-to-paste drawings on disk (see "Art to Go," *Macworld*, December 1986). Clip art tends to be the Muzak of the art world, but a well-done canned illustration beats a lousy custom one. If you can't draw yourself, draw on someone else. □

See *Where to Buy* for product details.

1-800-MAC-LINE

Software

Microsoft Excel	229.00
Microsoft Works	185.00
PowerPoint	229.00
MORE	155.00
SuperPaint	56.00
Cricket Draw	177.00
Flagtime	259.00
Microsoft Word 3.0	239.00
Omnis3+	269.00
Reflex	59.00
MacDraft 1.2	149.00

Please call for software not listed.

Disks

Sony SS Boxed	10.90
Sony DS Boxed	15.90

Accessories

Black Ribbons	3.00
MacPlus Bag	59.00
Disk File/30	7.00

Upgrades

128K to 512K	99.00
512K to 1024K	169.00
128K to 1024K	239.00
68020	495.00
SCSI Port	89.00

Hardware

Hard Disk Drives:

DataFrame 20XP	875.00
DataFrame 40XP	1475.00
ProApp20S	649.00
ProApp30S	769.00

800K Drive	219.00
Thunderscan	175.00
Radius 19" Screen	1695.00
PC-Mac Keyboard	119.00
MacFan	89.00
Numeric Turbo	109.00
Turbo Mouse	85.00
Samsung 1200 Modem	99.00

National

Call 1-800-MAC-LINE
Hours: 7:30am-7pm CDT
Visa, MC, C.O.D., P.O.s, Checks
Minimum \$3.50 for Shipping
Prices subject to change.
Ask for our free catalog.

In Texas/Information

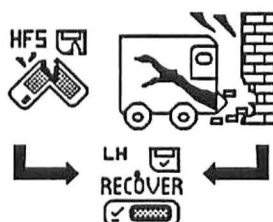
Call 1-512-835-0867
\$35 minimum on all orders.
Texas residents add 7.25% sales tax.
UPS Next Day Air available.
Items subject to availability.
Returns may be subject to a restocking fee.

NE MACLINE™ MACLINE MAC

10001 IH35 North, Suite 86, Austin, Texas 78753

Circle 673 on reader service card

Mac Zap



Don't let a Crashed Disk ruin your Day

Recover HFS

Safeguard your Files!
Full SCSI Support!

Recommended by the Major SCSI manufacturers. If you have a hard disk backup program you need Recover HFS also. NEVER lose important files.



Works with all HFS Systems.
Easy to Use, Reliable.
Files maintain icons, position attributes and folders.
THE most powerful Recover.
We recover where others quit.
Parameter Files for fully Automatic Recovery.
Expert Mode for power.



Mac Zap Tools

The most powerful Disk & File Utility available.
HFS/MFS, Maps, Graph.
Full SCSI Support!



Mac Zap Patcher

Install programs to Hard Disk, execute without Master Key Disk.

Books--► Software protection on Micro Computers Mac, Apple II, IBM
HFS and MFS Disk Structures Mac Disk System

Circle 219 on reader service card



THUNDERSCAN® IS SO IMPROVED YOU WON'T BELIEVE YOUR EYES.

Ever since ThunderScan started zipping back and forth inside the ImageWriter™, it's been famous for eye-popping graphics. And now, the most popular Macintosh™ scanner is better than ever. With exciting new features you won't find on scanners costing ten times as much. True halftone capabilities.



Now you have a choice of true halftones or dithered bitmaps.



New file formats.
Special effects.
And more.

ThunderScan halftones are really something to behold.

Because ThunderScan returns true gray shade information to the Macintosh. Not just dithered

ThunderScan is compatible with desktop publishing software.



bitmaps like most scanners. So even the most subtle details are captured. And with ThunderScan's sophisticated software palette, you can alter any image to your art's desire.

ThunderScan images can now be saved in a variety of formats, including PostScript® (EPSF), MacDraw™ (PICT)

and TIFF. That means complete compatibility with PageMaker® 2.0 and other advanced desktop publishing programs. So you can grace the pages of your publications with honest-to-goodness halftones generated by LaserWriter™. Like the images you see in this ad. And wait 'til you see the output from higher resolution printers like the Linotronic® 100. Incredible!



Frame your images in a variety of shapes.



Especially effective are ThunderScan's special effects. Straight line screens. Rotations. And frames. Plus, we've added a lasso that lets you control the shading of irregular shapes.

We've even made a major hardware improvement. It's called Power Port™. Just plug it in and ThunderScan is Macintosh Plus and SE compatible. With no additional accessories. And, Power Port can power most serial port peripherals.

Yes, the new improved ThunderScan is sure to raise some eyebrows. And its price is definitely a sight for sore...well, you get the picture.

\$249
Complete

Thunderware, ThunderScan and the Thunderware logo are registered trademarks of Thunderware, Inc. Power Port is a trademark of Thunderware, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. ImageWriter, LaserWriter and MacDraw are trademarks of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc. Pagemaker is a registered trademark of Aldus Corporation. Linotronic is a registered trademark of Linotype Company.

© 1987 Thunderware, Inc.

Circle 167 on reader service card



Thunderware

ThunderScan®
FOR MACINTOSH®

21 Orinda Way, Orinda, CA 94563 (415) 254-6581

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 January 31, 1988.

MACWORLD

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 _____

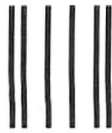
TITLE _____

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 January 31, 1988.

MACWORLD



NO POSTAGE
NECESSARY
IF MAILED IN
UNITED STATES

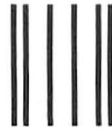


BUSINESS REPLY MAIL

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



Insights on More

Getting More work done

by Robert C. Eckhardt

Without doubt, the current standard-bearer for idea processor/outline programs is *More* by Living Videotext. While it's capable of high-quality printed output in text or graphic formats, *More* is not simply an outliner. People put it to work as a presentation program for computer-enhanced meetings, as a time manager and calendar, as an electronic phone book and dialer, or as a simple database.

Because *More* is so full of features, the manual overlooks a few entirely and fails to fully describe the usefulness of some others. Still others are treated with such modesty that one could easily miss their significance. For those who have yet to take full advantage of what *More* (version 1.1) has to offer, here are some useful tips. Even those who think they know *More* inside out will, I hope, discover a few new and useful techniques.

My thanks to Kandes Bregman and Robin Foster at Living Videotext, Bernard DeKoven of Computer-Enhanced Meetings, Marc Gerstein of Delta Consulting Group, and the participants in the IYT Forum on CompuServe for their contributions.

Upgrade to the Latest Version

The original release of *More* (version 1.0) had a number of shortcomings, including the absence of an Undo command, the inability to display more than one headline level in bullet charts, and inflexible font styling. Fortunately, these and other problems have been fixed in version 1.1, the current release. If you bought version 1.0 and did not receive the free update, it's probably because you forgot to send in your registration card. To get a copy of the new version, send in your registration card along with a note stating that you need a 1.1 update package.

Two Windows, One Outline

If you have a long outline and want to work on one part while referring to another, open a second copy of the same out-



line and arrange the two windows so you can see the contents of both at once. Do all your editing in only one window, though, to avoid confusion.

Dialog Boxes

If you prefer keeping your hands on the keyboard, try these shortcuts that avoid mousing around. To select a button in a simple dialog box (that is, one without text entry blanks) from the keyboard, press the

key corresponding to the first letter of a button's name. For example, instead of clicking the OK button, press the O key. In file-selection dialog boxes, pressing the initial of a file name scrolls the list to files beginning with that letter; use ⌘-letter key combinations to select buttons, such as ⌘-D to change drives. In dialog boxes with

(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 days 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
Avatech 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 VISA/MC
CALL FOR OUR LATEST CATALOG 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

How To/Insights



During meetings Marc Gerstein uses the mouse to advance More screens as if they were slides.

text entry fields, again use ⌘-letter key combinations to select buttons, and move from one text entry area to the next by pressing the Tab key (to move to the next field) or Shift-Tab (to go in reverse).

Tabs in Headlines

Some people even make tables with *More*. It takes a little thinking, though, because the Tab key is equivalent to ⌘-R; they both move a headline to the right. If you press Option-Tab, however, a real tab will be entered into the selected headline at the insertion point.

A Fitting Check

When running *More* with *Switcher*, or in any situation where memory is in short supply, use the About More command on the Apple menu to find out how much free RAM is available and to determine how large (in K) your current outlines are.

Sorting by Time and Date

To sort headlines by time and/or date, you must put the time or date, in the correct format, at the beginning of the headline. The easiest way to enter times and dates is to use the time and date stamps in the Edit menu. To set the correct format, select the Time & Date command in the Format menu. For the time stamp, select 24-Hour Clock and Leading Zeros on Hours. For the date stamp, select Numeric, Y/M/D, Leading Zeros on Day and Month, and Include Century.

Decloning

To change a clone headline back to a standard headline, cut it to the Clipboard and then paste it back to its original position.

Stripping Leading Characters

When you transfer headlines into a document window from a template or by using the Paste or Receive From commands, leading characters (such as the + and - signs) usually precede each headline. To remove the characters during the transfer, hold down the Option key while you choose the desired transfer command.

Calculations and Calendars

More interprets any number with an embedded slash (/) as a date and any number containing a semicolon (;) as a time. So to hide irrelevant figures while calculating sums, temporarily insert either a slash or a semicolon in the numbers you do not want included in the calculation.

Date-only Calendars

When using the Calendar command, you don't have to delete appointment-hour subheadlines by hand to create an outline calendar comprising only days, weeks, and months. Instead, before clicking on the Make Calendar Outline button, put the same hour in the From and To boxes in the Time section of the Calendar command window.

Counting Headlines

To count the number of headlines and documents in an outline, select the summit (topmost) headline and enter %? in the Search For blank in the Search dialog box. Turn on Match Pattern in the Search dialog box and click the Find All button. If you want a count for only a section of the outline, select the appropriate headline and click on Barcursor Only in the Search dialog box. To count a single document window, place the cursor before the first word of a full-screen document window before initiating the search.

More Counting

To count the number of correctly punctuated sentences in an outline or segment of an outline, enter [.,!^?] in the Search For field of the Search dialog box, turn on Match Pattern, and click Find All. You can limit the search as you do when counting headlines.

Similarly, to count words (three letters or more), choose a section of the outline, making sure the text insertion bar is at the

(continues)

MacBottom SCSI Hard Disk Drive

The compact that takes you and your Macintosh for a ride in the fast lane.

Get more (and less).

You've always heard that good things come in small packages—here's the proof. Available in 20 and 40 MB models, the MacBottom arrives completely formatted and ready to use; unpack it, plug it in, and turn it on. It comes with easy-to-use software including a print spooler for the ImageWriter and the LaserWriter; FloppyCopy, a floppy disk duplicator; and other MacBottom disk utilities. You also get PCPC's HFS Backup™, the popular archive and restore program, and Eureka, the desk accessory that locates misplaced files. And you don't have any surprise purchases in store when you buy a MacBottom. The cables, terminators, push-button SCSI address selection, and an additional SCSI port are built right into the compact case, as is the whisper-quiet fan that helps you keep your cool.

You CAN take it with you. The MacBottom is so lightweight and compact, you can take it anywhere. It weighs less than five pounds, and it's just two inches tall, so it fits under your Macintosh as perfectly as it fits into your attache case or your Macintosh Plus carrying case. More importantly, the MacBottom is designed to withstand the rigors of travel — it's not just small, it's sturdy.

All this and a modem, too! Reach out and explore the wealth of information available via telecommunications. You can buy a MacBottom SCSI with our optional Hayes™-compatible, 300/1200 baud modem built right in! Buy it now or add it later; the choice is yours.

Depend on it. As Macintosh hard disk pioneers, we have consistently set the industry standards. We provide unlimited technical support as well as a comprehensive upgrade policy that allows all MacBottom owners to take advantage of our latest developments. We're so confident in our drive that we give you a full one year limited warranty that includes all parts and labor.

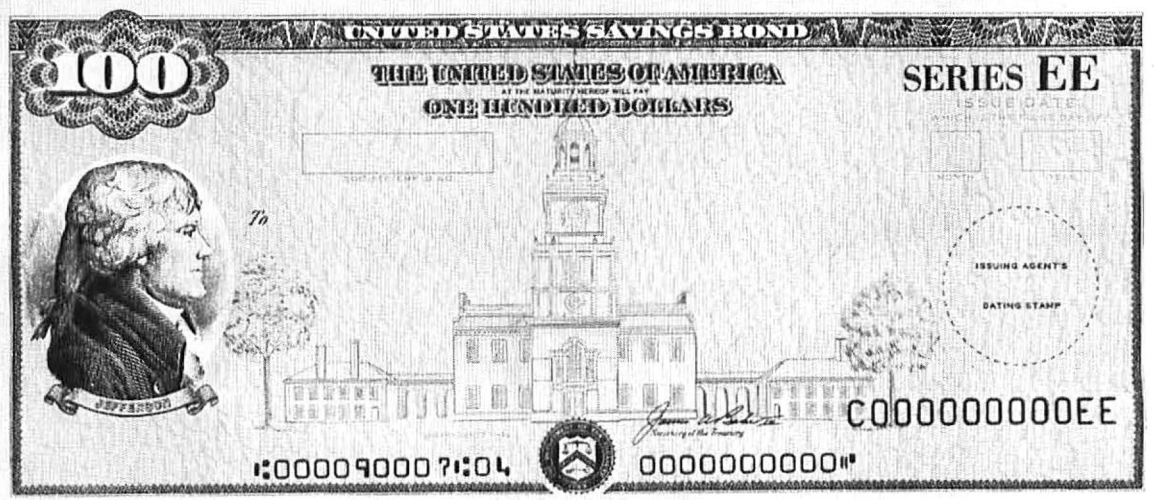
Call your dealer today. Featuring the ultimate in speed, engineering excellence, outstanding software, long-term customer support, and portable reliability, the award-winning MacBottom SCSI hard disk is a combination you can't beat. It's only two inches tall, but no other hard disk stacks up.



Personal Computer Peripherals Corporation
6204 Benjamin Road • Tampa, Florida 33634
800-MACBUTT • 813-884-3092

Circle 223 on reader service card

The Great American Investment.



John J. Creedon, President of Met Life and Chairman of the U.S. Savings Bonds Volunteer Committee.

U.S. Savings Bonds are great because of all they offer. Guaranteed competitive earnings. Tax benefits. Convenience. Complete security.

They're American because they are backed by the U.S. Government and they help strengthen our country's economy.

So join me and our Volunteer Committee in supporting and buying U.S. Savings Bonds. If you are an employer and you don't have a payroll savings plan, contact any U.S. Savings Bonds Office. It's in the telephone book under U.S. Government. They will show you how to set one up.

U.S. Savings Bonds. The Great American Investment.

National Chairman

John J. Creedon
Metropolitan Life Insurance Company
Ex-officio General Chairman
James A. Baker, III
Secretary of the Treasury

J. David Barnes

Mellon Bank Corp.

Kent M. Black

Commercial Electronics Operation
Rockwell International Corporation

Russell W. Brill

Wisconsin Electric Power Company

Dr. Manfred Byrd, Jr.

Chicago Public Schools

Joseph E. Cappy

American Motors Corporation

John B. Carter

The Equitable Life Assurance Society
of the United States

The Honorable Henry G. Cisneros

Mayor, City of San Antonio

John L. Clendenin

BellSouth Corporation

The Honorable Martha Layne Collins

Governor, Commonwealth
of Kentucky

Edwin I. Colodny

USAir Group

Lodwick M. Cook

ARCO

L. Stanley Crane

Consolidated Rail Corporation

Robert F. Daniell

United Technologies Corporation

Fred R. Dusto

Hubbell Incorporated

Richard K. Eamer

National Medical Enterprises, Inc.

Richard J. Flanson III

Security Pacific Corp.

Richard L. Gelb

Bristol-Myers Company

John A. Georges

International Paper Company

Thomas M. Gibbons

The Chesapeake & Potomac

Telephone Companies

Alfred Glancy III

Michigan Consolidated Gas Co.

Roberto C. Goizueta

The Coca Cola Company

John H. Gutfreund

Salomon Brothers, Inc.

Earle H. Harbison, Jr.

Monsanto Company

Jack L. Heckel

Aeroflot General

John M. Henske

Olin Corporation

Dwight H. Hibbard

Cincinnati Bell Telephone Co.

William N. Hulett

Stouffer Hotel Company

Allen F. Jacobson

3M

Robert L. James

McCann-Erickson Worldwide

David T. Kearns

Xerox Corporation

Robert J. Lanigan

Owens-Illinois, Inc.

Dr. William E. Lavery

VPI & State University

William S. Lee

Duke Power Company

J. Willard Marriott, Jr.

Marriott Corporation

Harry M. Mays

County of San Bernardino

J. Richard Munro

Time, Inc.

Raymond F. O'Brien

Consolidated Freightways, Inc.

Charles W. Parry

Aluminum Company of America

Victor A. Pelson

General Markets Group

AT&T

Sergio Pereira

Metropolitan Dade County

A. J. Pfister

Salt River Project

J. E. Reeves, Jr.

Reeves Brothers, Inc.

A. William Reynolds

GerCorp

Joseph A. Rice

Irving Bank Corporation

John M. Richman

Kraft, Inc.

Francis C. Rooney, Jr.

Melville Corporation

Dr. John W. Ryan

Indiana University

Edson W. Spencer

Honeywell

D. C. Staley

NYNEX Corporation

Dean D. Thornton

Boeing Commercial Airplane

Company

William R. Timken, Jr.

The Timken Company

Richard F. Walker

Public Service Company of Colorado

Hillsman V. Wilson

McCormick & Co., Inc.

Harold L. Yoh, Jr.

Day & Zimmermann, Inc.

Richard A. Zimmerman

Hershey Foods Corporation

Charles A. Zrakat

The MIRE Corporation

Buy United States Savings Bonds.
The Great American Investment.

beginning of the selected headline. Select the Search command, enter [a-z][a-z][a-z][a-z]* in the Search For blank, turn on Match Pattern and turn off Match Case, and click Find All. To count characters, enter ? in the Search For blank, turn on Match Pattern, and click Find All.

Making Major Changes

More's search and replace functions limit you to 127 characters in the Change To blank of the Search dialog box. To replace designated text strings with longer pieces of text, copy the replacement text to the Clipboard. Then use the Find Next command (or ⌘-F) and Paste commands to insert the substitute text from the Clipboard. Since the Clipboard can store font styles (the Change To box does not), this is also a way to change text to a different style.

Address Lists Made Easier

Say you've used the address file template on the Template menu to make a comprehensive list of your contacts. When you mark and gather a list of phone numbers, you find yourself with a bunch of numbers and no names. This is because both mark-

ing and gathering work only on single headlines (the one with the phone number, for example) and ignore neighboring headlines (such as the one with the name), even though they may contain important information. To solve this problem, when an address entry is complete, copy it to the Clipboard, paste it to the document window of the entry's main headline, and then delete all the subheadlines. Then when you mark and gather, you'll get the entire contents of the document window.

Centering Bullet Charts

To center bullet charts on a printed page with the page number at the bottom, be sure to turn on the As Shown When Printed button in the Bullet Options command window (accessed via the Formats menu). If you leave the Normal For Screen button selected instead, the charts will print off-center (both vertically and horizontally), with the page number directly below the chart.

Long Lists on Screen

When you're preparing bullet charts for on-screen presentations, select As Shown When Printed from the Bullet Op-

tions window to display a bullet chart that fills the screen. Be careful that your charts are not too long, however. In this viewing mode, charts that are too long for the screen are simply truncated; the missing part of the chart is not continued on the next screen.

Large Graphics on Screen

To display the largest possible graphic image in a bullet chart, select Normal For Screen from the Bullet Options window.

Cliff-hanger Charts

A particularly effective type of bullet-chart slide show is one that adds a new line to a list each time you click the mouse. To create such a sequence, first draw up the complete list in outline form as it will appear on the last slide—a main headline and a series of subheadlines. The effect works best if you preserve the illusion that you're adding to a list as you develop your theme, rather than showing a bunch of different images.

Experts in this technique prevent text from shifting left or right by making the main headline the longest of all the lines of

(continues)

Page Maker.



More news from Professor MacTeach.™ It's PageTutor,™ the fast, effective way to master PageMaker 2.0™ from Aldus.

PageTutor is your way to learn desktop publishing *in about an hour*. Forget the manual — just listen as friendly instructors guide you step-by-step through PageMaker's many features. Choose any (or all) of the three expertly-designed tutorials: Beginning, Intermediate, and Tips & Techniques. Each package 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 a PageMaker expert... for less than \$50.

You may call collect. PageMaker is a trademark of Aldus Corp. Professor MacTeach and PageTutor are trademarks of Personal Training Systems.



Personal Training Systems . . .
Self-Paced Training For Mac™ Software



Page Master.



Yes, send me more information on PageTutor.

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

text. If you prefer not to add more text, pad the main headline with invisible Option-spaces (nonbreaking spaces). Now make one duplicate of the list for each sub-headline. Starting with the final copy of the series, remove the bottom one, then two, then three subheadlines, and so on up the duplicates until you reach the opening list, which should have no subheadlines. Finally, change to Bullet Chart view and choose As Shown When Printed from the Bullet Options dialog box so that the charts all start in the same position at the top of the page.

And Serial Graphics

A similarly effective bullet-chart slide show consists of the sequential construction or alteration of a graphic image (such as a diagram or a bar chart). The easiest way to create this series of bullet charts is to first construct the final image in *MacDraw*. (If you use *Cricket Draw*, be careful not to use any PostScript effects—they won't transfer to *More*.) To keep the illustrations from changing position on the screen in *More*, surround the image with a box in *MacDraw*. Select a white line for

the box if you don't want a visible frame. Using *Switcher*, copy and paste the complete *MacDraw* image into the document window of the last headline in the *More* outline.

Back in *MacDraw*, strip away (or deselect) an element of the illustration, then revise and copy the image again and paste it to the headline above the previous one. Continue in this way until you paste the most basic version of the image to the top-most headline. Finally, select Bullet Chart view and start your slide show. Each chart in the sequence will overlay the previous one exactly, so it will appear as if you're unveiling previously hidden parts of a single slide.

Bullet Charts within Outlines

Sometimes you may want to print bullet charts within a regular outline. You can do so by putting the bullet chart in a graphics window. First display the bullet chart the way you want it, then cut or copy it to the Clipboard. Select the headline under which you want the bullet chart to appear and select Paste. Finally, print the document with the Pictures To Level option in the Print Options window set to the appro-

prate level. For example, if you have bullet charts attached to level 3 headlines, you must set Pictures To Level 3 or greater.

Exporting Bullet Charts

You can also transfer a sequence of bullet charts to draw programs, such as *MacDraw* and *Cricket Draw*. Simply display them as bullet charts and customize them; then use the Export command with *MacDraw* format to create a PICT (generic draw) file.

To transfer a single bullet chart to *PageMaker*, *ReadySetGo 3.0*, *SuperPaint*, or another program that accepts graphics, copy the individual chart on the screen to the Clipboard and then paste it into the other program. Programs that handle PICT images receive the chart in PICT format; those that work only with bit maps receive a bit-mapped image. Charts that are clipped by the bottom of the screen when the As Shown When Printed option is turned on are transferred in their entirety via the Clipboard.

(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.

Visit us at Macworld Boston (August 11-13), Booth 1903

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.

Coral
SOFTWARE

Circle 611 on reader service card

JDL-850 EWS™/GL+

Macintosh Desktop Engineering

Now there's a desktop, mid-format, high resolution plotter for the Mac that delivers something more. Of course you would expect line quality, accuracy, speed and reliability to equal or exceed the best pen plotters. The new JDL-850 EWS/GL+ delivers all the expected...with a significant *plus*.

14 colors on A through C-size media

Fourteen colors are always ready at the touch of a button, no pens to change or keep clean. Plot on ANSI, A to C-size, and ISO, A5 to A2, plain papers and vellum. No special set-up or pen changes for different media. Easily switch between single sheets and pin-feed paper. And all your drawings plot at just one speed – fast.

Plus true unattended operation for up to 18×24 inch media with the dual bin automatic sheetfeeder.

HP-GL compatibility: 7580B/7585B plus 7550A plus 7475A

All the power you need to run with popular Mac CAD and design software and plotting utilities. The 850 EWS/GL+ incorporates sophisticated functions for polygon fill and advanced labeling commands, *plus* added features such as copy mode for 1-99 copies, and reduction and enlargement from 5% to 200%.

Plus letter quality text and speedy data printing

For word processing, spreadsheet or project management output, a press of a button quickly puts the 850 EWS/GL+ into its printing mode for text and data up to 360 cps. A unique Wide Body text option allows super spreadsheets, or other text, to be printed up to 16 inches wide. Emulation of popular Diablo, IBM and Epson printers assures

compatibility with most software applications using print utilities.

Fast Mac plotting and high quality printing for less than you would expect to pay for a pen plotter alone. The JDL-850 EWS/GL+ Desktop Engineering Plotter/Printer for the Macintosh. See what the new + in high quality plotting can do for you.

Call for a brochure and plot sample now.



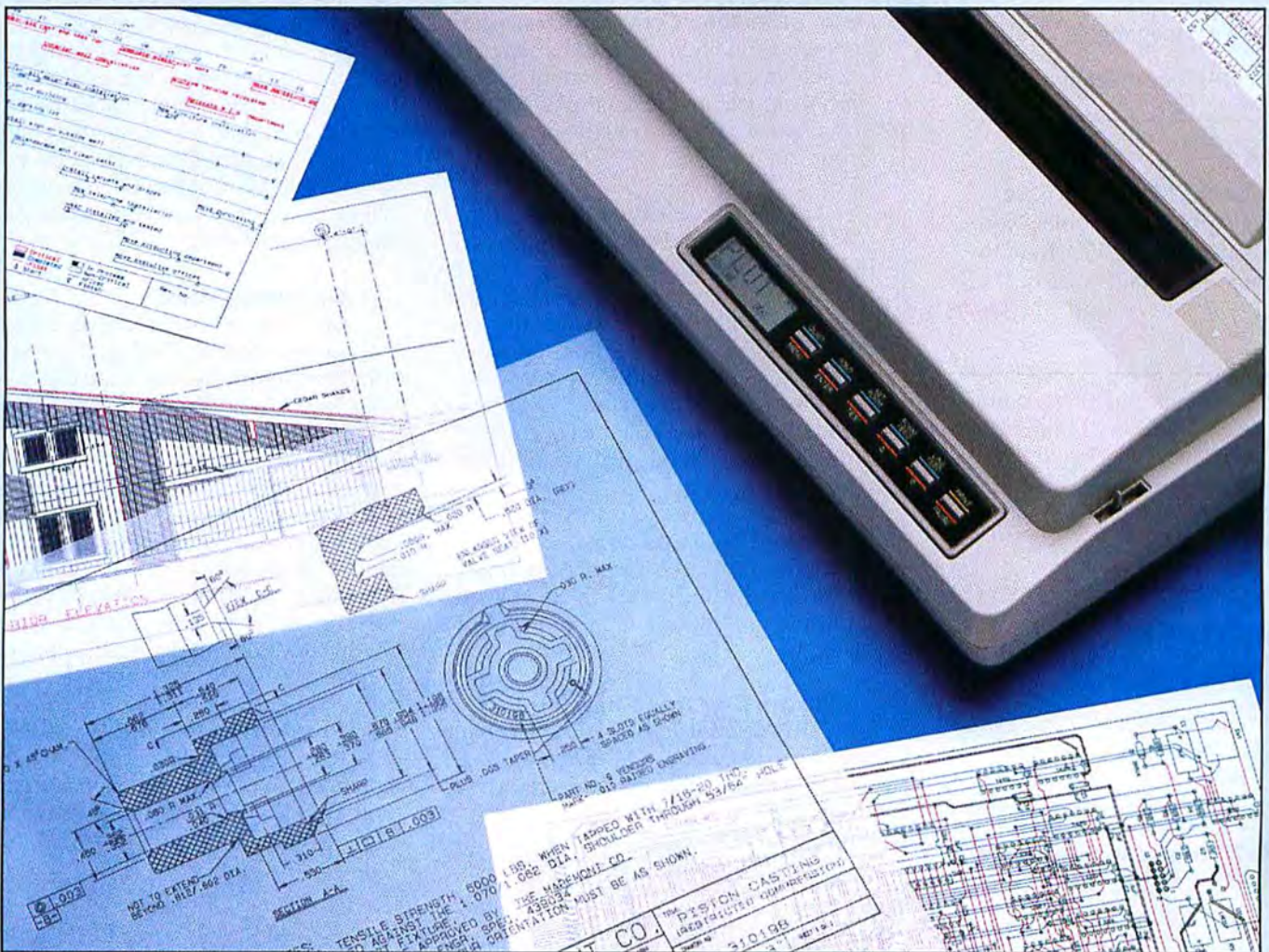
West: (805) 495-3451
East: (704) 541-6352

2801 Townsgate Road, Suite 104
Westlake Village, California 91361

HP-GL is a registered trademark of Hewlett-Packard Co. IBM is a registered trademark of International Business Machines Corp. Diablo is a registered trademark of Xerox Corp. Epson is a registered trademark of Epson America, Inc. and Macintosh are registered trademarks of Apple Computer Co. AutoCAD drawings courtesy of Autodesk Inc. VersaCAD drawings courtesy of VersaCAD Corp. PMS-II drawing courtesy of North American Mica Corp.

Nationwide service by **BRUNING**

A new + for high quality plotting



Circle 765 on reader service card

More Macintosh™ for less!

RamPlus™

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.

RamII

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

SCSI-Mac™

SCSI port for the Macintosh 512e. Completely Apple compatible. Non-destructive installation. Works with all SCSI devices. Installation Tool included. **\$99.95**

- 2 year full replacement warranty •
- Shipment within 72 hours •
(24 hour shipment available)

Terms:

- Prices reflect cash discount for prepaid orders.
- MasterCard, Visa, and AMEX accepted.

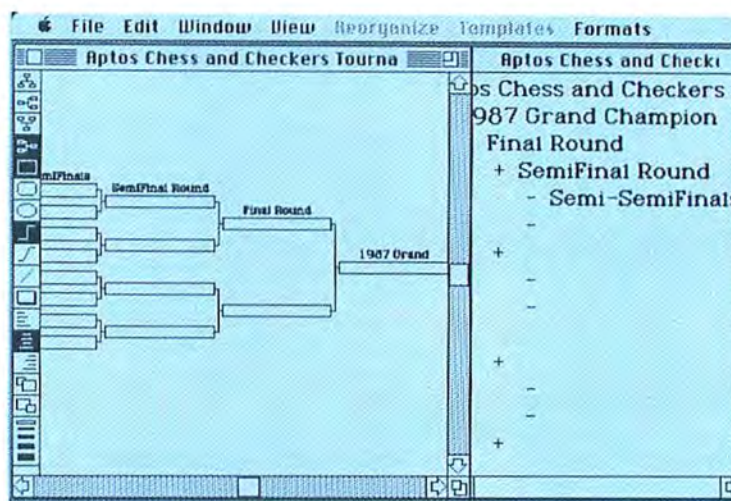
Open Mac Enterprises

140 Mason Circle, Suite H
Concord, CA 94520
(415) 682-0440

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

How To/Insights



Game Charts

In *More* you can open two views of the same outline at once. Here, a tournament-style outline is displayed in both tree-chart and outline views.

Tree Charts in Outlines

You can print tree charts within a regular outline or display them in a bullet chart (if you want to give your tree charts titles, for example) by putting them in graphics windows. To do so, first display the tree chart exactly as you want it to appear. If you intend to use the chart in a bullet-chart slide show, be sure it's small enough. If you intend to print it as part of an outline, fit the chart within the margins set for the outline. Copy the chart to the Clipboard. Finally, move the bar cursor to the headline under which you want the chart to appear and select the Paste command to place the chart in the headline's document window.

Labeled Tree-Chart Boxes

It's easy to put labels above empty tree-chart boxes. Choose a large font size together with a box size too small for the font. *More* prints the text—which would ordinarily appear inside the box—on top of the box instead. For a tournament-style chart, for example, add empty headlines to the outline to create columns of empty boxes beneath the one with the title (see "Game Charts").

Naked Tree Charts

To create tree charts with text only, and no connecting lines or boxes, choose the white-line pattern in the Tree Options dialog box.

Exporting Tree Charts

You can transfer multiple-page charts to draw programs like *MacDraw* and *Cricket Draw*. While in tree-chart view,

use the *MacDraw* format option of the Export command to create a PICT file.

To transfer a single-page chart to *PageMaker*, *ReadySetGo*, *SuperPaint*, *FullPaint*, or another application that accepts graphics, copy and paste the chart via the Clipboard. Just as with the bullet charts, the program tree chart transfers either in PICT format or as a bit map.

You can use the Clipboard to transfer multiple-page tree charts to programs that accept only single-page graphics. First, shrink the tree chart to fit on a single page (this usually requires some experimentation). Contrary to statements in the *More* manual, tree-chart segments that extend beyond the screen's boundaries do transfer properly via the Clipboard—as long as the whole chart can be accommodated on a single page.

Centering Titles

Unfortunately, *More* cannot center the summit headline on the page to serve as a title. You can achieve the same effect, however. First, place the bar cursor on the summit headline and press Return to add a new headline beneath it. Then type the desired title in the new headline and choose the Demote command from the Reorganize menu with the new headline still selected. Select Print Options on the Formats menu and enter 1 in the Center To Level box. Finally, in the Print dialog box, turn off the Include Summit option and click on OK to print.

Previewing Printed Outlines

Although you can use the Expand To command in the View menu to get a general idea of what your outline will look like

(continues)

Introducing: The Quiet 3.5 Drive

Only \$225

Compatible with Macintosh, IIGS, //e and Laser 128!

Now you can add 800K of Apple compatible storage to your Mac or Apple II at an affordable price. These 3.5 inch drives are functionally identical to Apple's 3.5 and Macintosh drives but cost half as much!

Works with a Macintosh:

These 3.5 inch drives directly connect to a Mac SE, Mac Plus or Mac 512 enhanced computer through the external drive port. No interface card is necessary.

Ideal Drives for an Apple II:

Our 3.5 inch drives connect to an Apple //e, Apple II Plus, Apple IIGS, or Laser 128 via our "Universal Disk Controller." This remarkable interface card allows you to connect two 3.5 inch drives for a total of 1.6 megabytes of Apple Unidisk 3.5 compatible disk storage.

Works with a IIGS

Using our Universal Disk Controller, connect two of these 3.5 inch drives to your IIGS at a savings of over \$300!



Now **super** quiet—includes LED "in-use" light!

Available Now!

Call today and order your 3.5 inch disk drives. Find out just how inexpensive it can be to add an 800K disk to your Apple!

**Central Point
Software**
INCORPORATED

9700 SW Capitol Highway, #100
Portland, OR 97219
(503) 244-5782
(Dealer inquiries invited)

☐ Yes, please send me the 3.5 inch 800K drives indicated below:

☐ **800K, 3.5 inch drive** for Mac Plus, Macintosh 512 enhanced, Apple II Plus, //e, IIGS, or Laser 128. (Sorry, not available for //c). \$225 & \$10 s/h (\$15 to Canada, \$50 overseas)

☐ **Universal Disk Controller card.** (Required to connect 800K drives to Apple II Plus, //e, IIGS, and Laser 128.) Controls 2 3.5 inch drives. Price includes our popular Copy II Plus disk utilities - free! \$90

And ship them to me at this street address ASAP:

Name _____

Address _____

Daytime phone # (____) _____

To Order By Mail:

Simply send in this order form with a cashier's check, or provide your Visa/MC # _____

and expiration date _____
issuing bank _____

To Order By Phone:

Just call us at **503/244-5782**
8-5 (West Coast time), M-F, with
your in hand!

**Central Point
Software**
INCORPORATED

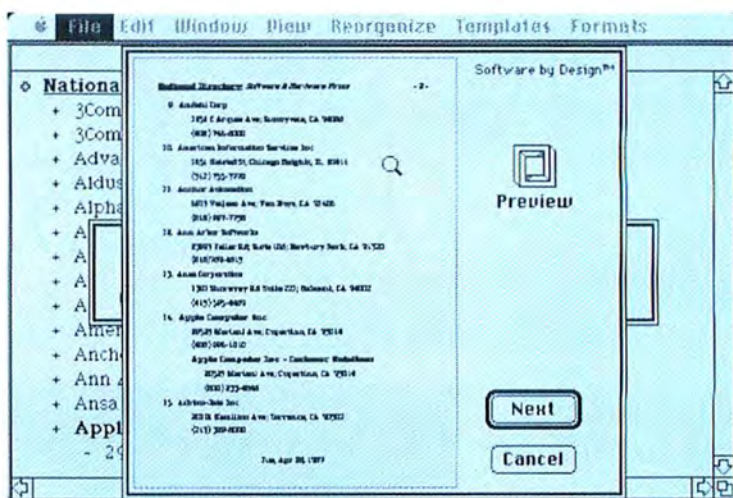
9700 SW Capitol Hwy., #100
Portland, OR 97219
MW

when printed, *More* doesn't show page breaks, the final position of graphics documents, or headers and footers. You can get a precise picture of what your outline will look like when printed using Randy Ubillos's shareware program *Preview*, version 1.3 (see "Page Preview").

To use *Preview*, put a copy of the program in your System Folder. Start *More* and, with the Chooser, select *Preview* instead of your usual printer driver. Any time you want to see how your outline will look when printed, select the Print command and click on OK in the Print dialog box. *Preview* then displays what the printer would have printed. You can flip through the pages of a multiple-page document and zoom in to a life-size view of critical areas. To print the outline, be sure to reselect the printer driver with the Chooser. *Preview* works with any program that lacks a precise what-you-see-is-what-you-get view.

Forcing Page Breaks

If *Preview* reveals a major headline at the bottom of one page and all its sub-headlines at the top of the next, there are two ways to force the main headline onto the next page. If your headlines are not labeled in any way, simply insert a blank



Page Preview

Preview, a shareware program, displays on screen what your outline will look like on paper. Click the magnifier tool for an actual-size view of the area underneath; click again to return to a full-page approximation.

headline in front of the headline you want to push to the next page. If your headlines are numbered and the previous headline does not yet have a document window, open its document window and insert a blank line.

Pasting Multiple Graphics

Owners of *More*'s older brother, *ThinkTank* 512, can easily paste a large number of illustrations into an outline. First, put all the images in the Scrapbook.

Then open *ThinkTank*, open a new document, and select Paste From Scrapbook in the Edit menu. The resulting outline is a series of blank headlines, each with a Scrapbook illustration stored as a graphic document. Save the outline, quit *ThinkTank*, open *More*, and then open the outline you just created with *ThinkTank* to finish the job. □

Macinware Plus™ - \$99.95

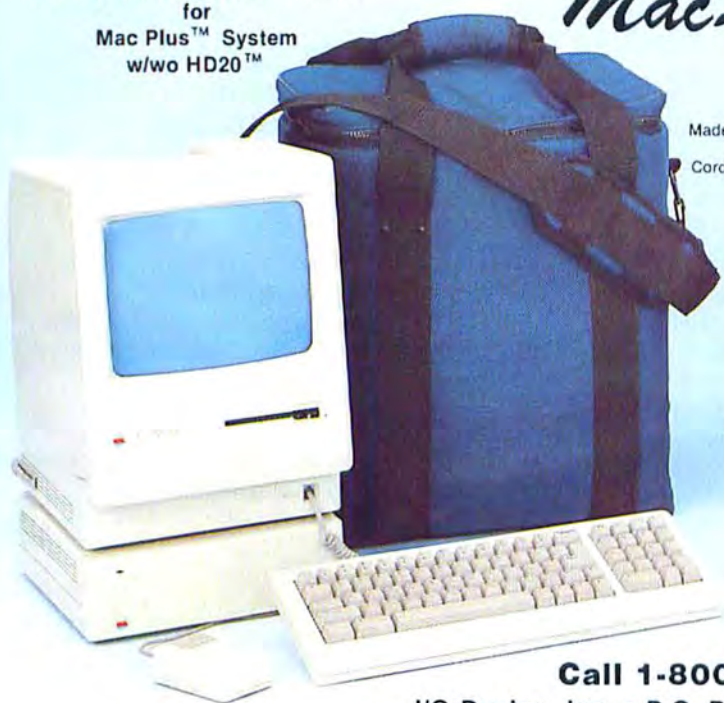
for
Mac Plus™ System
w/wo HD20™

MacLuggage

Made in the U.S.A.
of
Cordura™ Nylon

Imageware II™ \$89.95

for
Imagewriter II™

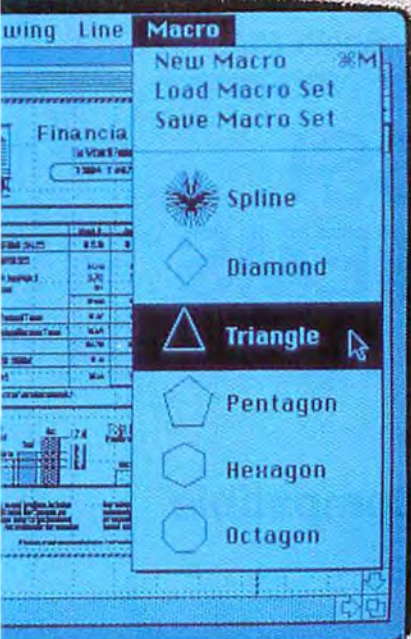


Call 1-800-241-2122

I/O Design, Inc. • P.O. Box 156 • Exton, PA 19341

Circle 530 on reader service card

All Trademarks Acknowledged



Once again, ahead of the rest!

In the past 18 months, our programs¹ have revolutionized the way you spell check your documents, cross reference your ideas, organize your thoughts and make notes to yourself. Now, with Canvas,TM we are going to revolutionize the way you draw!

CanvasTM seamlessly integrates MacDrawTM objects, high resolution 300 to 2400 dpi (dot per inch) images, PostScript and MacPaintTM graphics in a single document. In features alone, CanvasTM is clearly superior. Yet, it's the way in which the elements work together that sets CanvasTM apart from all other graphics programs.

Whether it's a corporate slide presentation or a complex graphics design, CanvasTM helps you look your best. Graphs and charts produced by products like ExcelTM and MoreTM can be customized in minutes. You can even create your own charts from scratch, up to 4 feet by 8 feet in size, using our pre-designed MacroObjects.TM And, with the desk accessory version of CanvasTM, you can bring state of the art graphics to your favorite desktop publishing program or word processor.

In addition to supporting *all* the capabilities of MacDrawTM and MacPaintTM, CanvasTM also includes: the ability to view and edit your drawings in any magnification or reduction from 3.125% to 3,200%, "what you see is what you get" (WYSIWYG) text editing and powerful alignment and duplication commands for impressive special effects.

Visit your local dealer for a complete demonstration or call us at 1-800-6CANVAS. In Florida call (305) 594-6965.

CanvasTM \$195.00 (includes Canvas DA)

Canvas DATM \$99.95.

Deneba
SOFTWARE

7855 NW 12th Street, Suite 202
Miami, FL 33126

Circle 761 on reader service card

¹MacLightningTM, the Merriam-Webster Thesaurus for Microsoft[®] Word[®], and MemoBankTM.

Canvas is a trademark of Deneba Systems, Inc. MacPaint and MacDraw are trademarks of Apple Computer, Inc. Excel is a trademark of Microsoft Corp. More is a trademark of Living Videotext, Inc. Deneba is a trademark of Deneba Systems, Inc. The names MacLightning, Volta and MemoBank are trademarks of Target Software, Inc. The software programs represented by those names were created, written and are Copyright © Deneba Systems, Inc.

See the PowerTower with the Macintosh II at MacWorld/Boston - Booth 554

FAST, RELIABLE SCSI MASS STORAGE SYSTEMS

*Macintosh Plus / Macintosh SE
Macintosh II*

Selectable Interleave, AppleShare and A/UX Compatible
SCSI Tape Backup System Available



MacStack 20, 40, 43 or 80 MB



Compact Model 20 MB or 40 MB



Power Tower 320 MB or 640 MB

HIGH PERFORMANCE SCSI HARD DRIVE AND TAPE BACKUP SYSTEMS

EXTERNAL: Macintosh Plus / SE / II - 20 MB to 960 MB Hard Drives - Complete Including Cables
INTERNAL: Macintosh SE - 40 MB - 29 ms Average Access - Replaces Upper Floppy or Hard Drive
INTERNAL: Macintosh II - 40 MB, 43 MB or 80 MB - Under 30 ms Average Access - Easy Installation
MacStack: Macintosh Plus / SE / II - 20 MB, 40 MB, 43 MB or 80 MB - SCSI Hard Drive Subsystems
TapeStack: Macintosh Plus / SE / II - 40 MB SCSI Tape Backup System with Data Compression
PowerTower: Macintosh Plus / SE / II - 320 or 640 MB - up to 16 MB of Cache - .5 ms Average Access



Best Performance • Best Price • Mass Storage Specialist

Call for the name of your nearest authorized dealer

• Dealer inquiries invited

CMS Enhancements, Inc. • 1372 Valencia Avenue • Tustin, California 92680

Phone: (714) 259-9555

Macintosh Plus, SE, II, AppleShare and A/UX are registered trademarks of Apple Computer, Inc., Power Tower and MacStack are trademarks of CMS Enhancements, Inc.

Circle 657 on reader service card

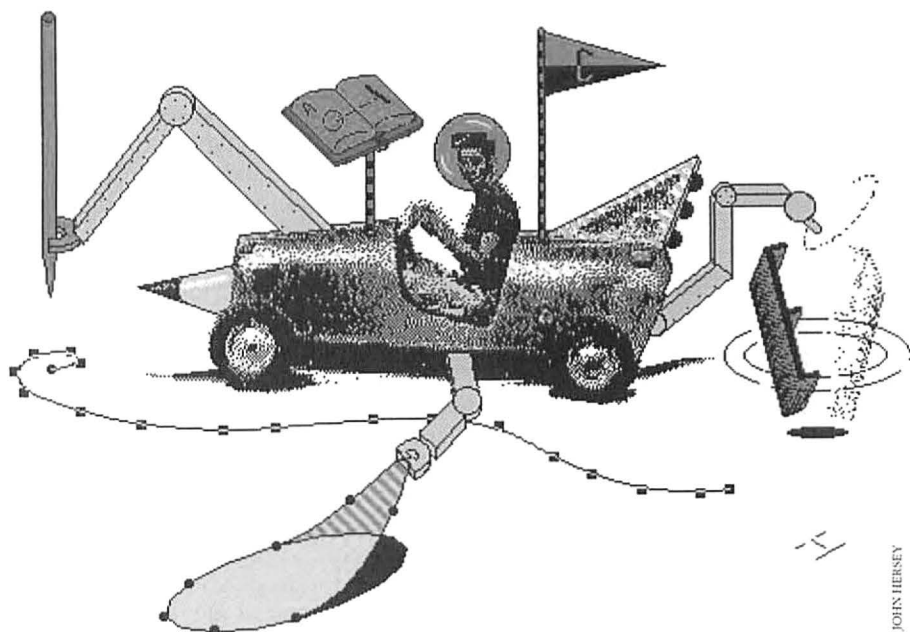
Mac Graphics Tools

Shedding light on Cricket Draw's undocumented features for PostScript graphics

by **Erfert Nielson**

New concepts often take a little time to catch on, but a proper introduction can make a difference. *Cricket Draw* represents a new technology, in this case PostScript graphics. For a variety of reasons, many users are puzzled about aspects of the program. Some are confused about the nature of PostScript graphics and the relationship of *Cricket Draw* to other Macintosh programs. The manual, too, leaves room for some questions. Although it's an excellent introduction to the basics of *Cricket Draw*, the documentation was written early in the program's development and fails to mention numerous features that were added or discovered after the program was released. In addition, word of mouth about bugs in the original version 1.0—which caused inconveniences from printing problems to program crashes—still leave some people reluctant to use the now updated *Cricket Draw*. The following tips should help *Cricket Draw* artists better understand the program, as well as avoid some of its shortcomings.

Briefly, *Cricket Draw* is a graphics program that lets nonprogrammers create special effects with the PostScript page-description language. Such effects include slanting or rotating text or graphics, filling objects with smooth transitions from one shade of gray to another, and attaching text to a path. (For a more detailed look at *Cricket Draw*'s features, see "Rounding the Bezier Curve," *Macworld*, May 1987.) The program's icon-based interface allows PostScript illiterates like me to produce impressive effects by manipulating graphic objects on the screen. To display text at an angle, for example, you click an icon, grab a corner of the text block, and rotate it. For those who are familiar with it, the PostScript code associated with each drawing is available for viewing and editing.



A *Cricket Draw* illustration can be printed directly from *Cricket Draw* or saved as a PICT file, transferred to another program, and printed from that program. But here some problems begin to surface. Probably the most common complaint about *Cricket Draw* is that it doesn't work with *PageMaker* 1.2. Although this fact is acknowledged in *Cricket Draw*'s manual, the information is tucked away in an appendix, where it can easily be overlooked. *PageMaker* 2.0 does accept and print PICT files created with *Cricket Draw*. The appendix also mentions that *MacDraw* may have problems reading PICT files created in *Cricket Draw*. A *Cricket Draw* PICT file includes PostScript code necessary for printing the file; *MacDraw*, which was written before the days of embedded PostScript commands, interprets the commands as text—and displays and prints them as such. According to a Cricket Software representative, *Cricket Draw* PICT

files are designed primarily to be exported to page-layout programs. *Cricket Draw* illustrations can also be pasted into word processing programs, although problems sometimes crop up with this technique. Caveat exporter.

The following tips came from *Cricket Draw* users and from Cricket Software's technical support staff. Desktop publishers Brian Lawler and Kevin Rardin were especially helpful, as was Doug Seward of Cricket Software.

You'll find more tips in Cricket's *Technical Notes*, which are released every few months (notes were included with *Cricket Draw* 1.0 and 1.01). For \$25 you can get an annual subscription to the notes; in addition, Cricket plans to make them available on several online information services.

(continues)

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 contender in the Macintosh CAD marketplace... MiniCad offers enormous functions for the price."

Graphic Perspective:

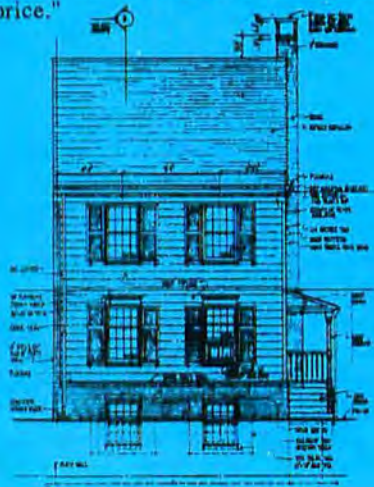
"MiniCad... is a wonderful example of one of those pieces of software that slips onto the scene unannounced, quietly surpassing all similar programs that break in on the market with a huge splash."

Personal Publishing:

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

MacWorld:

"MiniCad achieves 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

How To/Mac Tools

Quick and Dirty Default Text

One of *Cricket Draw*'s strengths is its ability to display text in a variety of fonts, styles, sizes, shades, and orientations. But one of the program's weaknesses is its inability to reset the default font size and style; when you click on the text icon and start typing, 12-point Helvetica always appears. If you want to type numerous labels in, say, 10-point Times, you must choose the Set Type command for each label and set the appropriate text attributes in the dialog box that appears.

To circumvent the dialog box, first type a block of text and use Set Type to specify the desired font, size, and style. Then, for subsequent text entries, simply click on the original text to select it, and press ⌘-D to duplicate the selection. Highlight the text and start typing; the new text will conform to the style and size of the original text block. Although this method is still somewhat cumbersome, it's more efficient than filling in the Set Type dialog box each time you need to type some text.

The Type that Binds

Cricket Draw's Bind Text command performs an impressive PostScript feat: a line of text follows a path you draw on the screen. You may have to experiment to achieve good-looking results, especially if text is connected to a complex curving shape. The following tips should help beginning text-binders.

If you see a series of plus signs, rather than diagonal lines, after you select Bind Text, the line of text is longer than the shape to which it's bound; the program truncates such text when printed. Select Unbind Text and adjust the text or the path as necessary.

When text follows a tight curve, letters often mash together in the printed result. To ease the crowding, add a space between each pair of letters in words that curve sharply.

It's hard to judge the length of a line of text in relation to the length of the path to which it's bound; the text may not end up where you want it on the path. Fortunately, *Cricket Draw* lets you justify text at the left, right, or center of a path. Double-click on bound text to produce a text-justification dialog box. To fine-tune the position of a line of bound text, add spaces at the beginning or end before justifying.



Concave Art

The first sample shows text bound to a convex arc; the second, text bound to the same arc rotated 180 degrees; and the third, text attached to an arc created while holding down the Option key.

Binding text to an arc is fairly straightforward. If you need to create an arc-shaped phrase, for example, select the arc tool, press the Shift key to constrain the shape to a segment of a circle, and draw the arc. If you want the arc to span more than a quarter of a circle, select Edit Arc and drag one end of the arc until it's large enough. Bind a line of text to the arc and center it as explained above. So far, so good. But you'll need to employ a trick to bind a line of text to an inverted arc (the bottom half of a circle). I first tried to achieve this effect by rotating my original arc 90 degrees and then binding the text to it, but that just produces upside-down text. At last I learned the secret: to produce a concave arc, press both the Option and the Shift keys while drawing the arc. Repeat the arc-enlarging and text-centering steps just described, and bind the text to the arc (the results are shown in "Concave Art").

Tools at Your Command

With most Mac graphics programs, when you select an icon in the tool palette, the tool remains selected until you choose another one. Not so with *Cricket Draw*. When you finish drawing an object, the tool you just used is automatically deselected and the selection arrow tool is highlighted. This can prove annoying if you need to draw several objects of the same

(continues)

Circle 634 on reader service card

MultiTalkTM makes your AppleTalk[®].

Presenting MultiTalkTM from Abaton.

Very few peripherals today, other than the Apple[®] LaserWriter[®], can be shared by Macintosh[™] users over an AppleTalk network. Which means higher-priced devices—such as modems, scanners, plotters, daisywheel printers and more—are limited to use by one person.

So companies often don't invest in them.

But what if these devices could be shared by more people? Suddenly, they become truly cost-effective options.

Now there's MultiTalk. So these devices can start "AppleTalking."

MultiTalk is a simple concept—the first of its kind. It takes serial devices that don't normally function over AppleTalk and makes them accessible to every user on the network.

MultiTalk is easy to set up. Just plug it into AppleTalk—anywhere you like—then connect up to three serial devices.

It's also easy to use. In fact, if you're familiar with Macintosh, you already know how to use MultiTalk. Simply run the application you need, then select the device you want to use from the available choices: modem, scanner, plotter, etc.

That's it. MultiTalk does the rest—transparently.

And you can attach up to four MultiTalks to each AppleTalk network. Which means up to twelve devices can be at your "point & click."

Extend the flexibility of your peripherals and your AppleTalk network today by visiting your authorized Apple dealer or by calling Abaton at (415) 463-8822.

We'll show you how to make the most effective use of your resources. And how to make ends meet.

Abaton

Technology Corporation

7901 Stoneridge Drive
Pleasanton, CA 94566
(415) 463-8822

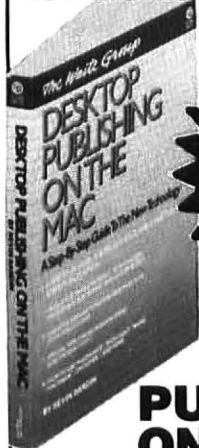
1185 West Georgia Ste. 920
Vancouver, B.C. V6E-4E6
CANADA (604) 685-7343

Circle 622 on reader service card

Apple, LaserWriter and AppleTalk are registered trademarks and Macintosh is a trademark of Apple Computer, Inc.



The guide to desktop publishing that's so good, it was named the best!



**THE 1986
COMPUTER
PRESS AWARD
FOR THE BEST
HOW-TO
BOOK**

DESKTOP PUBLISHING ON THE MAC

A Step-by-Step Guide to the New Technology

By KEVIN RARDIN/The Waite Group

A Mac and a LaserWriter™ printer isn't enough—if you don't know how to use them. And until now, there hasn't been a straightforward, user-friendly guide that leads you through all the steps of desktop publishing. But with **DESKTOP PUBLISHING ON THE MAC**, you can go from minimal knowledge on the subject to the ability to produce sophisticated finished printed projects, from forms and memos to newsletters and magazines.

In easy-to-understand language, it shows you how to put any type of manuscript into print, complete with professional-quality typesetting and complex illustrations. This practical guide covers—

- ▶ what hardware and software you'll need
 - ▶ transformation of ordinary word-processing into typesetting
 - ▶ creation of graphics and camera-ready art
 - ▶ page composition and layout
 - ▶ how to integrate Microsoft® Word, MacDraw™, MacPaint™, and PageMaker® into a complete desktop publishing system
 - ▶ how to capture and use existing art with digitizers
 - ▶ how to use the LaserWriter™ and Linotronic® 100 and 300 to create final camera-ready art you can take to the printer
- and much more!

Written by a top computer book author and drawing on the expertise and experience of The Waite Group, it is already recognized as the essential guide by thousands of desktop publishers. Honored by the professionals as tops in the field, **DESKTOP PUBLISHING ON THE MAC** is the clear choice for anyone entering this exciting new area.

\$22.95 paper. At all bookstores, or use coupon to order direct

NEW AMERICAN LIBRARY

P.O. Box 999, Bergenfield, NJ 07621

Please send me _____ copy(ies) of Z5902 **DESKTOP PUBLISHING ON THE MAC** at \$22.95 plus \$1.50 postage and handling per order. I enclose ☐ check ☐ money order (no CODs or cash) or charge ☐ MasterCard ☐ Visa.

Card # _____ Exp. date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Allow a minimum of 4 to 6 weeks for delivery. This offer, prices and numbers are subject to change without notice. Offer expires 1/31/88.

MC 8-87

Circle 773 on reader service card

How To/Mac Tools

type consecutively; it's as if with every nail you pounded in, the hammer flew back into your toolbox, forcing you to retrieve it again and again. Fortunately, if you hold down the **⌘** key after drawing with a particular tool, that tool remains selected, allowing you to use it as many times as necessary without returning to the tool palette. (The selection arrow will still be highlighted each time you finish drawing an object, but don't let that fool you.)

Grid Glitch

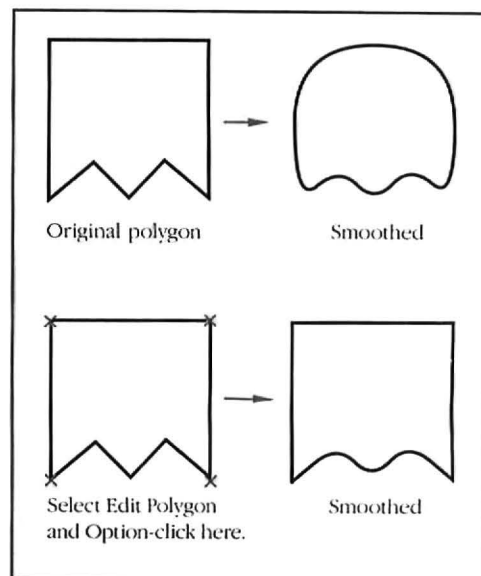
Cricket Draw's grid provides a snap-to option that automatically places an object on the nearest grid line when the object is moved. You may encounter a problem, however, if you duplicate an object and then attempt to line up the original and the copies along grid lines. When you choose the Duplicate command, a dialog box appears. The default setting specifies that duplicates of an object be offset 0.11 inch (8 pixels) horizontally and vertically from the original object. Unfortunately, duplicated objects don't line up correctly on the grid; each copy is off by a few pixels when you attempt to align it to the grid. There are two ways around this problem. The simplest is to set both the horizontal and vertical offsets in the Duplicate dialog box to 0; copies then stack up on the original object and align perfectly with the grid when you move them. Alternatively, select the original object and the duplicates and use the Align Objects command to keep them in line.

Similarly, if you paste an object into a drawing that has a grid, the object may not align properly with the grid lines. To correct the situation, choose Align Objects, selecting only the pasted object. Clicking Left Sides and Tops in the resulting dialog box will align the object with the grid.

For those occasions when you don't want to use the grid, here's a final tip for lining up objects. With most Macintosh graphics programs, you can constrain an object's movement to the vertical or horizontal by holding down the Shift key as you drag the object. *Cricket Draw*, however, uses the Option key for this function.

Curves and Straight Lines

Although the *Cricket Draw* manual mentions "composite objects" (objects made up of arcs, lines, and freehand polygons), this feature was not included in the final version of the program. You can, however, create objects that consist of both straight and curved lines. As you draw a shape with the freehand polygon tool,



Smooth plus Straight

With the help of the Option key, *Cricket Draw* enables you to combine straight lines and curves in a smoothed polygon.

hold down the Option key and double-click as you place each endpoint of a line you wish to keep straight; draw curved sections of the polygon normally, without the Option key. After you complete the polygon, double-click it to display a dialog box full of options. Select Smooth and watch what happens.

You can also add straight lines to a polygon you've already drawn. Select Edit Polygon, then hold down the Option key and click on the vertices of the edges you wish to keep straight. As before, double-click the polygon and select the Smooth option in the dialog box. The lines you Option-clicked remain straight, while the rest of the polygon is smoothed (see "Smooth plus Straight").

Speed Limitations

A number of factors slow *Cricket Draw's* screen display. When certain types of objects are displayed, the watch pointer appears frequently as you scroll. Several techniques speed up the display rate. The Preferences option allows you to turn off the animation (on-screen approximation) of text, bit maps, fountains, and shadows. That speeds up the screen-refresh rate when the objects or effects are redrawn. Smoothed polygons are also notoriously slow to redraw when scrolling. Wait until a drawing is nearly finished to smooth poly-

(continues)

Publish!

*The How-to
Magazine of
Desktop
Publishing*

SAVE 40%!

**CHARTER
SUBSCRIBER
SAVINGS**



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

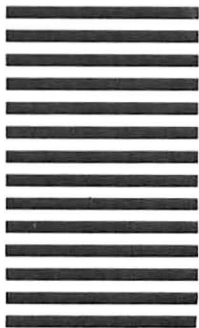
POSTAGE WILL BE PAID BY ADDRESSEE

Publish!

Subscription Department

P.O. Box 51966

Boulder, Colorado 80321-1966



SAVE 40%

IF YOU SUBSCRIBE NOW



YES! Send me one year (12 monthly issues) of *Publish!* at the Charter rate of only \$23.95. That's nearly 40% OFF the basic subscription rate. ☐ Payment enclosed ☐ Bill me later

Name (Please print your full name)

Company

Street

City State Zip

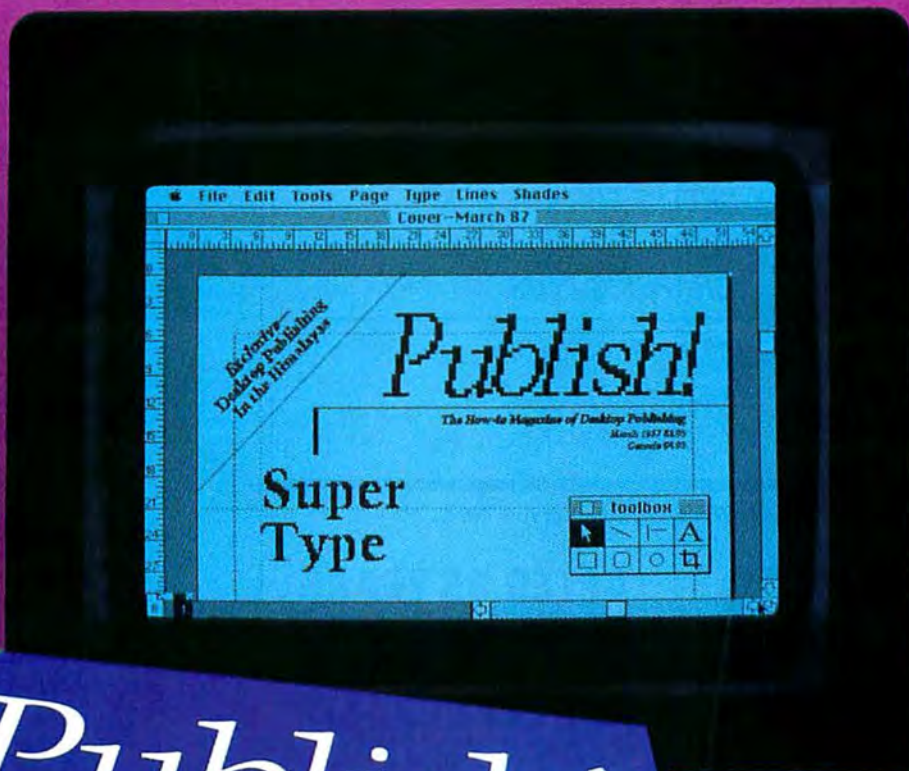
By regular subscription, *Publish!* is \$39.90 for 12 issues. Offer available to new subscribers in the U.S. only. Please allow 6—8 weeks for delivery of your first issue. Offer expires January 31, 1988. 5BY94

**BE A
CHARTER
SUBSCRIBER
AND
SAVE!**

Use the postpaid card
or call TOLL-FREE
800/222-2990

**VISA and
MasterCard accepted**

WHAT YOU SEE IS WHAT YOU GET



Exclusive—
Desktop Publishing
In the Himalayas

Publish!

The How-to Magazine of Desktop Publishing
March 1987 \$3.95
Canada \$4.95

Super Type

Improve Your Images

Master the Linotronic
Link in 6 Steps
Typeset Like a Pro
With PC Deskset
Fit More Fonts Into
Laserwriter Memory

Macintosh Paint
Programs Tested

Postscript Effects
Made Easy With
Pocket Draw

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.

WHEN LASERWRITER'S AREN'T GOOD ENOUGH...

**CALL GRAPHICS PLUS!
YOUR LAST STOP
IN DESKTOP PUBLISHING.**

FEATURING THE LINOTRONIC L300

- Resolution up to 2540 dpi.
- Complete Adobe typeface library.
- Modem available 24 hours.
- Same day turn-around in most cases.
- Training available.
- MasterCard or Visa accepted.

ONLY SETTLE FOR THE BEST

GRAPHICS PLUS

3710 S. ROBERTSON BLVD.
SUITE 216
CULVER CITY, CA 90232
(213) 559-3732

Circle 766 on reader service card

MAXELL BULK DISKS

3 1/2" DS/DD 1.19

3 1/2" DS/HD 4.50

5 1/4" DS/DD .64

5 1/4" DS/HD 1.64

Price based on quantity of 300
includes sleeves, labels and tabs.

SOFTWARE DUPLICATION

- Duplication
- Technical Support
- Custom Packaging
- Distribution
- Blank Diskettes
- Quality Control
- Duplication Equipment



800-222-0490

NJ 201-462-7628

- 24 Hour Shipment •

MEGA Soft

P.O. Box 710, Freehold, NJ 07728
Full service duplication facility

Circle 414 on reader service card

AFTER 35 YEARS AS HIS EMPLOYER, TELL HIM ABOUT DIRECT DEPOSIT AS A FRIEND.

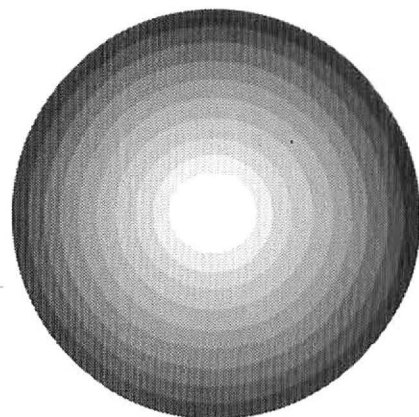
Direct Deposit lets retiring employees send their Social Security straight to their checking or savings account. As an employer, send for free materials to Direct Deposit (D3), Annex 1, PB-1100, Washington, DC 20226.



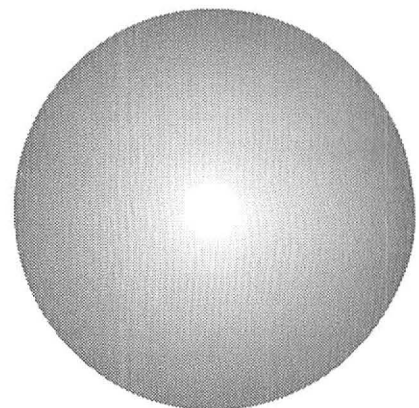
DIRECT DEPOSIT

United States Treasury

How To/Mac Tools



Series of concentric circles



Radial fountain

Fake Fountain

The "radial fountain" (bottom) is actually a series of concentric circles filled with gradually changing shades of gray. Although constructing a fountain in this way defeats the purpose of Cricket Draw—the automatic creation of PostScript effects—it sure speeds up printing.

gons so that you can move about more quickly while you work.

As any experienced *Cricket Draw* user knows, radial fountains take a long time to print. This unfortunate fact can radically decrease your popularity with co-workers if your office Macs are connected to a single LaserWriter. If printer access is limited, consider constructing a poor man's radial fountain. Turn on the grid, create a series of concentric circles, select 0.05 for the border width and None for the border intensity, and fill each circle with progressively darker shades of gray (see "Fake Fountain"). Save your ersatz fountains in the Scrapbook for future use. This

(continues)



SPEED RUNS IN THE FAMILY.

The ProAPP "S" Series SCSI drives are pushing Mac over the limit.

With access times as quick as 28 milliseconds and storage capacities 25 to 50 times that of an 800K drive, the ProAPP "S" series hard disks will have your Macintosh™ Plus working faster and doing more than you ever thought possible.

These handsome little performers deliver 20, 30 or 40 Megabytes of high-speed SCSI storage. And they're just as easy to use as they are powerful.

No more flip-flopping.

Now a single device stores application programs, large documents, numerous fonts and graphics. That means you won't be slowed by repeated disk swapping every time you use your computer.

Gets along with the growing Macintosh family.

These drives are compatible not only with the Macintosh Plus, but with the new Mac SE and Mac II. Or use a SCSI adapter and ProAPP will be driving your Mac 512, Apple IIGS™ or IIe.

Expandable and portable.

You can connect up to seven SCSI-compatible memory devices and printers without taking up Mac's serial ports. And if you want to take the drive with you, just unplug it—automatic head-parking will secure your data.

Reliability over the long haul.

The "S" series is built around some of the industry's highest-rated drives and backed by a limited one-year warranty. It's never been safer to travel at high speeds.

Ready to run.

The ProAPP 20S, 30S and 40S drives are pre-formatted. Just plug them in and power up. Everything you need, including cabling and software, comes with each "S" model package.

For more information, pull over and ask your computer dealer. Or call toll free: 800/225-6442 (in California: 800/843-0426 or 714/586-7700). The ProAPP "S" series. Another fine product from Logic Array, 2 Faraday, Irvine, CA 92718.

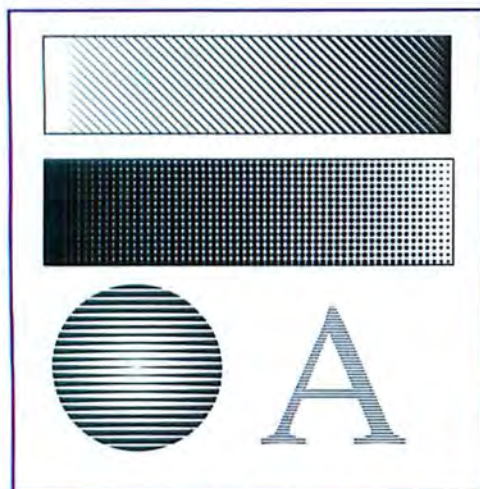
Specifications and availability subject to change without notice. Apple II series and Macintosh are trademarks of Apple Computer, Inc. © 1987 Logic Array, Inc.



Logic Array

DEALER INQUIRIES WELCOME

Circle 654 on reader service card



Objects à la Transfer Mode

Here's a small sample of the effects you can achieve with Cricket Draw's hidden transfer modes, combined with various types of fountains.

is admittedly a kludge, but it may be worth the effort when you compare printing times (about 8 seconds for a fake fountain as opposed to about 6 minutes for a similar radial fountain in a test I ran).

Transfer Modes

Cricket Draw's manual neglects to mention one of its most exciting features. Hold down the Option key and click on the object fill control (the box in the lower-left corner of the screen) to access *Cricket Draw's* transfer modes. This option gives you access to PostScript's setscreen and set-transfer operators, which allow you to specify the number of lines per inch in a pattern, set the angle of the lines, and even shade with dots instead of lines (see "Objects à la Transfer Mode"). You can, for example, create a fountain of lines or dots rather than a simple transition from one gray to another. Transfer modes can be applied to objects or text, producing eye-catching effects (transfer modes don't apply to black or white objects, though). In addition to producing interesting patterns, graphic designers can use the transfer modes' Set Angle option to produce color separations in which each of four colors is set at a different angle.

Constructing Regular Polygons

Many people consider *Cricket Draw's* starburst tool cute but relatively useless. However, the starburst can serve as a practical aid in constructing regular polygons.

Take the pentagon... please. To construct a regular, five-sided shape, first press the Shift key and create a circular starburst. Double-click on the starburst to bring up its attributes dialog box. Set the increment to 72 (360 degrees divided by 5 sides equals 72) and click OK. You now have five lines, spaced at equal intervals, radiating from a central point. Now draw a circle, align the shape's L/R Centers and T/B Centers with the Align Objects command, and place five straight lines around the outside of the circle to finish the pentagon; use the Zoom In command to make sure the corners line up (see "A Starburst Is Reborn"). Change the increment in the dialog box to create shapes with any number of sides.

Making Masks

Unlike bit-map graphics programs such as *MacPaint*, *Cricket Draw* doesn't let you "erase" sections of a drawing. If you need to delete part of a drawing, mask the unwanted section with a shape whose border intensity is set to None (freehand polygons are especially versatile in the role of erasers). Use the Bring to Front command to position the mask.

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.

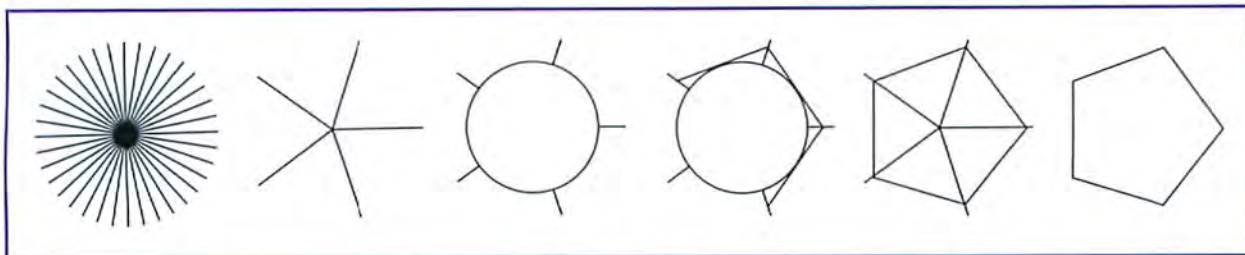
Target Insurance
Family Car Insurance Application

1. Policy Term: From 12/31/88 to 12/31/89 AGENCY: The Hartford Agency
2. IS COVERAGE: ☒ YES ☐ NO LOCATION: Westfield, WI
3. Name of applicant: (Please type or print) J. C. HARTMAN City: Westfield Tel: 527-04
Address: 124 Main St. Zip Code: WI 52704
County: LAKE Telephone: Rural Route Tel Number: 555-1234
4. Lender: Vehicle #1: 1988 National Bank Vehicle #2:
5. COVERAGE AS DEFINED: LIMITS/DEDUCTIBLES: Auto 1 Auto 2 Auto 3 Total
A. LIABILITY: Bodily Injury: 100/300/50
Property Damage: 50000
B. MEDICAL PAYMENTS: 100000
C. COLLISION: 10000
6. Description of vehicle(s):
Car Year Make Model Body Type Serial Number Actual Cost
1 1987 Ferrari Testarossa 1234567890 100000
2 1988 Ford Taurus 1234567890 100000
A. Did you report any violations? ☐ Yes ☒ No DO NOT SIGN DAMAGE WITHOUT INSPECTION
B. Are vehicles to be used commercially? ☐ Yes ☒ No If Yes, explain:
7. Have you been or are you now insured by Target Insurance? ☐ Yes ☒ No
8. Statement of all accidents and traffic violations during past 36 months for all drivers:
Name of Driver Date Reported to Police Date Reported to Insurer
The Driver: J. C. HARTMAN 12/31/88 12/31/88
I have read the foregoing and fully understand same and have answered all the questions and warrant them to be true and complete in every respect, and that the insurance herein applied for is subject to this application and in the event a policy is issued, the insurance herein applied for is a part of said policy, and I further agree that the above named company is not bound by any knowledge or statement made by or for me except as herein stated.
Signature of Applicant: J. C. HARTMAN Date: 12/31/88

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.



A Starburst Is

Reborn

Use Cricket Draw's starburst tool to create regular polygons such as this pentagon.

Closing Polygons

Have you ever had difficulty closing a freehand polygon? It can be tricky to align the cursor on the beginning point of the polygon and click to close the shape. There is an easier way. Double-click the last point to create an open polygon, then hold down the Option key and double-click anywhere on the shape; a line is automatically drawn between the last point and the beginning point, closing the polygon.

Common Misunderstandings

According to a member of Cricket's technical staff, users often misunderstand or misinterpret *Cricket Draw*. The following explanations should answer some of the more frequently asked questions.

Many people try to use the Color option in various dialog boxes to set an

object's color to white. This option is intended to be used when printing in color (at this point, that means on the ImageWriter II) and should not be applied to objects to be printed on a PostScript printer such as the LaserWriter. To make an object white, simply set its fill intensity to 0 in the object attributes dialog box (0 percent white equals black).

Cricket Draw accepts only 72-dot-per-inch bit maps, such as those produced in *MacPaint* or similar programs. It will not accept 300-dot-per-inch bit maps such as those produced by high-resolution scanners or 300-dpi editing features of programs like *FullPaint* and *SuperPaint*.

You will occasionally come across a grayed item, such as Edit Line or Edit Oval,

in the Edit menu. *Cricket Draw* always records what type of object is selected, and the Edit function is not available for shapes that have no vertices to edit.

Although I found writing this article exhausting, it is certainly not exhaustive. By all means experiment with *Cricket Draw*, especially with the Option key and with transfer mode effects. You'll undoubtedly discover tips and techniques of your own. On the one hand, it's annoying to work with a program with so many hidden features. On the other hand, you can think of yourself as an explorer, wending your way through uncharted—or at least undocumented—regions of a graphics program rich in resources. □

See *Where to Buy* for product details.

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.

Target Insurance Family Car Insurance Application

1. Policy Term: From 12:01 AM 9/31/86 to 9/31/88 AGENCY The Spectrum Agency

2. IS COVERAGE BOUND? ☐ YES ☐ NO LOCATION Madison, WI

3. Name of applicant: (Please type or print) Joe Gofast

Address 124 Main St City Madison Zip Code 53704

County Dane Township W Rural House Tel. Number 555-1212

4. Lienholder: Vehicle #1 First Nat'l Bank Vehicle #2

5. COVERAGES AS DEFINED LIMITS/DEDUCTIBLES

	Auto 1	Auto 2	Rate Factor	Total
A. LIABILITY				
Bodily Injury	100/300/50			
Property Damage	50000			
B. MEDICAL PAYMENTS	10000			
C. COLLISION	10000			

6. Description of vehicle(s):

Car	Year	Trade Name	Body Type	Serial Number	Actual Cost
1	87	Pontiac	Transamerica	1001234567890123	10000

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



Circle 731 on reader service card

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.

"...it looks to us like intermail
is the winner."

MACWORLD May 1987

Make Your Apple TALK

to other Macintoshes in your office

to Macintoshes anywhere in
the world

to IBM PC's and compatibles

to Telex machines worldwide

to mini & mainframe computer
systems

Heard a lot about desktop communications lately?

Well, *intermail* is the integrated desktop communications solution for your Macintosh and IBM PC compatible computers. *intermail* enables you to quickly and easily compose and send notes, memos, phone messages, graphics, reminders and files of any type and size to anyone in your office or anywhere else in the world. Better yet, *intermail* allows you to send documents of any sort for viewing, copying and printing, even if the recipient doesn't have the originating application! And best of all, *intermail*'s power is available from within all of your favorite applications.

intermail, the exciting new standard in AppleTalk electronic mail.

intermail by *internet*, the oldest Macintosh systems house around.



We put the talk into AppleTalk.™

Send
\$10.00
for a demo disk
and see for
yourself or call
617-965-5239
for more
information

Mail to:
internet
20 Amy Circle
Waban, MA 02168
Mass. residents
add 5% sales tax.

internet and *intermail* are trademarks of Interactive Network Technologies, Inc. Macintosh is a trademark licensed to Apple Computer, Inc. AppleTalk and AppleShare are trademarks of Apple Computer, Inc. IBM and IBM PC are trademarks of International Business Machines Corporation.

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.

AAIS PROLOG version M-1.15 fixes bugs, runs faster than the previous version, and has better memory management. Advanced A.I. Systems, P.O. Box 39-0360, Mountain View, CA 94039-0360, 415/961-1121. Free; \$150 new.

Forecast version 3.0 performs calculations that reflect the changes required by the Tax Reform Act of 1986. Star/Monogram Software, Inc., 367 Van Ness Way, Torrance, CA 90501, 213/533-1190. \$24.95; \$69.95 new.

MacMainFrame DX version 3.0 includes binary transfer, which allows transfer of non-Macintosh binary files to and from IBM mainframes, and text file filtering, which allows a Mac text document to be formatted to the host computer's standards of appearance. Avatar Technologies Inc., 99 South St., Hopkinton, MA 01748, 617/435-6872. Upgrade \$50; \$1195 new.

MacTablet version 4.0 fixes previous bugs. It also supports the Summa Sketch Professional and SCSI drives. Summagraphics Corp., 777 State St. Extension, Fairfield, CT 06430, 203/384-1344. Free; included with MacTablet (6 by 9 inches \$449, 12 by 12 inches \$599).

Mactran version 2.0 supports the Mac Plus, Mac SE, and Mac II. It includes complete ANSI 77 with extensions, and an integrated linker with the ability to generate stand-alone applications. DCM Data Products, 1710 Two Tandy Center, Fort Worth, TX 76102, 817/870-2202. \$40; \$199 new.

MiniCad version 3.0 includes an additional 32 editable patterns, multiple windows, an automatic double-line tool for architectural applications, and a polygon merge option that allows you to add, subtract, or intersect. Diehl Graph-Soft, Inc., 3246-K Normandy Woods Dr., Ellicott City, MD 21043, 301/461-9488. \$25; \$395 new.

Ragtime version 1.1 features soft hyphens, automatic page layout (including columns and rules), and the ability to import formatted text from other word processors and spreadsheets. Orange Micro Inc., 1400 N. Lakeview Ave., Anaheim, CA 92807, 714/779-2772. Free; \$395 new.

Trapeze version 1.1 enables you to import WKS data files directly and to specify foreign-currency formats. It includes new types of charts, password security for worksheets, and a comprehensive undo function. Data Tailor, Inc., 1300 S. University Dr. #409, Fort Worth, TX 76107, 817/332-8944. Free; \$295.

Send upgrade announcements to Updates, Macworld, 501 Second St., San Francisco, CA 94107. □

Get Your Hands on \$40 Billion.

Program and Workshop Topics

The College Market

- Demographics
- Decision Making and Purchasing
- Curriculum Applications
- Campus Software Development
- Campus Resale Programs
- Converging Technologies
- Computing Needs in Business, Engineering, Humanities, and Sciences

Marketing Strategies

- Pricing and Distribution
- Case Studies
- Site Agreements
- User Support Issues

Business Contacts

- Developer/Publisher Alliances
- Public Relations, Promotion and Advertising
- Campus vs. Corporate vs. Commercial Markets

Speakers

Experts and leaders from Apple; Borland; *Chronicle of Higher Education*; DEC; IBM; Lotus; Peat Marwick Main & Co.; John Wiley & Sons; Regis McKenna; Sun Microsystems; T/Maker; Zenith; Brown, Harvard, Stanford, and Ohio State universities; and the University of California.

Enrollment Information

Conference Location and Hotel Accommodation

- Fairmont Hotel, San Francisco
October 1-2, 1987
- The hotel has a limited number of rooms reserved. Please contact the hotel directly at 800/527-4727.

Registration Fees

- \$695 for the first participant; \$595 for each additional participant from the same company.
- The registration fees include course materials, receptions, and meals.



PCW Communications, Inc.
501 Second Street
San Francisco, CA 94107
415/546-7722

There are 12.6 million upwardly mobile college students with \$40 billion to spend. We're going to show you how to reach them.*

What do university students, professors, researchers, and administrators buy? Why do they buy? How do they buy? **Campus Computing '87: A Marketing Conference for Computer Executives** answers these questions for everyone—from CEOs to marketing managers to sales representatives. Presentations and workshops give you the opportunities, contacts, and tools to succeed in this growing, lucrative market.

The campus computing revolution is getting hot very fast. Breakthroughs. Strategic alliances between corporations and university research labs. Multibillions in sales.

You can develop successful products and marketing strategies for the higher-education market. Experts from industry and education show you the unique opportunities and special characteristics of the higher-education computer marketplace.

*And that's just students. We'll also show you how to reach the 2.4 million people in teaching, research, and administration, and the billions they spend on computer equipment.

***Make the College Connection.
Come to Campus Computing '88:
A Marketing Conference for Computer Executives.***

_____ Yes, enroll me for Campus Computing '88.

_____ Please send me additional information.

SSH7A

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

For additional information, call Shirley Gines, 415/978-3367

Return this form no later than September 15 to Campus Computing '88,
PCW Communications, Inc., 501 Second Street, San Francisco, CA 94107

Make your check payable to: PCW Communications, Inc.

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 (800/435-7766 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 \$5.00. ● 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

■ 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

■ Computer Insurance

SAFEWARE

- Business Computers
 - Home Computers
 - Overseas Computers
 - Leased Computers
 - Computers Leased to Others
 - Computers Taken to Shows
 - Computers Held for Sale
 - Others' Computers in Your Care
- Call for complete information!
- SAFEWARE, The Insurance Agency Inc., 2929 N. High St., P.O. Box 02211, Columbus, OH 43202, 800/848-3469 (Nat'l) or 614/262-0559 (OH)

■ 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, 1480 Terrell Mill Rd. #692, Atlanta, GA 30067, 404/955-1704, 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

○ Networking

PhoneNET® System

Brings the sophistication of large-scale networking to the low-cost AppleTalk environment. PhoneNET supports AppleTalk protocols, but can use ordinary telephone cabling, even existing wiring. Components of the system include the PhoneNET PLUS Connector, the PhoneNET Star-Controller, and the TrafficWatch network analysis package. Please contact us for a dealer near you. *Farallon Computing, 1442A Walnut, Suite 64, Berkeley, CA 94709, 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., 235 W. 15th St., New York, NY 10011, 800/872-4454, 212/645-7008

○ 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, IIs, 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

○ Scanners

High Perform Scanner!

New Spectrum Digital Systems' LS-300 Image Scanner™ combines speed, resolution & dependability. Comes with TrueScan™ software for complete scanning control & compatibility with all major desktop pub-

lishing programs. 300-dpi resolution & halftone capability. Fast, flexible, easy to use. Complete with all cables, only \$1550! Requires Macintosh™ Plus, SE, II.

Spectrum Digital Systems, Inc., 2702 International Ln., Madison, WI 53704-3122, 800/541-6661

○ 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*

■ 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*

■ 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., 6565 Sunset Blvd. #301, Hollywood, CA 90028, 213/462-6222*

Tap/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*

(continues)

○ 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. 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

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*

○ Graphics

NYC/NJ/PA/DEL 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, 201/552-8778, 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)

○ Training

Learn Excel or Word 3.0!

Tired of wasting your evenings and weekends trying to learn software from books and manuals? Our *LearnWord 3.0* or *Excelerate* series of self-paced tutorials will have you up and running in an hour. Each course provides in-depth, hands-on training and consists of an audio cassette with practice disk. See our ad in this issue or call us collect for a complete brochure.

Personal Training Systems, P.O. Box 54240, San Jose, CA 95154, 408/559-8635

○ 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

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)

■ 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*

Turnkey 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. 2.5

RUN 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

○ 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 next-generation development environment. Programming is as easy as creating a flowchart of your thoughts. Free brochure & *CompuServ* demo. Ships May '87. \$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

○ 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.
Tymilabs 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 & electronic information services such as *The Source*, *Dow Jones News/Retrieval* & *CompuServe*. Both text & binary file transfer supported. \$150.

Int'l Computer Consultants, 1311 Clegg St., Petaluma, CA 94952, 707/765-9200

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 program-mable 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

○ Data Acquisition

MacPacq

The MacPacq transforms the Macintosh into a digital 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. To order call 800/654-5147, 800/247-4994 (CA)*

○ Desktop Presentations

Carousel™ Color Slides

Carousel 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. MICROTTEST 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*

measureUP™ Testing

measureUP is a new test generator that has the features you need & the ease of use you expect! Combining graphics, word processing, & database management, *measureUP* enables you to produce tests easier & better than ever - we guarantee it! See why *measureUP* has been called the "best Mac program." *Logic eXention Resources, 9651 Business Center Dr., Ste. C, Rancho Cucamonga, CA 91730, 714/980-0046*

electronic FLASH CARD™

New version 2.0! Learn facts quickly. Increase your motivation. Learn course or job information more rapidly. Save time and learn more. Text-based flash-card-metaphor drill program. Asks unfamiliar facts more frequently. 128K+, 1 drive. \$35 + \$3 s/h. Check or MO. Write for free information.

Artificial Mind Software, P.O. Box 17590, Pittsburgh, PA 15235

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 Inputs. Free brochure & *CompuServe* demo. Shipping May '87 \$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

Interactive learning program for pre-school children, ages 2-6. Totally mouse-driven, *Kieran* uses a speech synthesizer to TALK to your child. *Kieran* can learn names and speak directly to your child. Covers alphabet, time-telling, counting, upper-lower case, and Mystery! \$39.95 *Ωhm Software Co., 163 Richard Dr., Tiverton, RI 02878, 401/253-9354*

(continues)

Digital Logic Design

"Professor McCaE" - logic entry & simulator using industry standard CAE features - gets you started on the right track. Draw logic & simulate until you get it right. It's fast, easy, and convenient. Uses "real" gate delay to accurately detect spikes & races. \$149 + s/h. (\$39 to professors, limit 1.) Fully credited to professional package. ***30-day MONEY BACK GUARANTEE (\$19 fee)***
Argus Software, P.O. Box 482, Andover, MA 01810, 617/851-8777

Children's Programs

Exceptional graphics, multiple activities & difficulty levels.
 • *Macrobots* (Preschool-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

○ 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

○ 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 2S2 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

CADMOVER bridges the gap between micro and mainframe. Translates IGES files into *MiniCad*, *MacDraw*, or *PICT* formats. Translates *MiniCad* and *MacDraw* files into IGES format. IGES support includes multiple drawings and multiple views. Runs on Mac 512K, Plus, SE, and Mac II. \$495.
Kandu Software Corp., P.O. Box 10102, Arlington, VA 22210-1102, 703/532-0213

○ 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 your 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

○ File Conversion

File Converter (ver. 3)

Fast file conversion program for the Mac. It does search-and-replace operations on text files up to 400K in 20 seconds. Add/delete tabs, spaces, CRs, LF's hex values as well as printing characters. Wild cards allowed. Change spaces to tabs for *Excel*. \$39.95.
Phillips Software, 1633 Commonwealth Ave., West Newton, MA 02165, 617/332-1373

○ Financial

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./u, 11222 La Cienega Blvd. #450, Inglewood, CA 90304, 213/410-9527

Profit Stalker II

Are you a Macintosh investor? Then you need to track the market. Here's what others say about this program. "Well worth the wait... I would not delay purchasing this program." "Nothing less than awesome." "I love it!" A myriad of technical tools as easy to use as your Macintosh. \$250 + \$3 postage. CA residents add 6% tax. Call or write for free info.
Button-down Software, P.O. Box 19493, San Diego, CA 92119, 619/463-7474

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., 2100 W. 53rd St., Minneapolis, MN 55419, 612/924-3404

○ 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 (New: extended Cyrillic) \$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

○ Forms Processing

Fill Out Any Form!

New TrueForm™ completes any form perfectly. Image scanner transmits forms to screen. Enter information from keyboard, database merge, or spreadsheet-type formulas. Print on original form, or duplicate entire completed form on blank paper. Store forms, data. For Macintosh™ Plus, SE, II. Complete system with scanner \$1995. Software only \$495.
Spectrum Digital Systems, Inc., 2702 International Ln., Madison, WI 53704-3122, 800/541-6661, 608/244-4300 (WI)

○ 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

The 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.

StarCom 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

MAC-ART LIBRARY

Illustrate your ideas w/ **MAC-ART LIBRARY!** 12 disks of professional **MacPaint** images:

- Animals
- Flowers/Trees/Plants
- Farm Life
- Greeting Cards
- Geography
- Kitchen
- People
- Sports
- Transportation
- Tools
- Signs/Symbols/Borders
- Buildings

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**

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 printed 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™: perspective 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. Vancouver, B.C., Canada V7L 4P6, 604/986-8060

Interesting Graphics

Our skilled illustrator has produced 5 collections for your Mac: **Horror/Fantasy #1**, **Bytes of Frigbt**, **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

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

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 & illustrations. \$39.95 ea. + \$3 s/h. Chk/MO only. (CA res. add 6%)

ScanMaster™ 2700 West Coast Hwy. #220, Newport Beach, CA 92663, 714/548-5967

MacPlot & MacCAD

MacPlot by Microspot is a powerful plotter driver that will plot any object-oriented graphics produced on the Mac in up to 30 colors/pens. **MacPlot** supports over 50 plots, **MacCAD** is a series of 12 separate architectural & engineering template symbol libraries for use with **MacDraw**, **MacDraft**, **MiniCad**, etc. **CompServCo, 800 Freedom, Slidell, LA 70458, 800/272-5533 or 504/649-0484**

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**

Investment

The Right Time System

The Stock Index & Futures programs generate accurate Buy/Sell signals for individual stocks, indexes and commodities. The software was developed by an expert portfolio manager for his own personal use & 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

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., 323 Monte Vista Ave., #307, Oakland, CA 94611, 415/547-1520**

Languages

FORTAN + 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 flexibility picture 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**

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 River-view Dr., Marietta, GA 30067, 404/953-8242, 800/322-4588

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

(continues)

Networking

DECnet™ for the MAC

TSSnet™ allows your MAC to become a true networking partner in a DEC network. Supports low-cost asynch connection and allows task-to-task communications, file transfers that retain all Mac characteristics, and VAX electronic mail. \$329 includes 30-day money-back guarantee and 6 months support. *Thursby Software Systems, 5840 Interstate 20 West #145, Arlington, TX 76017, 817/478-5070*

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 • *Flexibleeasy 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, 415/935-3673*

Payroll Made Easy!

The AATrix Payroll™ program for the Macintosh generates federal and state tax reports and bookkeeping records. The program also calculates FICA, insurance deductions, federal and state withholdings tax. Prints out paychecks on your custom designed forms. Introductory price: \$59. *AATrix Software, P.O. Box 217-A, Grand Forks, ND 58206, 701/746-7202*

Printer Drivers

The Print-Link™

A printer driver program, complete w/cable, that works with dot matrix, daisy wheel, & ink jet printers for the Mac. Mfr's supported are Apple, Brother, C. Itoh, Citizen, Comrex, Diablo, Dynax, Epson, Infoscrite, Juki, Okidata, Panasonic, Qume, Siemens, & more. \$84.95. *GDT Softworks Inc., P.O. Box 1865, Point Roberts, WA 98281-1865, 604/291-9121, 800/663-MACC (6222)*

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*

Communication Extender™

Compiled library provides high-level access to communications. Routines for serial-port initialization & mgmt., error-free transfer protocols, reporting of time data, generic & DEC terminal emulation, & more. Avail. for *LightspeedC*, *Aztec C*, *TML Pascal*, & *Lightspeed Pascal*. \$99.95. *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.)*

200+ Mac Disks

Don't get ripped off! 400K or 800K disks for a \$3 copying charge per disk! One-day turnaround. Free shipping and every 6th disk free. Send \$1.75 for a catalog with full program descriptions.

CHA Services Inc., Dept. 3, P.O. Box 622, Lincoln, MA 01773, 617/891-1981

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*

The Mac Group

Become a LIFETIME member for only \$15 and receive our PD Catalog, sampler disk, and 15% discount on TMG disks. We also offer customized public domain disks (you choose from 1000s of titles), bargain CLIP ART, and the best THEME DISKS. Send \$1 for our TMG Catalog. Visa/MC. *The Mac Group, P.O. Box 85152 MB 231, San Diego, CA 92138, 619/747-7940*

2000+ 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 programs + a description of our HUGE library of over 2000 programs PLUS our quarterly newsletter filled with tips & new programs. Members pay \$9 for any disk (plus \$1 s/h) *PD Mac, Dept. 18, 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*

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, 3324 State St., Ste. O, Santa Barbara, CA 93105, 805/687-4245*

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*

Investment Analysis

From RealData, the leader in real estate software. Latest tax rules included in this powerful sensitivity analysis for income property. Ten-year pro forma of cash flows, financing, resale, tax consequences, IRR/FMRR, and more. Flexible and easy to use. Requires *Multiplan™*, *Jazz™*, or *Excel™*. \$195. *RealData, Inc., 78 N. Main St., South Norwalk, CT 06854, 203/255-2732*

The Appraisal Office

State-of-the-art program developed by professional appraisers, just for the Mac. Completes the FNMA 1004 Residential Form quickly and accurately. Menu-driven; on-screen form; performs all calculations. Stores, searches, retrieves, and pastes comps to/from database. Office management function. FREE URAR upgrade. Requires *Excel*. \$395. *RealData Inc., 78 N. Main St., South Norwalk, CT 06854, 203/255-2732*

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, 203/936-1116

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, 203/936-1116

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, 203/936-1116

LEAD™

Multi-user management system for the solicitation of owners selling their own properties. 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, 203/936-1116

Rental

Omnispec Corp.

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. *Omnispec Corp.*, 17280 Newhope St. #4, 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 Research, 5615 Morningside #127, Houston, TX 77005, 800/835-2246 ext. 199, or 800/362-2421 ext. 199, in Kansas

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. Handles 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

Tax

Ready for Tax Reform?

If you had *TAXMASTER* you would be. *Excel*, *Multiplan*, *Works* templates to plan your 1987 tax situation. Also includes W4 and W4a forms. *TAXMASTER* calculates IRAs, capital gains, itemized deductions, passive incomes and losses, home refinancing and more! IBM & Apple II versions avail. \$50. Order line: 800/826-7146. Visa/MC. *Island Computer Services*, 3501 East Yacht Dr., Long Beach, NC 28461, 919/278-9483

Utilities

BRUtility™

The Millennium Backup/Restore Utility! Copies, backs up, restores all HFS/MFS vols., incl. SCSI drives, cartridges, floppies, & network vols.! Take your hard disk files w/you if your hard disk goes out for service. Backup disks can still be used directly, by all programs! View & print selected catalogs, rich w/icons & tree structure! Can print log while copying. Loves lg. screens. For Macintosh™ II, SE, Plus & 512E. \$49.95. MC/Visa.

Millennium Computer Corp., P.O. Box 20010, Rochester, NY 14602, 716/436-2952

Stepping Out:

The Macintosh Screen Extender fools the Mac into thinking it has a bigger screen. User chooses screen size appropriate for the task at hand. View of the pages slides over when the cursor hits the edge of the physical screen. The user can work with the entire screen at once via 2- & 4-times reduction commands. 2- to 16-times enlargements are avail. for detail work. \$95.

Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5536

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

The most exciting software package to be unveiled during the Macworld Expo will not be found on the show floor. To receive an invitation to an exclusive showing of our

BUSINESS MANAGEMENT and ACCOUNTING PACKAGE

**Write to: Business Package
P.O. Box 850
Frazer, Pa, 19355**

Or Call: 215-640-4771

Advertiser Index

Reader
Service
Number

Reader
Service
Number

- | | |
|---------------------------------------|--|
| 622 Abaton Technology Corp., 219 | 742 Migent, 50-51 |
| 552 Adobe Systems, 201 | 37 Miles Computing, Inc., 83 |
| 678 Adobe Systems, 42-43 | 713 MindWork Software, 58-59 |
| 760 Anatex, Inc., 31 | 230 Moneysworth, 182-183 |
| 204 Ann Arbor Softworks, 14-15 | 772 Mountain Computer, 94 |
| — Anthro Corp., 20 | 633 Nantucket Corp., 184 |
| — Apple Computer, Inc., 8-9 | 773 New American Library, 220 |
| 490 Bede Tech, 49 | 736 NuData, 172 |
| 627 Bering Industries, Inc., 23 | 737 NuData, 173 |
| 373 Best Computer Supplies, 90 | 718 Open Mac Enterprises, 212 |
| — Bottom Line Systems, 236 | 575 Orange Micro, Inc., 76-77 |
| 657 CMS Enhancements, Inc., 216 | 547 Owl Int'l., 24 |
| 770 Cahner's Exposition Group, 71 | — PC Connection, 104-107 |
| 757 CasadyWare, 52 | 754 PC Telesystems, 56 |
| 607 Central Point Software, 196 | 775 Palantir, 199 |
| 175 Central Point Software, 213 | 304 Peripherals Computers & Supplies, 88 |
| 524 Centram, 26-27 | 223 Personal Computer Peripherals, 207 |
| 697 Circo Business Solutions, 38-39 | 560 Personal Training Systems, 209 |
| 330 CompuServe, 195 | 724 PostCraft Int'l. Inc., 237 |
| 271 Computer Friends, Inc., 82 | 211 Practical Computer Applications, 80 |
| 611 Coral Software, 210 | 738 Priam Systems Division, 192 |
| 684 Cricket Software, 79 | 194 Programs Plus, 45-47 |
| 685 Cricket Software, 81 | 755 Psy-Den, 89 |
| 710 Cutting Edge, 22 | 334 Public Domain Exchange, The, 194 |
| 756 Data Electronics, Inc., 238 | 577 Radius, 13 |
| 662 Data Tailor, Inc., 61 | — Satori Software, 166 |
| 281 DataViz, Inc., 200 | 630 SBT Corp., 197 |
| 232 Dayna Communications, 65-68 | 743 Sigma Designs, 92 |
| 761 Deneba Systems, Inc., 215 | 266 Silicon Beach Software, Inc., 35, 37 |
| 615 DEST Corp., 175 | — Software Library, 60 |
| 634 Diehl Graphsoft, Inc., 218 | 768 Software Ventures, 10 |
| 562 Diskette Connection, 190 | 731 Spectrum Digital Systems, 224-225 |
| 600 E-Machines, Inc., 98 | 225 StatSoft, 88 |
| 626 Ergotron, Inc., 196 | 618 Sun Remarketing, 206 |
| 144 Forethought, Inc., 16 | — SuperMac Software, 44 |
| 143 General Computer, 73-75, 180 | — SuperMac Technology, 102 |
| 766 Graphics Plus, 222 | 332 T/Maker Co., IBC |
| 758 Great Wave Software, 185 | 735 Tecmar, 62 |
| 257 Hayes Microcomputer, Inc., 163 | — Think Technologies, 7 |
| 730 Hewlett Packard, 21 | 712 3M, 54-55 |
| 530 I/O Design, Inc., 214 | 167 Thunderware, Inc., 203 |
| 272 Icon Review, 84-87 | 483 Tussey Computer Products, 187 |
| 249 Infosphere, 64 | 134 USA-Flex, 72 |
| 589 Internet, 226 | 537 Uptime, 5 |
| 765 JDL, 211 | 769 Vector Electronics Co., 198 |
| 762 James River Corp., 91 | 383 Videx, 96 |
| 747 Jasmine Technologies, Inc., 18-19 | 459 Vision Technologies, 78 |
| 570 Jasmine Technologies, Inc., 30 | 439 Warp Nine Engineering, 36 |
| 11 Kensington, 6, BC | 374 Williams & Macias, 34 |
| 664 LaserWare, Inc., 178 | 732 Working Software, Inc., 40 |
| 652 Letraset, 164-165 | |
| 493 Levco, 176 | |
| 654 Logic Array, 223 | |
| 395 Mac Doctor Electronics, 33 | |
| — MacConnection, 104-107 | |
| 673 MacLine, 202 | |
| 1 MacMemory, Inc., 29 | |
| 368 MacRentals, 57 | |
| 653 Macropac Int'l., 191 | |
| 16 Macstore, 236 | |
| — Macworld Expo, 168-169 | |
| 767 Magic Software, Inc., 170 | |
| 764 Mass Micro Systems, 100 | |
| 414 Megasoftware, 222 | |
| 675 Meta Software, 188 | |
| 219 Micro Analyst, 202 | |
| 235 Micrographic Images, 63 | |
| 774 Microlytics, Inc., 171 | |
| — Microsoft Corp., IFC-1, 28 | |
| 470 Microtech Peripherals, Inc., 70 | |
| 585 Microtek, 179 | |

We RENT Mac Software !!

MacStore™ 28 Taalwood
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	9.45
Accounting Packages	Call	Mac Labeler	8.80
Battery Pak	8.80	Mac Lightning	14.80
Bulk Mailer	21.60	Medical or Legal Dictionary	13.30
Business Filevision	56.25	Mac Mat Book (all volumes 1 - 6)	25.47
Calendar Maker or Certificate Maker	8.90	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	27.80
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	Mac RAM Max PRINT	8.80
Davinci (We have them all!)	Call	Micro Planner Plus	64.88
Dollars and Sense	18.70	More	34.69
D Mac III	58.08	Musicworks or Videoworks	13.19 & 14.15
Double Helix	60.50	Omnis III Plus	70.95
Excel	52.75	OverVue	36.80
Filemaker	29.20	Picture Base or Postermaker	8.80
Fluent Fonts, Fontastic, Font Explorer,	Call	Pinball Construction Set	8.80
Laser Fonts, Superfonts, UltraFonts...	Call	Quick Disk, Quick Word, Quick Paint (each)	8.80
Ferrari Grand Prix or Flight Simulator	8.80	Ready Set Go	Call
Full Paint	14.56	Smart Alarms	8.90
Gato, Orbitor, or Gridwars	8.80	Super Paint	13.40
Helix	49.50	Tempo	13.30
Infocom games	Call	Thunderscan	37.50
LaserSpool	15.16	Will Writer	8.80
Keystroke	64.68	Write Now or Word Handler	Call
Languages (Asm, Basic, Z Basic, C, Cobol,	Call	Works	37.90
Expertisp, Fortran, TML Pascal, etc.)	Call		
Microsoft Chart, File, Multiplan, Word	Call		
Mac Attack	8.80		
Mac Cad	62.56		
Mac Challenger or Mac Command	8.80		
Mac Draft	33.84		
Mac Draw	32.47		

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.



In Texas **800-222-1537** After tone ask operator for extension **993265**
or dial direct **512-629-5419**



Circle 16 on reader service card

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

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

Please print or type all information

Name

Title

Company

Address

City, State, Zip (zip code needed to ensure delivery)

Phone: Area code/Number

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 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

August 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

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

Please print or type all information

Name

Title

Company

Address

City, State, Zip (zip code needed to ensure delivery)

Phone: Area code/Number

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 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

August 1987

Valid Through 11/17/87

Circle number 999 to subscribe to Macworld. We will bill you \$30 for a 1-year (12-issue) subscription (U.S. only).

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP.)

MACWORLD

Product Information Service
P.O. Box 2366
Clinton, IA 52735

PLACE
FIRST-CLASS
POSTAGE HERE.
(POST OFFICE
WILL NOT DELIVER
WITHOUT STAMP.)

MACWORLD

Product Information Service
P.O. Box 2366
Clinton, IA 52735

Product Index

Reader
Service
Number

Software

Business

- 622 Abaton Technology Corp., 219
- 552 Adobe Systems, 201
- 760 Anatex, Inc., 31
- Bottom Line Systems, 236
- 524 Centram, 26-27
- 697 Circo Business Solutions, 38-39
- 684 Cricket Software, 79
- 685 Cricket Software, 81
- 662 Data Tailor, Inc., 61
- 144 Forethought, Inc., 16
- 249 Infosphere, 64
- 589 Internet, 226
- 652 Letraset, 164-165
- 653 Macropac Int'l., 191
- 767 Magic Software, Inc., 170
- 675 Meta Software, 188
- Microsoft Corp., IFC-1
- 742 Migent, 50-51
- 713 Mindwork Software, 58-59
- 633 Nantucket, 184
- 575 Orange Micro, Inc., 76-77
- 547 Owl Int'l., 24
- 754 PC Telesystems, 56
- 560 Personal Training Systems, 209
- 630 SBT Corp., 197
- Satori Software, 166
- 731 Spectrum Digital Systems, 224-225
- 225 StatSoft, 88
- Think Technologies, 7
- 383 Videx, 96
- Vertical**
- Satori Software, 166

Data Management

- 144 Forethought, Inc., 16
- 653 Macropac Int'l., 191
- 383 Videx, 96

Word Processing

- 204 Ann Arbor Softworks, 14-15
- 774 Microlytics, Inc., 171
- Microsoft Corp., 28
- 713 Mindwork Software, 58-59
- 724 Post Craft Int'l., 237
- 332 T/Maker Co., IBC

Communications

- 622 Abaton Technology Corp., 219
- 524 Centram, 26-27
- 281 DataViz, Inc., 200
- 249 Infosphere, 64
- 589 Internet, 226
- 775 Palantir, 199
- 304 Peripherals Computers & Supplies, 88
- 334 Public Domain Exchange, The, 194
- 768 Software Ventures, 10
- Think Technologies, 7

Educational

- 758 Great Wave Software, 185
- 773 New American Library, 220
- 560 Personal Training Systems, 209

Graphics/Desktop Publishing

- 552 Adobe Systems, 201
- 678 Adobe Systems, 42-43
- 204 Ann Arbor Softworks, 14-15
- 757 CasadyWare, 52
- 684 Cricket Software, 79
- 685 Cricket Software, 81

Reader
Service
Number

- 232 Dayna Communications, 65-68
- 761 Deneba Systems, Inc., 215
- 634 Diehl Graphsoft, Inc., 218
- 766 Graphics Plus, 222
- 664 LaserWare, Inc., 178
- 652 Letraset, 164-165
- 675 Meta Software, 188
- 713 Mindwork Software, 58-59
- 575 Orange Micro, Inc., 76-77
- 547 Owl Int'l., 24
- 266 Silicon Beach Software, 35, 37

Personal Business/Home

- 547 Owl Int'l., 24
- 374 Williams & Macias, 34

Entertainment

- 37 Miles Computing, Inc., 83
- 211 Practical Computer Applications, 80

Languages/Development Systems

- 611 Coral Software, 210

Utilities

- 607 Central Point Software, 196
- 653 Macropac Int'l., 191
- 767 Magic Software, Inc., 170
- 219 Micro Analyst, 202
- 374 Williams & Macias, 34
- 732 Working Software, 40

Miscellaneous

- 330 CompuServe, 195
- 762 James River Corp., 91
- 560 Personal Training Systems, 209
- 755 Psy-Den, 89
- Satori Software, 166
- 537 Uptime, 5
- 374 Williams & Macias, 34

Hardware

Computer Systems

- Apple Computer, Inc., 8-9
- 493 Levco, 176

Printers

- 766 Graphics Plus, 222
- 730 Hewlett-Packard, 21
- 765 JDL, 211

Boards

- 493 Levco, 176
- 395 Mac Doctor Electronics, 33
- 718 Open Mac Enterprises, 212
- 769 Vector Electronic Co., 198

Digitizers/Scanners

- 615 DEST Corp., 175
- 585 Microtek, 179
- 167 Thunderware, Inc., 203

Display

- 600 E-Machines, Inc., 98
- 235 Micrographic Images, 63
- 577 Radius, 13
- 743 Sigma Designs, 92
- SuperMac Technology, 102

Reader
Service
Number

Modems

- 271 Computer Friends, Inc., 82
- 257 Hayes, 163

Hard Disks/Storage

- 627 Bering Industries, Inc., 23
- 657 CMS Enhancements, Inc., 216
- 710 Cutting Edge, 22
- General Computer, 73-75, 180
- 747 Jasmine Technologies, 18-19
- 570 Jasmine Technologies, 30
- 654 Logic Array, 223
- 764 Mass Micro Systems, 100
- 470 Microtech Peripherals, Inc., 70
- 772 Mountain Computer, 94
- 736 NuData, 172
- 737 NuData, 173
- 223 Personal Computer Peripherals, 207
- 738 Priam Systems Division, 192
- 735 Tecmar, 62
- 439 Warp Nine Engineering, 36

Miscellaneous

- 760 Anatex, Inc., 31
- 175 Central Point Software, 213
- 271 Computer Friends, 82
- 756 Data Electronics, Inc., 238
- 232 Dayna Communications, 65-68
- 1 MacMemory, Inc., 29
- 414 Megasoftware, 222
- SuperMac Software, 44
- 618 Sun Remarketing, 206
- 383 Videx, 96

Reader
Service
Number

Accessories

Floppy Disks/Holders

- 562 Diskette Connection, 190
- 712 3M, 54-55

Miscellaneous

- Anthro Corp., 20
- 490 Bede Tech, 49
- 373 Best Computer Supplies, 90
- 770 Cahner's Exposition Group, 71
- 626 Ergotron, Inc., 196
- 530 I/O Design, Inc., 214
- 762 James River Corp., 91
- 11 Kensington, 6, BC
- Macworld Expo, 168-169

Mail Order

- 373 Best Computer Supplies, 90
- 272 Icon Review, 84-87
- MacConnection, 104-107
- 673 MacLine, 202
- 368 MacRentals, 57
- 16 Macstore, 236
- 230 Moneysworth, 182-183
- PC Connection, 104-107
- 194 Programs Plus, 45-47
- Software Library, 60
- 483 Tussey Computer Products, 187
- 134 USA-Flex, 72
- 459 Vision Technologies, 78

Unleash the Full Power of your PostScript™ Laser Printer!

NEXT GENERATION

LASERFX™

DESKTOP PUBLISHING UTILITY

ROTATE

SKEW - SHADE

SHADOW - OUTLINE!

See us in
Boston
at the
**MacWorld
EXPO**
Booth #558

• Shown are just 7 of the 30 effects available using Times font. There are millions of options available for each PostScript font.

- Not just another new font, but a whole new concept.
- Save files in Encapsulated PostScript format and others.
- Easy integration into Quark XPress®, PageMaker 2.0®, RSG13, Microsoft Word 3.0, and most other popular desktop publishing packages.
- Allows user to read PICT or paint files, add special effects, and print them.
- No programming knowledge necessary.
- Special introductory price, only \$195.
- For Macintosh 512E™, Plus™, SE™ and Mac II™.
- Available soon for Apple IIGS™, Atari ST™, and IBM™.

USEFUL TOOL FOR THE AMATEUR
INDISPENSABLE TOOL FOR THE PROFESSIONAL

Ask for **LASER FX** at your local computer dealer...or, call for nearest location.

POSTCRAFT
INTERNATIONAL INC.

USA - 9420 Reseda Blvd.
Suite 476, Northridge, CA 91324
(818) 718-1598

CANADA - 3 King St., P.O. Box 938
Suite 127, St. Catharines, Ontario
Canada L2R 6Z4 / (416) 641-0768

Circle 724 on reader service card

See
Intro
Offer Below.

WHY SOME FINANCIAL WIZARDS NEVER WORRY ABOUT A CRASH ON WALL STREET.

You can't predict a crash, but you can be prepared. By backing-up valuable computerized data on ¼-inch cartridges from DEI.

After all, once a critical market analysis, financial calculation or other data is lost, it's lost forever.

That's why prudent financial wizards rely on DEI Series II Gold™, Series II Silver™ and Microtape™ 2000. The higher-performance, higher-capacity ¼-inch cartridges that have them talking on the street.

Every Series II Gold, Series II Silver and Microtape 2000 is 100% replacement guaranteed against failure in normal use.

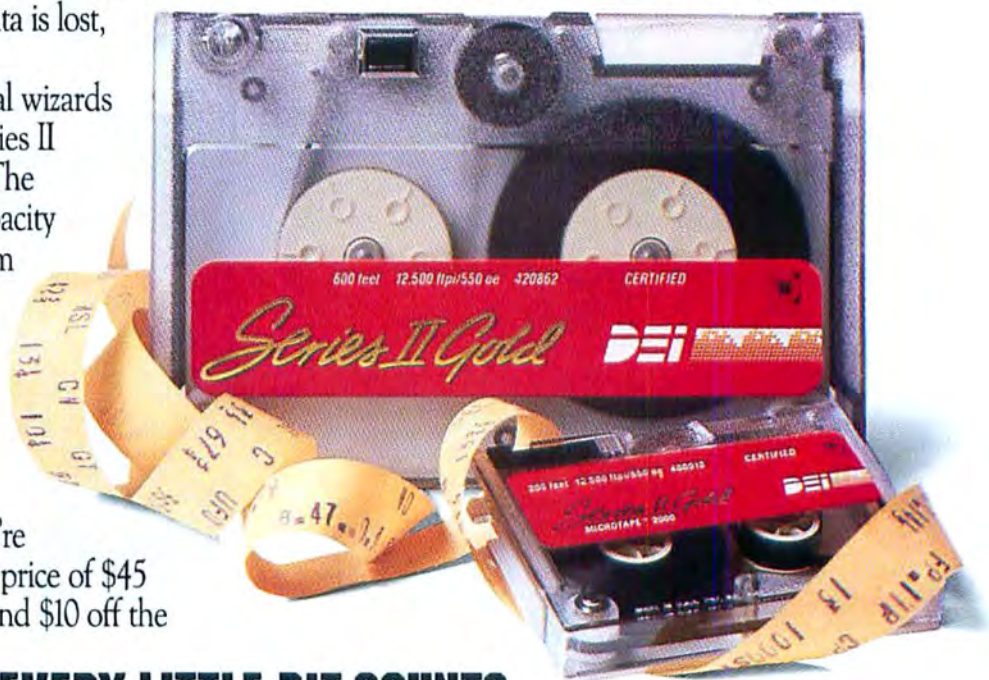
Guaranteed forever.

To introduce you to DEI we're taking \$20 off the regular retail price of \$45 on a Series II Gold cartridge. And \$10 off the

regular price of \$30 on Microtape 2000*.

For more information call 1-800-DEI-TAPE. In California, (619) 452-7840.

Invest in a DEI Series II ¼-inch cartridge today.



BECAUSE EVERY LITTLE BIT COUNTS.

* Offer good for one cartridge only, good through October 31, 1987. Cost does not include tax (if applicable) and shipping. DEI Series II Gold, Series II Silver and Microtape 2000 are trademarks of DEI. © 1987 Data Electronics Incorporated.

Circle 756 on reader service card

Where to Buy

This section contains information about products featured editorially 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, through user groups such as Berkeley Macintosh Users Group (415/849-2684) or the Boston Computer Society's Mac special interest group (617/367-8080), or through mail-order clearinghouses such as Educomp, 2429 Oxford St., Cardiff-by-the-Sea, CA 92007, 619/942-3838 or Public Domain Exchange, 2074-C Walsh Ave., Santa Clara, CA 95050, 408/496-0624.

Pages 108 to 113 *The Road to MS-DOS*

Apple PC 5.25 Drive

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 1MB minimum memory. \$399.

AppleTalk PC Card

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. \$399.

DaynaFile

Version 1.0. Dayna Communications, Inc., 50 S. Main St., 5th Floor, Salt Lake City, UT 84144, 801/531-0600, 800/531-0600. 512K minimum memory; requires SCSI port. \$595.

InBox

Version 2.0. Think Technologies, Inc., 135 South Rd., Bedford, MA 01730, 617/863-5590. 512K minimum memory; hard disk recommended. One administrator disk and three installer disks \$350, each additional installer \$125.

Jazz

Version 1A. Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142, 617/577-8500. Key-disk copy protection; installs on hard disks. 512K minimum memory; requires external drive. \$395.

Mac+ PC

perfectek Corp., 726 S. Hillview Dr., Milpitas, CA 95035, 408/263-7757. 512K minimum memory; Mac Plus, 5.25 Drive and attachments recommended. \$995.

Mac286

AST Research Inc., 2121 Alton Ave., Irvine, CA 92714, 714/553-0340 ext. 6190. Requires 5¼-inch drive and hard disk. Comes with 1MB of RAM. \$1499.

Mac86

AST Research Inc., 2121 Alton Ave., Irvine, CA 92714, 714/553-0340 ext. 6109. 1MB minimum memory; requires 5¼-inch drive and hard disk; needs 2MB expansion to attain a full 640K for MS-DOS. \$599.

MacCharlie

Version 3.0. Dayna Communications, Inc., 50 S. Main St., 5th Floor, Salt Lake City, UT 84144, 801/531-0600, 800/531-0600. 128K minimum memory. Single drive (256K system) \$795; double drive (640K system) \$995.

MacDraw

Version 1.9 for the 400K disk; version 1.0 for the 800K disk. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K with external drive recommended. \$195.

MacLinkPlus

Version 1.0. DataViz Inc., 16 Winfield St., Norwalk, CT 06855, 203/866-4944. 512K minimum memory; requires PC and serial port; external drive recommended. Includes disks for both machines, manual, and cable. \$195.

MacWrite

Version 4.5. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K or more with external drive recommended. \$125.

Microsoft Excel

Version 1.04. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; external drive recommended. \$395.

Microsoft Multiplan

Version 1.11. Microsoft Corp. (see *Microsoft Excel* for address). 128K minimum memory. \$195.

Microsoft Word

Version 3.01. Microsoft Corp. (see *Microsoft Excel* for address). 512K minimum memory; requires 800K drive storage; Mac Plus with external drive recommended. \$395.

PC MacBridge Plus

Version 3.0. Tangent Technologies, Ltd., 5720 Peachtree Pkwy. #100, Norcross, GA 30092, 404/662-0366. 256K minimum memory; requires MS-DOS version 2.1 or higher and two 5¼-inch drives. Includes *LaserScript*, *Mail Box*, *LaserGraph*, *PS Print*, *PSPS*, and *ATB*. \$650.

TangentShare

Version 1.0. Tangent Technologies, Ltd., 5720 Peachtree Pkwy. #100, Norcross, GA 30092, 404/662-0366. 256K minimum memory; requires MS-DOS 3.1 or higher, 5¼-inch drive. Software \$150, with card \$350.

TOPS

Version 1.0. Centram Inc., 2560 Ninth St. #210, Berkeley, CA 94710, 415/549-5900. Copy detection. 512K minimum memory; requires AppleTalk; hard disk recommended. \$149 per Mac, \$389 per PC.

Pages 120 to 127 *A DA in the Life*

Change Application Font

Version 1.03. Loftus E. Becker Jr., 41 Whitney St., Hartford, CT 06105, 203/241-4635. 128K minimum memory. Free.

(continues)

Where to Buy

CheapPaint

Spinnaker Software Corp., 1 Kendall Sq., Cambridge, MA 02139, 617/494-1200. Key-disk copy protection. 512K minimum memory. Bundled with *MUD*. \$49.95.

DA Installer+

Version 1.6. Dreams of the Phoenix, P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 512K minimum memory. Included in *Quick and Dirty Utilities Volume One*. \$39.95.

DiskTop

Version 2.0. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512KE minimum memory. \$39.95.

Display Message

Public domain software.

Double Apple

Version 10.7.1986. Public domain software by Stefan Bilaniuk. Send donation to the Graduate Breakfast Fund, Dept. of Math and Computer Science, Dartmouth College, Hanover, NH 03755.

FEdit Plus

Version 2.0. MacMaster Systems, 108 E. Fremont Ave., Sunnyvale, CA 94087-3201, 408/773-9834. 512K minimum memory. \$49.95.

JClock

Version 3.1. Public domain software by James Sulzen and Edgar Matias.

KnockOut

Shareware by Andy Stadler. Box 603, Occidental College, 1600 Campus Rd., Los Angeles, CA 90041. Donation requested.

LaserStatus

Version 2.0. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512K minimum memory; hard disk recommended. Free with purchase of *DiskTop*. \$39.95.

Mentor

Version 1.0. Target Software, Inc., 14206 S.W. 136th St., Miami, FL 33186, 305/252-0892, 800/622-5483. 512K

minimum memory; requires external drive for 512K. \$99.95.

Mentor Plus

Version 1.0. Target Software, Inc., 14206 S.W. 136th St., Miami, FL 33186, 305/252-0892, 800/622-5483. 512K minimum memory; requires hard disk. \$199.95.

MockChart

Version 4.3.4. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 128K minimum memory; 512K recommended. Bundled with *MockPackage Plus*.

ResEdit

Version 1.0.2 for System 3.0 or higher; version 1.0.1 for all other System versions. APDA, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548. 128K minimum memory. \$25 for APDA members.

Saviour

Public domain software.

ScreenLocker

Public domain software.

SideKick

Version 2.0. Borland International, Inc., 4585 Scotts Valley Dr., Scotts Valley, CA 95066, 408/438-9400, 800/255-8008, 800/742-1133. 512K minimum memory. \$99.95.

Smart Alarms and Appointment Diary

Version 2.3 for *Smart Alarms*; version 2.7 for *Appointment Diary*: Imagine Software, 19 Bolinas Rd., Fairfax, CA 94930, 415/453-3944. 512K minimum memory; hard disk recommended. \$49.95.

SmartScrap and The Clipper

Version 1.02 for *SmartScrap*; version 1.01 for *The Clipper*. Solutions International, Inc., 29 Main St., Montpelier, VT 05602, 802/229-0368. 512K minimum memory. \$59.95.

Pages 128 to 137 Safety Net for Storage

Adon TD-40

Adon Corp., 10603 107th Ct. NE, Redmond, WA 98052, 206/881-5996. 1MB minimum memory. \$1495.

Apple Tape Backup 40SC

Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 1MB minimum memory. Requires SCSI cable and terminator. \$1499.

Backup Manager

Version 1.0. Adon Corp., 10603 107th Ct. NE, Redmond, WA 98052, 206/881-5996. 128K minimum memory. \$179.

Data File

NuData, 3206 Scott Blvd., Santa Clara, CA 95054, 408/727-1049. 512KE minimum memory; requires SCSI port for the 512KE. \$1295.

DataStream

SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. 512K minimum memory; requires SCSI port for the 512KE; Mac Plus recommended. \$1299.

HyperTape

General Computer Corp., 215 First St., Cambridge, MA 02142, 617/492-5500, 800/634-9737, 800/854-9737. 512K minimum memory; requires SCSI port for the 512KE. \$1399.

MacBack Plus 40

Peripheral Land, Inc., 47800 Westinghouse Dr., Fremont, CA 94538, 415/657-2211. 512K minimum memory; requires SCSI port for the 512KE. \$1295.

MacServe

Version 2.2. Infosphere, Inc., 4730 S.W. Macadam Ave., Portland, OR 97201, 503/226-3620. Copy detection; cannot be used by more than one server. 512K minimum memory; requires hard disk and AppleTalk. \$250 per server.

Network DiskFit

Version 1.2. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. 512K minimum memory; Mac Plus, external drive, tape drive or second hard disk recommended. \$395.

Plus-60T

Peak Systems, Inc., 1201 Spyglass, Austin, TX 78746, 512/328-0747, 800/225-7509. 1MB minimum memory; at least 30MB hard disk recommended. \$1295.

SoftBackup

Version 1.0. Diversified I/O Inc., 1008 Stewart Dr., Sunnyvale, CA 94086, 408/730-2171. 512K minimum memory; requires either floppy drive or standard tape drive; hard disk recommended. Single user \$69.95, network users \$139.95.

T-40

Mirror Technologies, Inc., 2209 Phelps Road, Hugo, MN 55038, 612/426-3276. 512K minimum memory; requires SCSI port for the 512KE. \$1459.

T60Plus

Relax Technology, Inc., 3101 Whipple Rd. #22, Union City, CA 94587, 415/471-6112, 800/848-1313; call collect within California. 512K minimum memory; requires SCSI port for the 512KE. \$1595.

TapeFit

Version 1.2. SuperMac Software, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. 1MB minimum memory; requires DataStream or DataFrame 40 + 40. Bundled with DataStream \$1299; bundled with DataFrame 40 + 40 \$2599.

TOPS

Version 1.0. Centram Inc., 2560 Ninth St. #210, Berkeley, CA 94710, 415/549-5900. Copy detection. 512K minimum memory; requires AppleTalk and hard disk. \$149 per Mac, \$389 per PC.

Pages 138 to 145 *Top of the Charts*

Cue: The Film Music System

Version 1.01. Opcode Systems, 444 Ramona St., Palo Alto, CA 94301, 415/321-8977. Key-disk copy protection. 512K minimum memory. Sonata fonts from Adobe highly recommended for Laser printing. \$499.

DataFrame XP 40

SuperMac Technology, 295 N. Bernardo Ave., Mountain View, CA 94043, 415/964-8884. 512K minimum memory; 512K requires DataPort and *DataPort Software*, 512KE requires DataPort only; Mac Plus recommended. \$1899.

FileMaker Plus

Version 2.0. Forethought, Inc., 250 Sobrante Way, Sunnyvale, CA 94086, 408/737-7070, 800/622-9273. 512K minimum memory; requires 800K of drive storage. \$295.

HyperDrive FX/20

General Computer Corp., 215 First St., Cambridge, MA 02142, 617/492-5500, 800/634-9737, 800/854-9737. 512K minimum memory; requires SCSI port for the 512KE. \$1199.

Jam Factory

Version 0.91. Intelligent Music, P.O. Box 8748, Albany, NY 12208, 518/434-4110. Key-disk copy protection. 512K minimum memory; requires MIDI interface; external drive recommended. \$120.

M

Version 0.94. Intelligent Music, P.O. Box 8748, Albany, NY 12208, 518/434-4110. Key-disk copy protection. 512K minimum memory; requires MIDI interface; external drive recommended. \$150.

Master Tracks Pro for the Macintosh

Version 1.0. Passport Designs, Inc., 625 Miramontes St. #103, Half Moon Bay, CA 94019, 415/726-0280. Key-disk copy protection. 512K minimum memory; requires MIDI interface; ex-

ternal drive or hard disk recommended. \$299.95.

Microsoft Excel

Version 1.04. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; external drive recommended. \$395.

Microsoft File

Microsoft Corp. (see *Microsoft Excel* for address). 128K minimum memory. \$195.

Microsoft Word

Version 3.01. Microsoft Corp. (see *Microsoft Excel* for address). 512K minimum memory; requires 800K drive storage; Mac Plus with external drive recommended. \$395.

MIDI Paint

Version 1.0. Southworth Music System, 91 Ann Lee Rd., Harvard, MA 01451, 617/772-9471. 512K minimum memory; Mac Plus recommended; there will be a special version for the Mac II. \$149.

Music Mouse

Version 1.0. Opcode Systems, 444 Ramona St., Palo Alto, CA 94301, 415/321-8977. 128K minimum memory. \$60.

Opcode Sequencer

Version 2.5. Opcode Systems, 444 Ramona St., Palo Alto, CA 94301, 415/321-8977. Key-disk copy protection; allows two hard disk installations. 512K minimum memory; requires MIDI interface; external drive or hard disk recommended. \$250.

OverVue

Version 2.1a. ProVue Development, 222 22nd St., Huntington Beach, CA 92648, 714/969-2431. 128K minimum memory; external drive recommended. \$295.

PackIt III

Version 1.2. Shareware by Harry Chesley, 1850 Union St. #360, San

Francisco, CA 94123. 512K minimum memory. Current version \$10; current version and future upgrades \$20.

Performer

Version 1.22. Mark of the Unicorn, Inc., 222 Third St., Cambridge, MA 02142, 617/576-2760. Not copyable; backup disk mailed upon receipt of registration card. 512K minimum memory; requires MIDI interface. \$295.

Professional Composer

Version 2.0. Mark of the Unicorn, Inc., 222 Third St., Cambridge, MA 02142, 617/576-2760. Not copyable; backup disk mailed upon receipt of registration card. 512K minimum memory. \$495.

SmoothTalker

Version 2.0. First Byte, Inc., 2845 Temple Ave., Long Beach, CA 90806, 213/595-7006. Key-disk copy protection. 512K minimum memory. \$49.95.

Sound Design

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; Mac Plus with hard disk recommended. Mirage version \$395, all other versions \$495.

Page 146

A Portable Finder

DiskTop

Version 2.0. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512KE minimum memory. \$39.95.*

Page 148

XPress! XPress! Read All About It!

XPress

Version 1.01. Quark Inc., 2525 W. Evans #220, Denver, CO 80219, 303/934-2211. Copy protected; allows three installations to floppies or hard disk. 512KE minimum memory; requires external drive or hard disk. \$695.*

Page 150 *Check It Out*

Spellswell

Version 1.3J. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986. 512K minimum memory. \$74.95, medical dictionary \$99.95.*

Page 151

The Perils of Normandy

Patton vs Rommel

Electronic Arts, 1821 Gateway Dr., San Mateo, CA 94404, 415/571-7171. Not copyable. 512K minimum memory; Mac Plus with external drive recommended. \$39.95.*

Page 151

Easy Ways to Excel

Check Book

Version 1.1. Heizer Software, 5120 Coral Ct., Concord, CA 94521, 415/827-9013. 512K minimum memory; requires *Microsoft Excel*; external drive recommended. \$15, demo disk \$2.*

Guided Tour

Version 1.2. Heizer Software, 5120 Coral Ct., Concord, CA 94521, 415/827-9013. 512K minimum memory; requires *Microsoft Excel*; external drive recommended. \$15, demo disk \$2.

Microsoft Excel

Version 1.04. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206/882-8080, 800/426-9400. 512K minimum memory; external drive recommended. \$395.

Personal Budget

Version 1.1. Heizer Software, 5120 Coral Ct., Concord, CA 94521, 415/827-9013. 512K minimum memory; requires *Microsoft Excel*; external drive recommended. \$15, demo disk \$2.*

(continues)

Where to Buy

Page 153

A Programming Language

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.*

Macintosh 68000

Development System

Version 2.0. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 512K minimum memory; 512K with external drive recommended. \$195.

Page 154

Billing Your Clients

Project Billing

Version 1.35. Satori Software, 2815 Second Ave. #590, Seattle, WA 98121, 206/443-0765. 512K minimum memory; 800K drive storage recommended. \$695, Project Billing + \$1095.*

Page 156

Made to Specification

MacSpec

Version 2.0. LM Software, P.O. Box 93, Belmont, CA 94002, 415/345-0388. 512K minimum memory. \$199.95.

Page 157

Seize the Data

Data Desk

Version 1.06. Data Description, Inc., P.O. Box 4555, Ithaca, NY 14853, 607/257-1000. 512K minimum memory; requires 800K drive storage. \$175. Student version (\$38) available from Kinko's Academic Courseware Exchange, 4141 State St., Santa Barbara, CA 93110, 800/235-6919.*

Page 158

Fast Relief for Security Headaches

Hard Disk Partition

Version 1.05. FWB Software, Inc., 2040 Polk St. #215, San Francisco, CA 94109, 415/474-8050. 512K minimum memory; Mac Plus with SCSI hard drive recommended. \$54.95.*

Page 159

Gender-Specific Leather and Lace

Leather Goddesses of Phobos

Release 59. Infocom, 125 Cambridge Park Dr., Cambridge, MA 02140, 617/576-3190, 800/262-6868. 128K minimum memory. \$39.95.*

Moonmist

Release 59. Infocom, 125 Cambridge Park Dr., Cambridge, MA 02140, 617/576-3190, 800/262-6868. 128K minimum memory. \$39.95.*

Page 160

High-Power Communications

inTalk

Version 2.11. Palantir Software, 12777 Jones Rd. #100, Houston, TX 77070, 800/368-3797, 800/831-3119. 512K minimum memory. \$199.*

Page 162

Making It Big

inLarge

Version 1.0. Berkeley System Design, 1708 Shattuck Ave., Berkeley, CA 94709, 415/540-5537. 512K minimum memory. \$95.*

Pages 193 to 202

Getting Started with Macintosh Graphics

CheapPaint

Spinnaker Software Corp., 1 Kendall Sq., Cambridge, MA 02139, 617/494-1200. Key-disk copy protection. 512K minimum memory. Bundled with MUD. \$49.95.

Cricket Draw

Version 1.01. Cricket Software, Inc., 30 Valley Stream Pkwy., Malvern, PA 19355, 215/251-9890, 800/345-8112. 512K minimum memory; external drive and LaserWriter recommended. \$295.

Cricket Graph

Version 1.1. Cricket Software, Inc. (see *Cricket Draw* for address). 512KE minimum memory; external drive and LaserWriter recommended. \$195.

FullPaint

Version 1.1. Ann Arbor Softworks, Inc., 2393 Teller Rd. #106, Newbury Park, CA 91320, 805/375-1467. 512K minimum memory; external drive recommended. \$99.95.

FullWrite Professional

Version 1.0. Ann Arbor Softworks, Inc. (see *FullPaint* for address). 1MB minimum memory; external drive recommended. \$295.

GraphicWorks

Version 1.1. Mindscape, Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667, 800/221-9884, 800/942-7315. 512K minimum memory; requires external drive. \$99.95.

Illustrator

Version 1.1. Adobe Systems, Inc., 1870 Embarcadero Rd., Palo Alto, CA 94303, 415/852-0271, 800/292-3623. Key-disk copy protection. 1MB minimum memory; scanning device and laser printer highly recommended. \$495.

Jazz

Version 1A. Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142, 617/577-8500. Key-disk copy protection; installs on hard disks. 512K minimum memory; requires external drive. \$395.

LaserPaint

Version 1.1. LaserWare, Inc., P.O. Box 668, San Rafael, CA 94915, 415/453-9500, 800/367-6898. Key-disk copy protection; installs on hard disks. 1MB minimum memory; hard disk or external drive recommended. \$495.

Mac3D

Version 2.0. Challenger Software Corp., 18350 Kedzie Ave., Homewood, IL 60430, 312/957-3475. 512K minimum memory; requires 800K drive storage; external drive recommended. \$249.

MacDraft

Version 1.2a. Innovative Data Design, Inc., 2280 Bates Ave., Ste. A, Concord, CA 94520, 415/680-6818. 512K minimum memory; external drive recommended. \$269.

MacDraw

Version 1.9 for the 400K disk; version 1.0 for the 800K disk. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K with external drive recommended. \$195.

MacMovies

Version 1.2. Beck-Tech, 41 Tunnel Rd., Berkeley, CA 94705, 415/548-4054. 512K minimum memory; external drive recommended. \$99.

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.

Microsoft Chart

Version 1.02. Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073, 206/882-8080, 800/426-9400. 128K minimum memory. \$125.

Microsoft Excel

Version 1.04. Microsoft Corp. (see *Microsoft Chart* for address). 512K minimum memory; external drive recommended. \$395.

Microsoft Works

Version 1.01. Microsoft Corp. (see *Microsoft Chart* for address). 512K minimum memory; external drive recommended. \$295.

PageMaker

Version 2.0. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. 512K minimum memory; requires 512K with hard disk or 512KE with 800K external drive; Mac

Plus with hard drive and PostScript printer recommended. \$495.

Phoenix 3D Level One

Version 1.2. Dreams of the Phoenix, Inc., P.O. Box 10273, Jacksonville, FL 32247, 904/396-6952. 512K minimum memory; external drive recommended. \$49.95.

PowerPoint

Version 1.0. Forethought, Inc., 250 Sobrante Way, Sunnyvale, CA 94086, 408/737-7070, 800/622-9273. 512K minimum memory; Mac Plus with external drive recommended. \$395.

Pro3D

Version 1.0. Enabling Technologies, Inc., 600 S. Dearborn St. #1304, Chicago, IL 60605, 312/427-0408. 512K minimum memory. \$349.

ReadySetGo

Version 4.0. Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653, 201/845-6100, 800/526-9073. 512K minimum memory; 512K with external drive recommended. \$395.

Scoop

Version 1.0. Target Software, Inc., 14206 S.W. 136th St., Miami, FL 33186, 305/252-0892, 800/622-5483. 512K minimum memory. \$495.

Smartcom II

Version 2.2b. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348, 404/441-1617. 128K minimum memory. \$149.

SpaceEdit

Version 2.0. Abvent, 9903 Santa Monica Blvd. #268, Beverly Hills, CA 90212, 213/659-5157. Key-disk copy protection. 512K minimum memory; Mac Plus with external drive recommended. \$625.

SuperPaint

Version 1.0. Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory; Mac Plus recommended. \$99.

Switcher

Version 5.01. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K recommended. \$19.95.

Tempo

Version 1.2. Affinity Microsystems, Ltd., 1050 Walnut St. #425, Boulder, CO 80302, 303/442-4840, 800/367-6771. 512K minimum memory. \$99.

Trapeze

Version 1.1. Data Tailor, Inc., 1300 S. University Dr. #409, Fort Worth, TX 76107, 817/332-8944, 800/443-1022. 512K minimum memory; external drive recommended. \$295.

VideoWorks

Spinnaker Software Corp., 1 Kendall Sq., Cambridge, MA 02139, 617/494-1200. Key-disk copy protection. 128K minimum memory. \$99.95.

Pages 205 to 214 *Insights on More*

Acta

Version 1.2. Symmetry Corp., 761 E. University Dr., Mesa, AZ 85203, 602/844-2199, 800/624-2485. 128K minimum memory; 512K recommended. \$59.95.

Cricket Draw

Version 1.01. Cricket Software, Inc., 30 Valley Stream Pkwy., Malvern, PA 19355, 215/251-9890, 800/345-8112. 512K minimum memory; external drive and LaserWriter recommended. \$295.

FullPaint

Version 1.1. Ann Arbor Softworks, Inc., 2393 Teller Rd. #106, Newbury Park, CA 91320, 805/375-1467. 512K minimum memory; external drive recommended. \$99.95.

MacDraw

Version 1.9 (400K disk); version 1.0 (800K disk). Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory. 512K with external drive recommended. \$195.

More

Version 1.1. Living Videotext, Inc., 117 Easy St., Mountain View, CA 94043, 415/964-6300. 512K minimum memory; requires external drive; hard disk recommended. \$295.

PageMaker

Version 2.0. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. 512K minimum memory; requires 512K with hard disk or 512KE with 800K; Mac Plus with hard drive and PostScript printer recommended. \$495.

Preview

Version 1.3. Shareware by Computer:applications, Inc., 12813 Lindley Dr., Raleigh, NC 27609, 919/846-0023. 512K minimum memory. \$10.

ReadySetGo

Version 4.0. Letraset USA, 40 Eisenhower Dr., Paramus, NJ 07653, 201/845-6100, 800/526-9073. 512K minimum memory; 512K with external drive recommended. \$395.

Spellswell

Version 1.3J. Working Software, Inc., 321 Alvarado, Ste. H, Monterey, CA 93940, 408/375-2828, 800/331-4321, 800/851-1986. 512K minimum memory. \$74.95, medical dictionary \$99.95.

SuperPaint

Version 1.0. Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory; Mac Plus recommended. \$99.

Switcher

Version 5.01. Apple Computer, Inc., 20525 Mariani Ave., Cupertino, CA, 95014, 408/996-1010. 128K minimum memory; 512K recommended. \$19.95.

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.

Thunder

Version 1.01. Electronic Arts/Batteries Included, 1820 Gateway Dr., San Mateo, CA 94404, 415/578-0316. 512K minimum memory. \$49.95.

Pages 217 to 225 *Mac Graphics Tools*

Cricket Draw

Version 1.01. Cricket Software, Inc., 30 Valley Stream Pkwy., Malvern, PA 19355, 215/251-9890, 800/345-8112. 512K minimum memory; external drive and LaserWriter recommended. \$295.

FullPaint

Version 1.1. Ann Arbor Softworks, Inc., 2393 Teller Rd. #106, Newbury Park, CA 91320, 805/375-1467. 512K minimum memory; external drive recommended. \$99.95.

MacDraw

Version 1.9 (400K disk); version 1.0 (800K disk). 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. (see *MacDraw* for address). 128K minimum memory; 512K with an external drive recommended. \$125.

PageMaker

Version 2.0. Aldus Corp., 411 First Ave. S #200, Seattle, WA 98104, 206/622-5500. 512K minimum memory; requires 512K with hard disk or 512KE with 800K; Mac Plus with hard drive and PostScript printer recommended. \$495.

SuperPaint

Version 1.0. Silicon Beach Software, Inc., P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory; Mac Plus recommended. \$99. □

Macworld Best-Sellers

Months on chart	Last month	This month	
Business Software			
26	1	1	Microsoft Word <i>Microsoft</i>
6	2	2	Microsoft Works <i>Microsoft</i>
18	3	3	Microsoft Excel <i>Microsoft</i>
14	4	4	PageMaker <i>Aldus</i>
5	10	5	SuperPaint <i>Silicon Beach Software</i>
10*	6	6	MacWrite <i>Apple Computer</i>
23	5	7	MacDraw <i>Apple Computer</i>
10*	7	8	MacPaint <i>Apple Computer</i>
10	9	9	Omnis 3 <i>Blyth Software</i>
6	—	10	MacDraft <i>Innovative Data Design</i>
Education Software			
10	1	1	Math Blaster <i>Davidson and Associates</i>
10	2	2	KidsTime <i>Great Wave Software</i>
6	3	3	MasterType <i>Scarborough Systems</i>
9	—	4	Typing Tutor III <i>Simon and Schuster Computer Software</i>
Entertainment Software			
10	1	1	Flight Simulator <i>Microsoft</i>
6	2	2	Dark Castle <i>Silicon Beach Software</i>
10	4	3	MacGolf <i>Practical Computer Applications</i>
2	—	4	Balance of Power <i>Mindscape</i>
5	—	5	The Ancient Art of War <i>Bröderbund Software</i>
Networking/Data Communications			
6	2	1	TOPS <i>Centram Systems</i>
10	1	2	AppleTalk <i>Apple Computer</i>
10	3	3	MacServe <i>Infosphere</i>
2	4	4	AppleShare <i>Apple Computer</i>
17	5	5	MacTerminal <i>Apple Computer</i>

Months on chart	Last month	This month	
Hard Disk Drives			
6	1	1	Apple HD-20SC <i>Apple Computer</i>
9	3	2	Apple Hard Disk 20 <i>Apple Computer</i>
10	2	3	DataFrame 20 <i>SuperMac Technology</i>
9	5	4	HyperDrive 20 <i>General Computer</i>
1	—	5	Rodime 20 Plus <i>Rodime Peripheral Systems Division</i>

Months on chart	Last month	This month	
Books			
10	1	1	Excel in Business <i>Douglas Cobb, Microsoft Press</i>
9	2	2	Inside Macintosh <i>Addison-Wesley</i>
4	3	3	Creative Programming in Microsoft BASIC <i>Steve Lambert, Microsoft Press</i>
3	5	4	Microsoft BASIC Book/Macintosh Edition <i>Walter A. Eitlin and Gregory Solberg, Osborne/McGraw-Hill</i>
10	4	5	The Printed Word <i>David A. Kater and Richard L. Kater, Microsoft Press</i>

Product Watch

Editors' choice:

Other recent products of particular interest:

Findswell *Working Software* Finder enhancement software

The Realist *Letraset* gray-scale graphics program

Super 3D *Silicon Beach Software* color 3-D graphics

Source: Exclusive InfoCorp survey of more than one hundred Macintosh retailers and selected mail-order suppliers. Covers sales during April 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.”

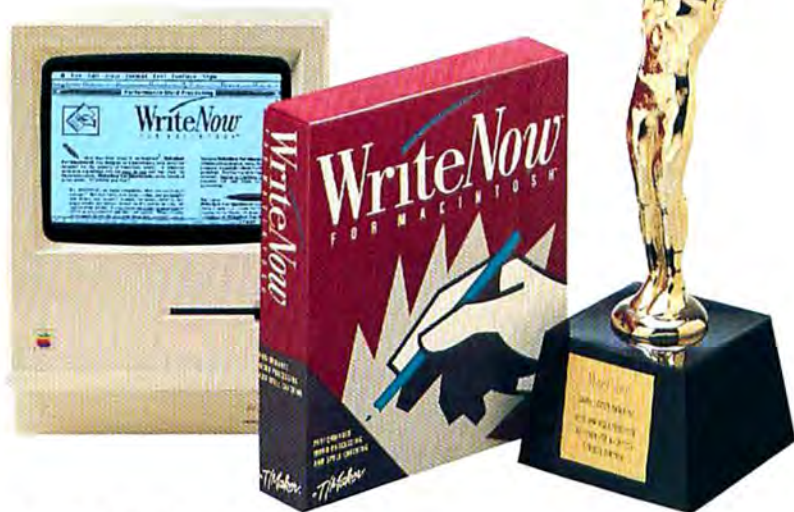
Steve Jobs,
NeXT Inc.

“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

“...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



Best New Word Processor
MacUser Magazine 1986

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 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

T/Maker®

Pagemaker 2.0 now
imports & exports
WriteNow
documents.

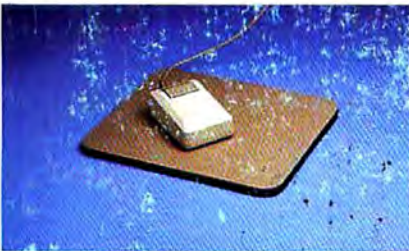
Our engineers have never had a suntan.



System Saver Mac, \$99.95*



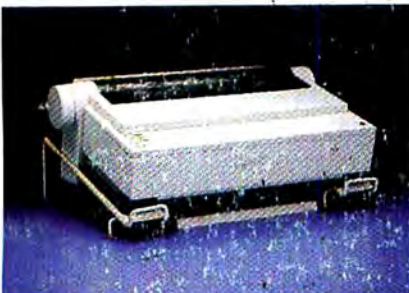
Tilt/Swivel, \$34.95



Mouseway, \$9.95



Anti-Glare Filter, \$49.95*



Printer Stand, \$19.95



Turbo Mouse, reg. or ADB, \$129.95

This time of year, most people enjoy lying on the beach, soaking up the sun. Not our engineers. They'd rather be in the office, thinking up new Maccessories®.

It was the same last summer. They got a bigger kick out of designing System Saver® Mac than most people get from a month at the shore.

This winter, when they dreamed up Turbo Mouse™ and Printer Mufflers, we offered them a bonus trip to Jamaica, but they were having too much fun to go.

This summer it's the new ADB Turbo Mouse and Mouse Pocket for the Mac SE and Mac II. An Apple® Security System (to keep your Mac from going to the beach without you). And a Disk Pocket (so you can spend more time running applications, and less time running to your disk case).

For a free brochure, or information on where to buy all this great stuff, call (800) 535-4242. In NY, call (212) 475-5200.

And don't feel too bad for these guys. We're taking them to the beach for a barbecue on Labor Day. If we can get them out of the office.

KENSINGTON ◀



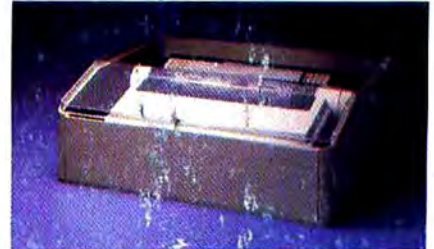
Apple Security System, \$49.95



Disk Pocket, \$9.95



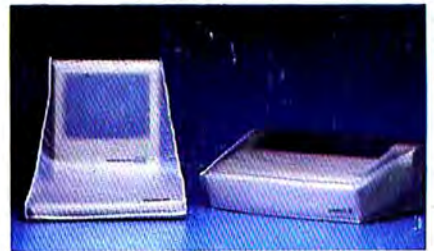
Copy Stand, \$29.95



Printer Muffler 80, \$59.95



AppleTalk Clips, \$25.00 for 25



Dust Covers, \$9.95 to \$13.75



Mouse Pocket, reg. or ADB, \$9.95



Disk Drive Cleaning Kit, \$29.95

*Available in two colors — original Apple Beige and new Apple Platinum.

Trademarks: System Saver, Maccessories, Turbo Mouse, Printer Muffler/Kensington Microware Ltd. Apple, Mac, Macintosh, Apple Talk, ImageWriter/Apple Computer Inc. © 1987 Kensington Microware Ltd.

Circle 11 on reader service card