INSIDE: Apple's Hot New Macintosh IIcx!

Connectivity Face-Off

Ethernet vs. LocalTalk

TOPS vs. AppleShare

Power Presentations: MORE II vs. Persuasion

Remote Access: Long-Distance Computing

Top Designers Reveal Their Font Secrets

The 4th Annual Editors' Choice Awards

The Winners
The Losers
The Year's Surprises

Over 350 Macintosh Reviews!

WriteNow 2.0
Works 2.0
LetrasStudio
MacSchedule
New CD-ROMs
...and more!
It began with a phone call in 1981. And what resulted is the stuff history is made of: together Microsoft and Apple were going to offer corporate America a new way to compute.

With a disarming little computer called a Macintosh.

At Microsoft we knew that, with the right software and the right engineering, this new machine could literally change the way people work. So for the next three years we were unflinchingly committed to making the Macintosh the most functional, intuitive, powerful business computer ever used.

Finally, in 1984, the invasion began. And since that time we have created state-of-the-art applications for the Macintosh that have spawned a new breed of business person:

The Macintosh enthusiast.

With unparalleled zeal, they have made every one of our products a top seller. Starting with Microsoft Word, the single most popular Macintosh application in history. In return, we have taken word processing to an even higher plane with Microsoft Word 4.0. Menus can be customized. Tables can be set up automatically, without worrying about tabs. And all along, you get true WYSIWYG, so you can edit and tweak to your heart's content.

As for those who dabble in lighter word processing, Microsoft Write is unequalled in its class and a superb value. It offers footnote capabilities. A spectacular spell-checker. As well as Print Preview. Words alone, however, fail to define the scope of Microsoft's involvement with the Macintosh.

Enter Microsoft Excel. When it was introduced, Microsoft Excel was the most compelling reason to buy a Macintosh. The business user wanted power, and Microsoft Excel had loads of it. Today, with the introduction of version 1.5, eight out of ten of those Macintosh users who use a spreadsheet use Microsoft Excel.

It was the graphic capabilities of the Macintosh that allowed Microsoft
to bring a new kind of functionality to business. Via desktop presentations, a category we defined.

With PowerPoint® 2.0, you alone can generate an entire presentation from start to finish: overheads, color 35mm slides, speaker notes and handouts. And only PowerPoint 2.0 can give you built-in color schemes with dazzling special effects for impactful presentations.

In the database market, File is the leader in its price class. Fast and flexible, it makes creating forms a breeze. And when you use it with Microsoft Word, you can add your personal touch to form letters and other mass mailings.

As for value, it doesn't get much better than Microsoft Works 2.0. With five tools seamlessly integrated into one program—word processing, spreadsheet, database, drawing and communications—this versatile product can handle a myriad of business needs.

And lest we forget those with a talent for developing applications, we offer Microsoft QuickBASIC, the practically priced development tool that includes everything you need for fast programming, testing and execution.

As effectively as each of these products performs in solo, when used in combination your productivity really soars. The unifying link is Microsoft Mail. It has made workgroup computing a reality by allowing you to send and receive electronic mail, share data, files, graphics and a multitude of information.

For more information, you can call (800) 541-1261, Dept.188.

The next time you want to know the real story about Microsoft and the Macintosh, take a look at our software. And let it unfold in your business.
At last, the real story behind Microsoft and Apple is about to unfold.
FOR: Bill
DATE: 7/16/81
TIME: 3:50 A.M.
M: Steve
OF: Apple
PHONE: 408-996-1010

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MESSAGE:

SIGNED: Lisa

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To an architect,

fine hairlines like ours are pure poetry.

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

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

Auto-resizing helped this VP of Sales display the fruits of his labor, graphically.

How an architect, an MBA, and an art director developed instant talent in precision drawing. And a gorilla developed mild indigestion.

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

Easy enough for almost any primate to master.

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

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

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

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

Like we said: go bananas.

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

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

After all, power like this can be very apeeling.

Canvas 2.0 (including Canvas 2.0 DA) $299.95
Canvas 2.0 Demo Disk $9.95
Site licenses available

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

3305 Northwest 7th Avenue, Miami, Florida 33122

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These unretouched drawings were created in Canvas 2.0 and output to a Mirrus film printer. Please circle 80 on reader service card.
Now you can buy your Macintosh II with a powerful tool which will dramatically increase your daily productivity. A Radius Display. Radius offers displays for every type of Macintosh user and every type of Macintosh software application.

If you're involved primarily in intensive word processing and database management, we heartily recommend our FPD. The Radius Full Page Display shows you an entire 8½" x 11" paper-like page. With a refresh rate of 69 Hz, you have a virtually flicker-free display ideally suited for working with software like Microsoft Word and 4th Dimension.

If you're incorporating your word processing into page layout and design, we suggest that the Radius Two Page Display is clearly the more appropriate choice. For these reasons:

You have the same flicker-free resolution of the FPD and a full two-page horizontal layout. The ideal environment for viewing a magazine spread created in PageMaker or architectural plans drafted in MacDraft.

Or, if you're putting photographs into your Macintosh, our Radius Gray Scale Display lets you create and manipulate life-like images in 256 shades of gray across the same expansive TPD. Scan your photographs, then do your own retouching using Image Studio or Digital Darkroom. When you're ready, just print out on a LaserWriter...
EASONS WHY UR MACINTOSH II AT ORIZED DEALER.

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

So before you buy your Macintosh II, call 1-800-527-1950 ext. 84 for a brochure and the name of your nearest Radius Authorized Dealer. It's clearly the thing to do.

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Intelligent Hardware™

or download to a Linotronic. You'll get startling results.

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

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

Create color layouts with Quark XPress. Draw dynamic 3D color illustrations. Design a new circuit board. Or produce and direct your own presentations. All in vivid, living color. And should you need it, our Color Display is more than willing to work in gray scale.

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

All of our displays offer you Tear-off Menus that can be positioned anywhere on the screen. As well as adjustable menu and menu bar type size.

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"Two or three years from now, the typical laser printer will be a lot like the Business LaserPrinter™: small, light, with a SCSI connector for a hard disk, and inexpensive."

That's how Publish! magazine characterized our Business LaserPrinter (BLP), a Postscript® printer for Macintoshes®, IBM's® and IBM clones. We'd only add that the future has arrived ahead of schedule.

Simply stated, the BLP is a better way to translate the language called Postscript into the graphics, words and numbers people use to communicate in business.

Better because the BLP lets you—or anyone else on your AppleTalk® network—produce superior text with the aid of 39 fonts (four more than our nearest competitor).

Finally, the BLP even takes better care of your bottom line. In fact, you can buy a BLP and a dedicated hard disk for less than the price of a LaserWriter® II NT alone.

Someday, if Publish! magazine is right, other printers will offer all this. But if you prefer not to wait, just visit your authorized GCC Technologies dealer for a BLP demonstration. For more information, or the name of a dealer near you, phone (617) 890-0880.*

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For five years, the Macintosh community has delivered excellence in innovation left and right. The key word in that sentence is community. Apple has done some insanely great things, but it hasn’t done them alone. Credit Apple with the vision but don’t forget that those early days were pretty bleak. The first Macs were fine productivity tools, but only if your idea of word processing was limited to eight-page memos embellished with clip art of the footwear of your choice or if your chosen field was swine-farrow management. For a few tense months, those were about the only games in town, Mac-softwarewise.

Dismal days indeed. But then something magical happened: Software developers began crawling out of the woodwork. Third-party wizards brought us the magic of animation. The allure of sound. Outliners. Presentations. And third parties pushed the envelope of the Mac interface to bring user friendliness to productivity applications like telecommunications, financial management, and data storage and analysis. And on the hardware front, we witnessed the coming of age of scanners, printers, mass storage, optical media, networks — well, you get the idea. The third-party community has been busy.

There are two other important elements to the Mac community. First, there’s been you: the users, the Macintosh champions, who brought Macs into your homes and workplaces (sometimes literally sneaking them in through the back door). Your feedback — on technical-support phone calls, on registration cards, on BBS threads, in discussions at user group meetings, and by voting with your wallets, one-on-one with your salesperson — has provided an endless source of ideas, constructive criticism, and encouragement to the software and hardware producers. And your skyrocketing numbers have provided an incentive for them to excel.

The Mac community has one more constituent that we shouldn’t forget: the competition. Big Blue, NeXT, Sun, Commodore, and others have done their part to make sure that Mac developers stay on their toes.

A Surge of Excellence

Third-party wizards brought us the magic of animation. The allure of sound. Outliners. Presentations. And third parties pushed the envelope of the Mac interface to bring user friendliness to productivity applications like telecommunications, financial management, and data storage and analysis. And on the hardware front, we witnessed the coming of age of scanners, printers, mass storage, optical media, networks — well, you get the idea. The third-party community has been busy.

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CHOICE CHOICES

It all adds up to an overwhelming universe of choices. Every month, our goal is to steer you toward the products and techniques that best suit your particular needs. And once a year, we award our Editors’ Choice Awards — the Eddies — to products that are so outstanding that we think they deserve special recognition. In this issue’s roundup of Eddy winners, you’ll find 34 products that represent the cream of this year’s bumper crop.

One of this year’s recipients holds a special place on the roster of winners. CE Software, hardly a newcomer to Eddydom, has given the Mac community plenty to cheer about — including some great shareware and freeware. When viruses first hit the Mac, Don Brown of CE Software was quick to respond with Vaccine. And rather than exploiting the sudden wave of virophobia, he made the product universally available. In a year when our columnists and letter-to-the-editor writers argued about whether shareware was viable in a maturing Mac market-

CAVEAT EDDY

The Eddies are MacUser’s ultimate seal of approval, and many Eddy winners prominently feature their awards in their advertising. While we’re delighted that they choose to do so, you should realize exactly what the Eddy does and doesn’t signify. The Eddies are awarded for the best new product in a specific category for a given year. So, for example, the candidates for the best new relational database for 1989 aren’t in the same category as flat-file managers, and they haven’t been weighed against products released in previous years. (Major upgrades of older products are considered for each year’s awards, though.) Also, don’t confuse our award with a similar (but unrelated) award from a European magazine. With these caveats in mind, let Eddy be your guide to the best of the best. (And for a look at the best of the worst, check out the “Shreddy” awards in Scrapbook.)

THE NETWORKSHOP

Networks. In today’s multi-Mac environment, you can’t live without ‘em, but sometimes you can’t live with ‘em, either. This month, we’ve got a special package of articles designed to help you tame your network demons and optimize those sometimes-dangerous liaisons. (You’ll also find connectivity solutions this month place. Vaccine sidestepped the debate and provided a measure of antiviral protection to us all.

MAY 1989
WE PUT PERSONAL SCANNING WITHIN YOUR REACH.

Announcing LightningScan, the new hand-held scanner for Macintosh. From Thunderware.

Now one quick pass is all you need to scan any image up to four inches wide. With resolution settings up to 400 dots per inch, LightningScan makes almost any scanning job easier to handle. And because LightningScan is controlled by the software that helped make ThunderScan famous, you have the powerful tools you need to enhance and edit your images. As for graphics compatibility, you name it: from PageMaker and Illustrator to ImageStudio and Digital Darkroom.

At its suggested retail price of $549, LightningScan makes the benefits of personal scanning very easy to grasp.

Thunderware
21 Orinda Way, Orinda, CA 94563 415/254-6581 FAX: 415/254-3047

NEW DIRECTIONS

The past year has seen lots of growth and change for MacUser and, more personally, for me — and the next year promises even more. Starting next month, I’ll be moving on to a new challenge within Ziff-Davis, and MacUser will have a new editor-in-chief: Paul Somerson, acclaimed columnist, best-selling computer-book author, and one of the guiding forces behind PC and PC Computing magazines, who’s convinced that the Mac represents the future of computing. I’ve enjoyed being a part of your Mac experience and would like to thank the MacUser staff and readers for all they’ve shared with me. Though you won’t be hearing from me in this column, I’ll still be an active part of the Mac community — but from a different window.

FREDERIC E. DAvis
EDITOR-IN-CHIEF
“SUM, or to be more precise, Symantec Utilities for Macintosh, is the slickest and most important set of utilities you can get for your Mac. To have a hard disk and not have SUM is sheer folly.”

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

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

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

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

MacUser's highest possible rating: 5 Mice.
Come what May.

Hold on to your hats! Hold on to your feet! And hold on to your original packaging and documentation! Because, MacConnection is now offering 30 and 60 day money-back guarantees on products from selected companies. (Look for the companies which are marked with a star and listed in red.) If you are dissatisfied with your purchase of these products for any reason, just call for a hassle-free return authorization.

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The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

**ACCOUNTING & FINANCE**

* Aatrix Software ... 30 day MBG
  3976 Aatrix Payroll 3.05 ... 99.
  4020 Aatrix TimeMinder 2.0 ... 109.
  4021 Aatrix TimeCard 2.0 ... 109.
  3958 Aatrix Payroll PLUS 3.02 ... 159.

* Bedford Software
  4977 Simply Accounting 1.04 ... 219.
  1613 Rags to Riches Ledger 3.1 ... 119.
  1614 Rags to Riches Payables 3.1 ... 119.
  1617 Rags to Riches Receivables 3.1 ... 119.
  1622 Rags to Riches 3-Pak special, see box
  1612 Inventory Control 2.6 ... 239.
  1615 Professional Billing 2.9 ... 239.
  1616 Professional 3-Pak ... 359.
  1618 Retail Business 3-Pak ... 359.

* Doc Software
  4502 Dac-Easy Light 1.0 ... 44.
  4955 InforWork ... 275.
  2425 Quicksoft 1.01 ... 33.

* MECA ... 60 day MBG
  2796 Managing Your Money 2.0 ... 127.

**GRAPHICS & DESIGN**

* Aegis Development ... 60 day MBG
  4596 Showcase FX 1.0 ... 205.
* Altays ... 30 day MBG
  4830 KeyMaster 1.0 ... 52.
  1194 FONtastic Plus 2.0 ... 52.
* Broderbund Software
  4055 PrintMaster Impact 2.5B ... 35.
  1427 Print Shop 1.3 ... 35.
  4501 Drawing Table 1.0 ... 76.
* Casady & Greene ... 60 day MBG
  1575 Fluent Fonts 2.0 ... 27.
  4835 Fluent Fonts/SC/ITC Garamond ... 39.
* Challenger ... 30 day MBG
  1610 Mac3D 2.1 ... 119.

**NUMBERS & DATABASES**

* Abacus Concepts ... 60 day MBG
  4482 StatView SE + Graphics 1.03 ... 229.
  4481 StatView II 1.03 ... 339.
* Access Technology ... 60 day MBG
  1346 Trapazine 2.1 ... 449.
* Aegis ... 30 day MBG
  1010 4th Dimension 1.0 ... 399.
  4024 4th Dimension Runtime 1.06 ... 229.
* Ashton-Tate
  4098 FullImpact 1.0 ... 249.
* Blyth Software
  4318 Omnis 6 Plus/Express 3.3 ... 399.
* Borland International
  1508 Reflex Plus 1.0 ... 189.
* BrainPower ... 60 day MBG
  1532 DataScan 1.0 ... 118.
  1533 DesignScope 1.15 ... 128.
* Bray Technology ... 30 day MBG
  1539 MacCalc 1.2 ... 77.
* Chang Labs ... 60 day MBG
  1611 C.A.T. 2.0 ... 229.

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* Claris
  4196 FileMaker II 1.0 ... 229.
  1125 MacProject II 1.0 ... 379.
* Fox Software ... 30 day MBG
  4195 FoxBASE / Mac ... 205.
  4844 FoxBASE / Multi-User ... 315.
* Microsoft ... 30 day MBG
  4720 101 Macros for Excel ... 37.
* MicroPress ... 30 day MBG
  2866 File 2.0A ... 129.
  2884 Works 2.0 ... 169.
  2865 Excel 1.5 ... 255.

**Software Discoveries**

* 30 day MBG
  4664 Milo 1.0 ... 159.
* Preferred Publishers ... 30 day MBG
  4780 Dealerize 1.01 ... 75.
  4582 Panorama 1.1 ... 207.
* Rubicon Publishing ... 60 day MBG
  3272 Dinner At Eight Encore Edition (CP) ... 45.
* Satori ... 30 day MBG
  3320 BulkMailer 2.2 ... 79.
  3321 BulkMailer Plus 3.22 ... 195.

* DAE Software
  1537 StatView 512 + 1.2 ... 175.
  1534 MathView Professional 1.1 ... 139.
  1537 StatView 512 + 1.2 ... 175.
  3960 ArchText 1.03 ... 179.
  4066 The Analyzer Bundle (includes DataScan, DesignScope, and StatView 512 + ) ... 319.

**Microlytics ... 60 day MBG**

Element: Word Processor 220—Holds over 4.5 Meg of information, including 100,000 spelling words and 220,000 synonyms all electronically at your fingertips. Includes four AAA batteries ... $79.

**Microlytics / Aatrius**

* Aatrix Payroll 3.05 ... 99.
* Aatrix Payroll PLUS 3.02 ... 159.
* Aatrix TimeCard 2.0 ... 109.
* Aatrix TimeMinder 2.0 ... 109.
* Aatrix Payroll 3.05 ... 99.
* Aatrix TimeCard 2.0 ... 109.
* Aatrix TimeMinder 2.0 ... 109.
* Aatrix Payroll PLUS 3.02 ... 159.
Come what June?

Portraits... 30 day MBG
Key-Master 2.0—Imports art from most drawing programs into a high-resolution PostScript font. Accessing commonly used graphics, logos, and letterheads is as simple as touching a key... $52.

Claris
1123 MacPaint II 2.0... 99.
1117 MacDraw II 1.0... 309.
4815 SmartForm Designer... 309.
4814 Claris CAD... 629.

 Cricket Paint 1.0... 99.
1667 Cricket Draw 1.1... 168.

A Denisea Software... 30 day MBG
1769 Canvas 2.0... 159.

DreamMaker... 60 day MBG
4088 MacGallery (MacPaint format)... 27.
4840 Ciphers: Business 1... 95.
4841 Ciphers: Business 2... 95.

Dubl-Click Software
3972 World-Class Fonts! Originals (1-2)... 45.
3973 World-Class Fonts! The Stylish (3-4)... 45.
3974 World-Class Fonts! The Giants (5-6)... 45.
3964 WetPaint Classic Clip-Art (1-2)... 45.
3965 WetPaint For Publishing (3-4)... 45.
3966 WetPaint Animal Kingdom (5-6)... 45.
3967 WetPaint Special Occasions (7-8)... 45.
3968 WetPaint Printer's Helper (9-10)... 45.
3969 WetPaint Industrial Revolution (11-12)... 45.
3970 WetPaint Old Earth Almanac (13-14)... 45.
3971 WetPaint Island Life (15-16)... 45.
3940 WetPaint All The People (17-18)... 45.

Electronic Arts
4315 Studio3 1.0... 319.

Aegis Development... 60 day MBG
Showcase FX 1.0—A feature-packed special effects and animation system for fonts & graphics. Enhance your graphic images with powerful, unique headlines by applying exciting styles to any font... $205.

PUBLISHING & PRESENTATIONS
Adobe Systems
1138 The Collector's Edition... $79.
4816 The Collector's Edition II... 149.
1142 Newsletters/Publishing Pack 1... 255.
4565 Forms and Schedules Pack 2... 309.
4566 Presentations Pack 3... 309.
1137 Adobe Illustrator '88 1.6... 309.

Farallon Computing... 30 day MBG
Timbuktu Remote—The long-distance version of Farallon's Timbuktu screensharing and file transfer application. Use with PhoneNET or other AppleTalk networks... $195.

MacConnection carries the entire Adobe Type Library (volumes 1-82). Listed below are Adobe's newest typefaces at press time.

4577 67 ITC Clearface... 245.
4578 68 Americana... 125.
4579 69 ITC Serif Gothic... 182.
4817 70 Century Expanded... 95.
4818 71 Serifa... 182.
4819 72 Caslon Open Face... 63.
4820 73 Frutiger... 245.
4821 74 Centennial... 245.
4822 75 Stemple Garamond... 125.
4823 76 Weiss... 125.
4824 77 Garamond 3... 125.
4825 78 Universal News Com/Greek... 95.
4826 79 Avenir 1... 182.
4827 80 Avenir 2... 182.
4828 81 Bauhaus... 126.
4829 82 Antique Olive... 125.

Aldus
1330 Freehand 2.0... 349.
4751 Persuasion 1.0... 389.
1331 PageMaker 3.01... 399.

Broderbund
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Just for the record, all the ads in this series feature real live MacConnection customers and the real live letters they wrote us. Really!
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<td>62.00</td>
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**OUR POLICY**

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- No sales tax.
- All U.S. shipments insured; no additional charge.
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- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
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<td>30 day MBG</td>
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<tr>
<td><em>Traveling Software</em></td>
<td>60 day MBG</td>
<td>$83.99</td>
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### Cutting Edge

800K External Disk Drive: Sleek, new drive features the latest in technology. Compatible with 52K, Plus, and SE. Includes disk access light and manual eject button. $175.

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### Kurta

- 2604 IS ADB Tablet $255.
- 2605 Cordless 4 Button Cursor $65.
- **LYNX Computer** 30 day MBG $65.
- 1211 LYNX Trackball $65.
- 1212 LYNX Trackball ADB $65.
- *Mobius Technologies* 60 day MBG $65.
- 4846 DataDesk 30 day MBG $85.
- 2808 A + Mouse $85.
- 2809 A + Mouse ADB $85.
- *Nutmeg Systems* 30 day MBG $85.
- 2992 15" Monitor for Mac Plus call $95.
- 4006 19" Monitor for Mac SE $134.99.
- 4007 19" Monitor for Mac II $144.99.
- 4849 LCD Interface (Kodak DataShow) $99.99.
- Olduvai Software $79.
- 3035 Read-ITS 1.08 $79.
- 3034 Read-ITS 2.0 $249.
- *Orange Micro* 30 day MBG $79.
- 4488 Grappler Spooler $39.
- 3036 Grappler C/Mac/GS $79.

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- 3036 Grappler C/Mac/GS $79.
Letters

Simon Edkins of Upper Darby, Pa., enjoyed Louise Kohl’s January ’89 column, and “not just because of the references to science fiction literature. I suspect that she, like me, mentally winces every time she hears, reads, or is obliged to use that silly, arrogant phrase artificial intelligence. Years ago, I wrote a term paper for a graduate course in neuropsychology in which I coined the term extrabiological intelligence; a machine possessing this kind of intelligence would be called an e-b brain. Alas, as a class assignment, the paper was never published and so my coinage went unseen by anyone but the professor.”

MacUser is proud to introduce these two new pieces of jargon into the literature. Send your comments and coinages to MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. All letters become the property of MacUser, and we reserve the right to edit any letters we print.

HIERARCHY ANARCHY

I’m a not-entirely-satisfied WordPerfect user who agrees with most of Charles Spezzano’s WordPerfect review (“Something Less Than Perfect,” February ’89). But his objections to WordPerfect’s hierarchical menus constitute barking up the wrong tree. That contribution to the human interface comes from Apple. WordPerfect improves on the Apple-supplied tool in that if you release the mouse while on the main menu item, the submenu reappears at the top of the screen under the menu header, where its items can be selected by a keystroke (the reborn submenu has numbered items) or with a mouse click. Combine this with the liberal use of Command-key equivalents, and you end up with a very slick and usable user interface.

EDWARD NUTTER
SAN DIEGO, CALIF.

CLAUSE AND EFFECT

In the March ’89 article “Interactive Multimedia: Discovery by Design,” you explain the illustration of the trout in the milk with a statement that A causes B, which in turn causes C. Could you please offer a fuller explanation? Also, is a poster-sized copy of this illustration available?

MICHAEL L. STELLPFLEGG
MADISON, WIS.

Many readers [and editors — Ed.] have expressed curiosity regarding the connection between multimedia and a trout in the milk. The reference is to a well-known quote of 1854 (at least it is well known to me) that goes as follows: “Some circumstantial evidence is very strong, as when you find a trout in the milk.” I would also remind you that while you can take a trout out of the milk, you can’t take the milk out of a trout.

As for the assertion that A causes B, which in turn causes C — well, you’ve got me there. I retract that. We were under deadline pressure.

Alas, there is no poster. However, there is a disk. And from this disk you will learn which well-known person...

D-D-D-DOS FOR ALL, FOLKS!

I have a Mac Plus and need to run DOS software rather than just read it. In your February ‘89 Labs Brief on SoftPC, you mention that AST Research and PerfectEK Corp. have hardware solutions for running DOS software on a Mac. Are there any products that can give my Mac Plus this capability?

STEVEN M. ZAPILER
DENVER, COLO.

Unfortunately, I am not aware of any DOS boards for the Plus. You could add an accelerator board that contains a 32-bit 68020 processor and add a megabyte of RAM, which would enable you to run SoftPC. Check the “MiniFinders” section and the February ’89 MacUser Labs report “Maximum G-Force” for a list of boards that use the 68020 chip. In addition to being able to run DOS, you will notice significant performance improvements on normal Mac tasks. You can also reach AST at (714) 863-1333 and PerfectEK at (408) 263-7757. — JR

SEPARATION ANXIETY

After reading “From the Desktop” in your March ’89 DTP section, I tried your method of producing pages with PageMaker 3.0 and Adobe Separator 2.0. My page contained four boxes using PageMaker’s coloring system, plus a color logo created in Adobe Illustrator 88. The file was saved as an Encapsulated PostScript Format...
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*Price becomes $299 after May 31, 1989. Stand-alone version licensed for developers only. Requires Macintosh SE or SE Plus with 2MB of RAM, a 1MB hard disk space, 3.5MB floppy disk drive, and HyperCard 1.3. Includes 30-day money-back support, ORACLE database, HyperSQL database interface, SQL-Plus, SQL*Net, and Pro*C. Macintosh Programming Workshop required for programming usage. System Setup and Example Scripts. *Full networking version is $999 and includes SQL-Net. (See database communications.) Requires $199 ORACLE for Macintosh and 4th DIMENSION. **Requires Pro*C. **Requires Pro*C. *Full networking version is $199 and includes SQL-Net. (See database communications.) Requires $199 ORACLE for Macintosh and 4th DIMENSION. **Requires Pro*C.
Letters

(OEPSF) file and was separated using Separator. The logo separated, but the four PageMaker boxes did not. Why don't you use something like QuarkXPress that can separate color EPSF files?
LANE REEDER
TALLAHASSEE, FLA.

Oops. We omitted an important caveat in our discussion of color separations and PageMaker. We chose PageMaker because its interface is the closest to traditional pasteup techniques. While QuarkXPress is touted for its color-separation abilities, in reality it can only separate process colors created within the program or EPSF files imported from Illustrator 88 (see “Change of XPression,” January ’89). PageMaker’s new Color Extension (see this month’s DTP department) will close the gap between the two programs and will separate all EPSF files. More details and tips will be in next month’s installment of DTP.
— AA

BERNE, BABY, BERNE

As a developer for GreenLight Software, I was pleased to read Kristi Coale’s straightforward summary of linguistic localization and options for foreign marketing (“Multilingual Mac,” February ’89). As a copyright and computer law attorney, I was also pleased that the article attempted to deal with the complexities of international copyright protection. However, your sidebar on “The Berne Convention” was full of bugs.

The Berne Convention and moral rights have nothing to do with a signing nation’s “moral obligation to observe Berne’s copyright laws.” The Berne Convention is an international agreement that signing countries will treat foreign copyright owners no worse than they treat nationals.

Moral rights are distinguished from economic rights. In the U.S., we are familiar with the economic copyright rights: the right to reproduce, to prepare derivative works, to distribute, publicly perform, and display a copyrighted work. These rights may be licensed or sold. Thus, one can retain a copyright in the original U.S. edition of Oobleck software and license a French company to localize the software and translate the documentation for sale in French-speaking countries. Moral rights, on the other hand, cannot be transferred; they are personal to the human author. Moral rights include paternity, the author’s right to have his or her name associated with the work, and integrity, the right not to have the work changed by others.

Copyright law differs in each country. Some countries have strong moral rights, some tepid, some none. Eight countries belong to Berne, and even among the Berne nations, the extent of moral right protection differs greatly. The U.S. just voted to join Berne, effective March ’89. Congress declared that the U.S. has sufficient moral rights. In addition to the moral rights discussed in Berne, the U.S. is infusing its trade policy with increasing respect for intellectual property.

DANIEL KEGAN
CHICAGO, ILL.

POLY WANT AWRAPPER?

I write books, I write long letters to friends, I even write poems; I never write letters to the editor. But your announcement in your February ’89 Letters column impelled me to write. Thank you for deciding to discontinue the plastic mailing bags. I hate the fact that we smother our landscape with plastic mailers, plastic bags, and millions of tons of other nonbiodegradable plastic trash each year. I would much rather have my issues of MacUser arrive looking a little ratty than have you use the plastic mailers. I only wish that...

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68030 for the Mac II & the Mac IIx
How to give Ethernet a run for the money.

Some people may think the way to rev up a LocalTalk network is to rip the whole thing out, lay some heavy cable, and send your computers out for an Ethernet implant. Spending big bucks in the process.

TOPS suggests a less traumatic alternative: FlashBox, the fast and easy LocalTalk upgrade.

For just $189 per node, FlashBox delivers fully 80% of Ethernet performance for just 20% of the cost. How? By turning your LocalTalk network into a high-speed freeway moving data at FlashTalk rates of 770 Kbps.

Installation won't slow you down either. FlashBox plugs right into the back of your Mac and runs over your existing twisted-pair wire. It's 100% compatible with your current applications. It communicates at FlashTalk rates with PCs using TOPS FlashCard. And, unlike Ethernet, it lets you continue printing to your LaserWriter® without buying a costly gateway.

Best of all, FlashBox is available now. So stop by your nearest TOPS dealer and find out how to rev up your network without overhauling your budget. Or call the TOPS Division of Sun Microsystems at 1-800-445-TOPS, extension 106 (from outside the U.S. and Canada, call 1-415-769-8700, ext. 106).
If you make presentations, you're no stranger to pressing deadlines. Or last-minute changes. If only there were a quick, easy way to create powerful presentation visuals.

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Letters

other magazines (notably conservation magazines, like Audubon) would follow your lead.

Also, next time you redesign the magazine, please use more white space and fewer colors and other design elements. The current design is something along the lines of "Adobe School of Frenetic" (see the recent Adobe Type Catalog, for example). Finally, thanks for giving Louise Kohl her own column. I was getting tired of the preponderance of male voices.

SUSAN J. TWEIT
AMES, IOWA

SLEAZeware ADS, PART XIII

In the last paragraph of his letter, Virgil Bowden (January '89) states that it is your job to make judgments on our behalf. He could not be further from the truth. He says that you "pass the buck" by forcing your readers to draw the line (regarding adult software and ads) where you won't.

I would never order such a product, but to paraphrase Patrick Henry, I would — if necessary — defend to the death your right to advertise it.

MICHAEL STEINER
SIERRA VISTA, ARIZ.

That's a paraphrase of a translation of a paraphrase of something Voltaire wrote. Patrick Henry said, "Give me liberty or give me death!", which, the way things are going, might not be so far off the mark. — JB

MOUSE OF ILL REPUTE

This is going to sound nuts, but I thought I'd better pass it along. I'm a woman and have been using my SE progressively longer hours on the job, to the point where I now sometimes do 8 to 10 hours at a stretch.

Last time I went in for my physical, I was sent for a mammogram because — my mouse is responsible. The doctor told me to work with my elbow and wrist elevated as high as was comfortable, but I've chosen to switch hands.

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We'll send you Hard Driver™ formatting and diagnostics, backup, and numerous other utilities, 10Mb of public domain software, and cover you with our one year limited warranty. Free!

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<td>100Mb</td>
<td>$1147</td>
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VS300 300 dpi Scanner

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Eyes for the Macintosh. With a VS300 scanner, you've an unlimited supply of art and graphics. Scan in illustrations, photos, templates and more.
Hypercard ™ users - add fresh images to your stacks. Illustrator™ or Freehand ™ users - scan in original templates. Because the VS300 saves files in all standard formats, it's the perfect "front end" for any Macintosh OCR (Optical Character Recognition) software. And because it can operate as a Desk Accessory, you needn't exit your primary application to use the scanner.
Couple our scanner with a Mac and a faxmodem and voila... a fax machine!
Mirror Technologies Visionscan scanners cost half as much as competing scanners because its design eliminates needless moving parts. "If it were my money, I'd buy the Mirror Technologies Visionscan. Its price/performance ratio is unequaled." - Byte

<table>
<thead>
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<th>Model</th>
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<td>VS200 200 dpi Scanner</td>
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MIRROR
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_92. Mass Media _83. Scanners _84. Removables
Introducing the Macintosh IICX

Apple celebrates an early Christmas with a new CPU.

Instead of keeping us in suspense all year, Apple has already unwrapped its initial 1989 goodies. Less than two months after introducing the SE/30, Apple announced in March yet another powerful Mac and two new monitors, while promising even more in store for us before the year is out.

The Macintosh IICX is Apple’s latest entry in its series of “modular” Macs, inaugurated with the Macintosh II and enhanced by the IIX. The newest Mac is essentially a Mac IIX with a smaller footprint or, if you prefer, an SE/30 with an external monitor and slots.

The machine’s footprint has been reduced by providing only three NuBus slots, a correspondingly smaller power supply, and space to support a 3.5-inch internal hard disk (sorry, no 5.25-inchers) and a single floppy drive.

The new machine is roughly equivalent to a IIX or an SE/30 in function and performance. It’s equipped with a 68030 processor running at 15.7 megahertz, a 68882 math coprocessor, one high-density floppy drive, a SCSI port, two serial ports, a stereo output jack, two Apple Desktop Bus ports, an Apple Sound Chip, and 256K ROMs. An empty socket for SIMM ROMs is provided to expedite future ROM upgrades. There’s also an additional serial port for an external floppy drive.

The design of the newest Mac is quite elegant and introduces some new features. Even though the box is slim (only 11.9 inches wide), Apple has designed it to ventilate through the rear so it can be placed either horizontally or vertically. The internal design allows for easy servicing, and many components can be accessed without disassembly. When you do need to get into the guts, just remove one screw and everything else snaps apart easily. The power switch can be

The Macintosh IICX is Apple’s latest “modular” Mac. It’s a 15.7-megahertz 68030 unit with three full-size NuBus slots. Joining the CPU are Apple’s first large-screen monitors: a single-page and a two-page display. Both are gray-scale.
The Macintosh IIcx's interior is remarkably simple — the whole thing is held together by a single screw.

locked so that the Mac will restart automatically after a power failure; this will be especially helpful if the Mac is used as a file server.

Depending on how Apple prices things, this machine will likely sound the death rattle for the Mac II, which loses by comparison in every respect except for having three more NuBus slots. The newest Mac is expected to be available immediately, with memory/hard disk configurations similar to those available for the SE/30.

While the IIcx confirms Apple's commitment to small CPUs, the company is also entering the big-screen market with two grayscale monitors and NuBus video cards. The first, a "workstation" monitor, can display two full pages; the other, a "portrait" monitor, shows one page.

Both monitors have been designed to maximize clarity and sharpness. Apple wants a user to be able to look at text for hours without the eye fatigue often encountered with large screens. Both monitors use very flat antiglare screens, minimizing distortion at the edges, and employ a 75-hertz noninterlaced refresh rate, producing an image that is stable and free of flicker. For both monitors, Apple has video cards that will support four gray levels (using 2 bits per pixel) and, with an expansion kit, 16 gray levels (with 4 bits per pixel).

The workstation monitor displays 1,152-x-870 pixels (crossing the megapixel boundary with a total of 1,002,240 pixels) at 72 dots per inch (dpi). The screen measures 21 inches diagonally and comes with an integrated tilt/swivel base. The monitor should be available immediately and is expected to cost roughly from $2,600 to $3,000, including video card.

The portrait monitor displays 640-x-870 pixels at 80 dpi. Herefore, all Apple monitors have used a 72-dpi display, and at 80 dpi, images will appear reduced in scale by 10 percent. This monitor comes with three Apple Desktop Bus ports, so you can connect your mouse and keyboard directly to it. The portrait monitor should ship in June and will cost about $1,500 to $1,800, including video card.

Apple also announced a 1-bit (black-and-white only) videocard for its 12-inch monochrome monitor. At an expected price of from $200 to $225, this will provide a low-cost entry into the modular Mac line.

We're still waiting for Apple's fabled laptop, "tower" workstation, and promised major System update, but the first presents have been anything but stocky stuffers.

— James Finn

EDITED BY GIL DAVIS

Apple's Earnings, Prices on Roller Coaster

CUPERTINO, CALIF. — Apple's projected earnings fell by as much as an estimated 42 percent for the quarter ending March 30, 1989, in part because Apple purchased large quantities of DRAMs last summer just before memory prices started dropping. To offset this expense, Apple hiked prices on many computers and peripherals last September, which it said prompted customers to buy lower-priced models and to opt for third-party memory and hard drives. In January, Apple announced lower profits and attempted to overcome buyer resistance by decreasing prices.

You Never Gave Me Your MIDI

LONDON — The holding company for The Beatles, Apple Corps Ltd., has filed a lawsuit against Apple Computer, Inc., demanding that Apple Computer discontinue its use of the Apple trademark and logo or that it remove sound-synthesizing capabilities from its computers, according to Wayne Cooper, an attorney for Apple Corps. He said the action followed a year of unsuccessful negotiations between the two companies over a 1981 contract in which Apple Computer reportedly agreed that it wouldn't use its trademark or logo on any product designed to reproduce or synthesize music, or to publish musical literature. An Apple Computer spokesperson said that the company didn't believe that it had violated the 1981 agreement.

Lotus Buys into Mac Market

CAMBRIDGE, MASS. — Lotus reentered the Macintosh market in January by buying PS Publishing, which is developing two Mac products: PS Compose, a PostScript typesetting program, and PS Collage, a high-end drawing application. Lotus is moving PS Publishing to larger quarters and is hiring Mac programmers for the company's West Coast Mac development center.

Claris to Drop MacPaint

MOUNTAIN VIEW, CALIF. — MacPaint, one of the original software products bundled with early Macs, is in its last version. MacPaint's features will be included in the next version of MacDraw, which may be announced later this year, according to Yogen Dalal, Claris' vice president of product development. Claris has also discontinued technical support for customers who originally bought its software as Apple-labeled products, unless they upgrade to the Claris versions.

Thin Bits . . . Music Software Plus, of Santa Cruz, Calif., has acquired the U.S. distribution rights to Music Publisher, a notation program developed by Graphic Notes . . . Apple is establishing a standards committee for HyperTalk and has invited the participation of Silicon Beach Software, developer of the HyperCard-compatible program SuperCard . . . Connect Inc. is offering registration and payment services for shareware programs through its on-line Mac Symposium . . .
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NEWS LINE!

Speaking Out: Can IBM Steal Mac Developers?

One of the Macintosh's greatest attractions is its graphically based software designed by Mac developers. However, these programmers and their publishers are increasingly being sought by IBM executives to develop applications for Windows and Presentation Manager. To see how this new competition from IBM will affect the Mac's future, we asked industry leaders for their comments:

"IBM has been trying to attract our developers since almost the first Macworld Expo. However, there's a lot of difference in our platforms. In hardware, their '386 machines are only doing what our 68000 is doing in a Mac SE, and we've moved on to the more powerful 68020 and 68030. In software, our system has been fine-tuned over nearly eight years, so we have refinements that aren't in competing systems. For developers, picking anything other than a Mac is automatically going to handicap their best efforts."

— John Sculley, chairman of Apple Computer, Inc.

"I love the Mac. It's an extraordinary machine. But Apple's reluctance to offer a low-cost Macintosh is forcing us to consider developing on other platforms. We develop accounting software for small businesses, which are price-sensitive. That market has reached a plateau on the Mac, which is a financial danger signal for us and prompts us to look for new markets and new platforms. But even if Apple abandons the entry market, I think it will be several years before OS/2 has the kind of innovative software we now see on the Mac."

— Thomas Reahard, President, Teknon

"There's nothing new about IBM's trying to woo Macintosh developers away to Windows and Presentation Manager. Apple has tried to woo IBM developers to the Mac and has done it as well as anybody. Apple must do what all computer companies have to do to attract developers: offer an attractive, exciting platform that has lots of users so developers can make lots of money."

— Andy Hertzfeld, original Mac team member

"IBM is attracting developers to Windows and Presentation Manager using a new publishing division that's trying to talk with everyone and see what sort of deals can be put together. That especially impresses me because it means that combinations of developers can come out with far stronger products than previously available."

— Susan Morgan, President, SoftView, Inc.

"This isn't a religious question about whether it's sinful to do development for someone other than Apple. It's a business decision. The issue for us is whether we'd be better off taking a whole new direction or maximizing what we have on the Mac. Since we've got our hands full, we'll stay with the Mac."

— Charlie Jackson, President, Silicon Beach Software, Inc.
One of the real ironies of the present day is that Apple Computer, which gave birth to the job title "Software Evangelist," is increasingly falling prey to the proselytizing missionaries of other faiths. What's more, these heathen cults appear to be making substantial progress in luring Macintosh software developers to worship at foreign altars.

The biggest missionary efforts directed against the faithful come from the church of the IBM/Microsoft OS/2 Presentation Manager and the related sect of Microsoft Windows. Both IBM and Microsoft have taken to emulating Apple's early evang-
"The Jasmine DirectPrint is not as good as a laser printer. It's better."

"Ever since the day they came out, I've been using PostScript® laser printers. I edited a magazine that was desktop-published from cover to cover, so I lived and died by laser printers daily. Over the last three years, I've had experience with at least 15 or 20 different models. And the Jasmine DirectPrint™ is better than any of them.

"It's the fastest, most capable, most reasonably-priced 300-dot printer I've ever seen. Text and graphics are clear, sharp, and vivid, and the black and gray tones are incredibly rich. And the amazing thing is, it's not even a laser printer, but uses liquid crystal technology that requires fewer moving parts. So I expect to have fewer problems with it.

"I've been using this printer for proofing all of the drafts of my new book. I've thrown some pretty complex PostScript graphics at it, using programs like FreeHand® and Illustrator®88," and nothing I've created has slowed it down in the least. There's no question in my mind that the DirectPrint is as fast or faster than even Apple's® fastest laser printer.

"Another thing I like about the DirectPrint is that it's about half the size of any laser printer, and actually fits on my desk. And it's only $3495, so it fits within this freelance writer's budget, too. In fact, if I make any more flattering statements about the DirectPrint, people will think I'm taking up a second career as an ad copywriter!"
Mac’s Fifth Anniversary Feted in San Francisco

Last year John Sculley called 1989 the year of the CPU, and Apple kept that promise by rolling out the SE/30 at the January Macworld Expo in San Francisco. The SE/30 helped mark the Mac’s fifth anniversary, and it is the second in Apple’s new line of machines based on Motorola’s 68030 chip. Along with the Mac IIx, the SE/30 pushes the state of the Mac beyond the technological level of 68020 machines like the Mac II (see “Much Ado About Something,” March ’89, for more on the SE/30).

Apple also formally announced its acquisition of Coral Software, a developer of programming languages and artificial intelligence tools. In addition to Macintosh Programmers Workshop 3.0 (MPW 3.0), Apple will now distribute Mac Allegro Common Lisp to developers. To further bolster its developer services, Apple announced that it will bring the Apple Programmers and Developers Association (APDA) back under direct management of its Cupertino, Calif., offices.

The other big news coming from Apple was its new version of A/UX. Version 1.1 is more compatible with other UNIX operating systems, and it makes developing applications for A/UX easier.

In other related announcements, several software publishers, including Versacad, Claris, and Microsoft, introduced A/UX-compatible products — Versacad 2.1, MacDraw II, MacProject II, MacWrite II, Word 4.0, and PowerPoint 2.0 will support A/UX.

Through these announcements, Apple set an agenda for the industry — build on the existing technology, taking it to the high end. Echoing this sentiment, other manufacturers unveiled their contributions to the high-end Mac.

At the forefront were erasable optical drives from four companies. Sony and Ricoh were the primary OEMs, and all four companies used one of these two engines. Pinnacle Micro uses Sony’s drive in its RE0-650 (see New on the Menu, April ’89, for more information), while MACsdata Technologies, SUMO Systems, and Jasmine Technologies chose the Ricoh. The Ricoh engine was said to have a faster average access time than the Sony, but the precise speed difference varied with the proprietary driver used. All of the drives are SCSI.

Another big development on the floor was third-party, PostScript-compatible output devices. Tektronix had two — ColorQuick Ink-Jet, a QuickDraw-based 216-dot-per-inch (dpi) printer that lists at $2,495, and Phaser CPS (for the Mac), a 300-dpi color thermal transfer printer listing for $15,995 (output shown above).

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Ink-Jet, a QuickDraw-based 216-dpi ink-jet printer that lists at $2,495, and Phaser CPS (for the Mac), a 300-dpi color thermal transfer printer listing at $15,995. Howtek had its Pixelmaster Thermo-Jet 240-dpi ink-jet printer for $7,690. NEC debuted its challenge to Apple’s LaserWriter IINTX: the Silentwriter LC 890XL, a 300-dpi, eight-page-per-minute printer ($6,905). Ricoh also had a new entry, the PC Laser 6000/PS 300-dpi printer for $4,495.

Adding a new twist to PostScript output, Agfa, in an agreement with Adobe, implemented a PostScript interpreter in its MA-TRIX digital color film recorders. Agfa expects this new system to ship in the third quarter of the year.

And even with all this high-tech, high-price color activity, there was still room for a low-price, low-tech color alternative. Studioronics showed ColorSet, a software package that turns any flatbed, gray-scale scanner into a color scanner. Don’t worry — this isn’t Ted Turner software — ColorSet is intended for use with color originals only. The software lets you make color scans in three passes (red, green, and blue) and then composite those separate files into a reconstructed color image. Discovery Software, which entered into a marketing agreement with Studioronics the day after the show, lists ColorSet at $1,995.

Agfa wasn’t the only German entry at the show, as Miro showed its miroGRAPH graphics boards for the Mac II — the Prisma 20 P for 256 colors ($1,895), Prisma GS for 256 gray scales ($1,895), and the Pencil 20 P for work in black and white ($985). AST Research showed its NuView color image capture and processing board that supports 8-, 16-, and 24-bit color on the Mac II. Though AST claimed it would be shipping sometime in the first quarter, it looked as if it still needed a lot of work. NuView has programmable resolution up to 645-x-484 pixels and lists for $2,509, plus $695 for the AST-Converter.

Higher End

Human Devices (see “A Chorus LAN” elsewhere in New on the Menu) and 68000, Inc., demonstrated their high-end computing solutions for the Mac, making the Mac a strong player in the desktop-engineering market, among
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other number-intensive fields. A souped-up Mac II, the Dash 30 system from 8800, Inc., works with all Mac II and SE software and incorporates a 68030, 68882 math coprocessor, a high-speed RAM cache, a disk-DMA channel, accelerated SCSI circuitry, 4 megabytes of RAM, a virtual-memory scheme, a fast 180-megabyte hard disk, an 800K floppy drive, and five open NuBus slots. Dash 30 also maintains the Mac interface, can be networked, and lists for $15,000 for a standard unit.

Orihide continued the trend upward, giving the Mac more RAM-caching capabilities with its MacSprint II ($299). MacSprint II increases the performance of a Mac II by 20 to 40 percent. Pinnaclce Micro also had its entries—the NuBank Cache Cards, with 4 megabytes ($1,995), 8 megabytes ($3,345), 12 megabytes ($4,695), and 16 megabytes of RAM ($5,995).

Part of going toward the high end includes gaining speed, and Optical Character Recognition (OCR) has managed to do just that. Calera Recognition Systems' package can scan a letter-sized document in under ten seconds, thanks to its scanner, the Compound Document Processor (CDP) 9900. The CDP 9900 has four Motorola 68000 processors; it can handle batch processing; it can be networked (TOPS, Ethernet, and AppleTalk); and it works on a 1-megabyte system. The only thing it isn’t cheap — $29,950 is the list price. The software, a Mac version of the PC's Top Scan, is expected to sell for around $695.

Xerox Imaging Systems added a bit of intelligence to OCR with its Intelligent Character Recognition (ICR) package — a port of the Kurzweil technology. For $995, you can scan and read skewed text, photocopies, and faxes.

Software Marches On

Software developers took the high road too. Leading the way was Silicon Beach with SuperCard, a HyperCard-like application development environment (for more information, see “A Wild Card,” March ‘89). Other movements in the realm of HyperCard included the announcement of some true HyperTalk programmer’s tools. Heizer

Software was selling CompileIt!, a HyperTalk script compiler ($99), which includes HyperCard. Although the version selling at the show proved to have memory-management problems, the current shipping version has patches for the error. Although it wasn’t ready yet, another item generating a lot of interest was TMON’s HyperTMON, a HyperText debugger listing at $969.55 and expected to ship at the beginning of the second quarter. And there was no shortage of new HyperCard books. Among the most interesting of these was The HyperTalk Bible from The Waite Group, published

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Showcase F/X offers text scrolling, fades, wipes, dissolves, and on-screen motion. It also acts as a presentation program (animated presentations) and will read graphs and charts from Cricket Presents or PowerPoint.

by Howard W. Sams

Claris announced a major upgrade for its word processor, MacWrite II, bringing it up to the ranks of the higher-end word processors like WriteNow 2.0 and MindWrite. Now MacWrite II can handle multiple windows — up to seven documents open at once. It also supports Microsoft’s Rich Text Format (RTF), importing and exporting documents from Word, Works, Write, old MacWrite, and WriteNow. Users can create up to 30 style sheets, which can include footnotes, endnotes, precise leading, multiple columns, and font sizes from 2 to 500 points. It also supports the eight QuickDraw colors, letting a user insert MacPaint or PICT files directly into documents. This new version is available for $249.

Animation programs were out in full force with entries from Electronic Arts, Aegis, and MacroMind. As a follow-up to Studio/8, Electronic Arts introduced Studio/1, a black-and-white version of Studio/8 that is the first to integrate paint and animation.

Aegis, a major player in the Amiga world, introduced its first Mac product, Showcase F/X ($595), an animated titling program. Showcase F/X offers text scrolling, fades, wipes, dissolves, and on-screen motion as well as an ANIM file for storing compressed animations, and the ability to read graphs and charts from Cricket Presents or PowerPoint. In the second quarter of this year, Aegis plans to offer Showcase F/X along with backgrounding images, animation segments, and the product manuals all on CD-ROM (four megabytes of material).

MacroMind brought its animation technology to the presentation front with Director ($695). Director, formerly VideoWorks Professional, simplifies the creation of a multimedia presentation. The Overview window lets you choose snippets of animations to put together in a presentation. In the AutoAnimate window, you create the multiple frames for the animation. On the very high end of animation packages was RenderMan from Pixar, in the Levco booth. This pro-only package is an industry standard for producing realistic 3-D animation. For the Expo, Pixar ported its animations created in RenderMan over to Levco’s transputer board.

Among the nonstories at the Expo was Wingz. Once again, Informix was not shipping this much-ballyhooed spreadsheet package. Instead, Informix added hats to its apparel line, which already included jumpuits, flight jackets, and, of course, tote bags.

Apple also contributed to this trend by not announcing a color printer. Apple also didn’t hint at any plans for a full-page or double-page display monitor as had been anticipated by industry insiders. Guess we’ll just have to wait a few months for the Boston show.

— Kristi Coale

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A Chorus LAN

Say supercomputer to just about anyone, and they'll immediately picture a machine the size of a pickup truck. But Human Devices may change that with Chorus, a supercomputer for AppleTalk networks. Chorus is a freestanding tower that combines parallel processors and reduced instruction set computer (RISC) technology in a "compute server" for AppleTalk networks; it can process data at speeds of from 8 to 32 megaflops (depending on the configuration). In a typical work situation, you send your job to the Chorus unit for processing, and it completes the task and returns the results to you. Unfortunately, Chorus doesn't increase AppleTalk's speed, but it does put supercomputer-level computing on your network.

Supercomputers, however, aren't for everyone. Chorus is intended for high-end situations that require tremendous levels of computational power, such as economic and financial modeling, photographic-quality imaging, and engineering tasks. The idea is to bring supercomputer power in-house, right on your AppleTalk network with your familiar Mac interface.

Chorus can be outfitted with from 1 to 16 floating-point processors, each of which contains a RISC integer processor rated at 5 million instructions per second (mips); a floating-point unit that can crank out IEEE-standard double-precision calculations at 2 megaflops; a megabyte of high-speed RAM; and Human Devices' proprietary Virtual Tree bus interface. Accessing all this computing power, however, takes software, so Human Devices provides developers with Macintosh Programmers' Workshop (MPW)-based, C, Pascal, and FORTRAN compilers. The manufacturer boasts that with Chorus, programmers writing new applications or converting existing ones can do so without altering their interface code. Chorus' system software is also designed to handle the parallel processing and networking tasks that are normally left to the developer.

Chorus comes in two basic configurations. Chorus 4 includes four floating-point processors, a dedicated I/O processor with AppleTalk and FlashTalk ports, and Human Devices' system software. It lists for $25,500. Chorus 4 can be expanded up to three processor cards, each of which carries four additional floating-point processors. The cards list for $16,900 each. For those with slightly smaller checkbooks, there's the entry-level Chorus 1, which houses a single floating-point processor and lists for $9,700. The Chorus 1 can also be upgraded to any of the larger configurations.

If that isn't enough for you, Human Devices offers a number of additional options, including an Ethernet I/O upgrade and a software simulator that lets developers create software for Chorus units under MPW on non-networked Macs. The software simulator lists for $450. To audition Chorus, contact Human Devices at 100 Varick St., New York, NY 10013; (212) 580-0257.

— Russell Ito

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Finishing Touches

There was more to 3-D in January than Coke commercials and the Super Bowl. Enabling Technologies announced Pro3D Mixed Media, a $495 multipurpose 3-D modeling, illustration, and presentation package. Pro3D Mixed Media lets you type text in 3-D, import backgrounds and 3-D objects from a variety of sources (including its massive 3-D clip-art library), and chart your heart out with its built-in 3-D any-shape grapher.

If you're still not satisfied, there's one last touch — Pro3D Photo Finish. It embodies all of Pro3D Mixed Media, plus you can select each 3-D object and tell the program what material it's made of, how shiny its surface is, and, if applicable, how transparent the object is. You can set up multiple colored light sources and designate selected surfaces to reflect one or more surrounding images, giving an effect very close to ray tracing but requiring much less imaging time. When you give the final OK, Pro3D Photo Finish can produce amazingly real-looking stuff — without the typical computerish faceting, jagginess, and dullness. Real shine, real shadows, real neat. The result is nothing less than grand. The price will be a little less than two grand when it ships sometime midyear.

Both packages will be file compatible with their PC-based counterparts. For more information, contact Enabling Technologies, 600 S. Dearborn St., Chicago, IL 60605; (212) 545-7188.

— Salvatore Parascondolo

Pro3D Photo Finish's variable transparency feature, combined with the option to select reflective and reflected objects, produced this realistic glass object floating amidst brushed metal columns.

Pro3D Photo Finish smooths surfaces and, for selected objects, simulates reflections from surrounding images, giving an effect very close to ray tracing but much quicker.

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The PaintJet printer brings so
The next generation of CD-ROM players, which are starting to appear now, will not only be able to read data CD-ROMs but will also be able to extract the data from audio CDs. That means that you can use those wonderful effects from the Star Trek Sound Effects CD in your Apple Sound Chip-equipped Mac without running them first through a digitizing/processing box (or board).

That's not all you can expect from the next CD-ROM drives. The Tandy-developed erasable (and thus reusable) CD technology is coming along much faster than was originally predicted. Drives using this technology should be available by the end of the year.

Of course these drives won't be compatible with existing drives and CD-ROMs, nor will they work with the new enhanced audio CD-ROMs.

Apple has decided to get into the slide-making business. It plans to buy the marketing rights to an existing unit, and, in the words of a person we've promised anonymity to, “We'll do the software right.” Of course these are the same people who did the AppleFax Modem's software.

Just as the copy-protection issue has about disappeared (have you noticed that most games now come without copy protection?), a major productivity software publisher plans to “protect” its highly touted new product (due out late this year) with a hardware key. Hard to believe but true. Too bad, too, because the program really looks promising.

Way back when (three years or so), dedicated server hardware was all the rage. It didn't work too well and wasn't remarkably reliable. It was a good idea that demanded more than the 1985 technology could do. Now Apple and another company are going to try the dedicated server again.

The third-party version will come preloaded with many specially licensed and preconfigured software packages. It is expected to have a high-end and a low-end word processor, a spreadsheet, a flat-file database, charting software, distributed communications software, and electronic mail, all built-in.

All you need to do is plug this box in (it also has 680 megabytes of disk storage) and hook up your FastTalk cables. This could be the hardware sleeper bargain of 1989.

Add-in colorizing modules are being developed for several very popular older packages. While some publishers have revised their products to take advantage of the color capabilities of the Mac II and the SE/30, other publishers have let some classic software languish. These add-in packages, which are being developed by some third-party developers, will rectify the situation. Expect to see them by summer.

The next great Mac application will come out of a garage. (We'd like to thank Dave Winer—who, at last glance, didn't work out of a garage—for that one.)

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Photon Paint

Color paint applications will soon be one of the most crowded categories of Mac software. Photon Paint is one of the latest entries. Though it isn’t the equal of Studio/8 or PixelPaint, Photon Paint does offer a workable painting environment, multiwindow capability, some interesting special effects, and, perhaps most importantly, a more affordable price.

Photon Paint was originally written for the Amiga, and Microillusions has done a creditable job of transforming it into a Mac program that’s generally faithful to the Mac interface.

The Photon Paint environment is dominated by five palettes (tool, pen, color, pattern, and status) in floating, movable windows. Only the color palette is sized appropriately for its function; the others are excessively large. On a 13-inch monitor, they can cramp the drawing area. The pen and tool palettes are resizable; the pattern and status palettes should be.

In comparison to other Mac applications, Photon Paint is limited. For instance, only 14 standard pens are available, and the spray can is adjustable only to those pen sizes. Also, although pattern palettes can be saved, they can hold only 16 patterns. And though discontiguous selections are possible (Command-click), the lasso and rectangle cannot “cinch down” on a selection.

On the other hand, any Clipboard image may be used as a brush, and the RGB and HSV (hue, shade, value) tools provide an easy and powerful way of revising the color palette. Just click on two colors and Photon Paint calibrates the values between them, creating intermediate shades for all the intervening steps. (Custom palettes can be saved.) Palette changes are instantly reflected in the current document. However, although the palette can be restored with the Undo command, the change in the image is irreversible. Exercise care with unsaved documents.

Photon Paint supports five graphic modes: normal, add, subtract, blend, and wash, a watercolor-like effect. It also incorporates a number of dynamic effects: bend, twist, tilt, and rotate. Controlled from dialog boxes, dynamic effects can be calibrated precisely (e.g., 43 degrees of rotation), but since you’re not getting any visual feedback, precision doesn’t necessarily translate into accuracy. The dynamic effects, however, do work with lassoed objects — without affecting any unwanted areas outside the selected item. Selections so modified can be dropped in the image (to test the fit) and still be undone.

The most eye-catching dynamic effect is the ability to “wrap” a selection to create three-dimensional-looking shapes, such as cones, spheres, and cubes. Lighting (direction, distance, and color of a spotlight) can be altered to enhance the 3-D effect. The results are pretty good with patterns, but with colors, color banding can diminish the effectiveness of the wraps. Although most shapes are created fairly quickly, some can take a bit of time to be produced.

Perhaps most useful in day-to-day operation is Photon Paint’s multiwindow capability. Any number of documents (limited only by available memory) may be open simultaneously.
Quick Clicks

A handy Send to Rear button on each window lets you shuffle the stack. Palettes are loaded with each document, but a link is not maintained when another image with a different palette is opened. So the last palette loaded will always be active. Bringing an image to the front will shift its colors to the currently active palette. If you forget about this potentially disastrous feature and have saved your file in a previous version, there is a Revert to last saved option. But if you don't save often and you open an old document while working on an unsaved image, watch out. Your unsaved file will take on the color palette associated with the incoming document, and you can't undo this effect.

Also, you may open several windows into the same document with Photon Paint's magnification tool. Click and it creates a four-times enlargement in a separate window. Click again and zoom to eight-times enlargement (FatBits size) in yet another window. Zooms of 16- and 32-times normal can also be attained. Intermediate magnifications are possible with the plus/ minus buttons at the lower left of each window. Changes made in one view are updated in the others. However, the windows aren't linked. If you scroll around in one image and switch to another, you'll have to center again. Also, Photon Paint does not remind you if a magnified view is already deployed; it simply creates another window, leading at times to a stack of multiple — or even identical — zoom-windows under your drawing. Still, the ability to display multiple, magnified views is valuable.

Photon Paint reads and writes only its own format. Luckily, that format is PICT2, although the program's Paint icon with PP superimposed gives no clue of this. Transportable files are a plus.

The Photon Paint disk also includes a black-and-white version. Only a shadow of the color program, it will not displace any of the black-and-white paint applications already in existence. And colors cannot be assigned to a document on standard Macs to be viewed in color on Mac IIs. The monochrome version's saving grace is its ability to view Photon Paint files (it only reads PICT) on standard Macs. Finally, Photon Paint's manual is nicely designed but woefully short on information about the program. The generally clear and concise version 1.1 update booklet is better.

Photon Paint 1.1 isn't the final word on color painting. However, it operates reasonably well and, at $299, is priced at substantially less than its competitors. If you're on a budget or don't need all the features found in the higher priced programs, Photon Paint could be your paint program.

— Carlos Domingo Martinez

Photon Paint

List Price: $299.95
Published by: Microllusions, 17409 Chatsworth St., Granada Hills, CA 91344; (818) 360-3715, (800) 522-2041.
Version: 1.1
Requires: Mac II and color board, 1 megabyte RAM, and second disk drive. 2 megabytes and hard disk recommended (black-and-white runs on 512K).
Compatibility: MultiFinder friendly.
Application Size: 188K, color; 103K, black and white.
Copy Protection: None
WORD PROCESSING

WriteNow 2.0

I must be getting old. Three years ago a word processor this powerful would have satisfied everyone, even me. It would have been the talk of the town. But in 1989, even its publisher rates WriteNow 2.0 as just an entry-to-medium-level word processor. Special, but not one of the big three.

Even so, WriteNow is the fastest, best pure writing program available. It does the basic thing that word processors were created to do best. You're not going to find graphics editors, add-on or Post-it notes, page-layout ability, indexing, or outlining in WriteNow.

Of course, being too pure a writing tool isn't a virtue either. Today's technology offers a lot to writers, and WriteNow has a good and useful selection of writing features. There's an excellent spelling checker, mail merge, excellent indexing, or outlining in WriteNow.

WriteNow isn't a new program. The original version was a well-received, justly popular program, but it lacked a lot of features. For example, importing and exporting (even to text-only files) required a separate translator program. Version 1.0 of WriteNow was praised for its speed, its ability to run on any Mac (including 128K machines), and its excellent built-in spelling checker. The new version has kept all that was good in version 1.0 (what a pleasant surprise!) and has added to the program.

WriteNow still runs on any Mac, a feat remarkable in this day of word processors that require multiple megabytes of memory and hard disks. Version 2.0 is even faster than the previous version, which used to be the fastest word processor. It also has a new and equally good spelling checker that can use the same dictionaries that version 1.0 used, so you can still use your customized dictionary.

The list of new and improved features is too long to print in its entirety here. One of the highlights is direct import and export to text only, text with line breaks, MacWrite, and RTF formats. RTF is Microsoft's Rich Text Format and is currently the only way to import from and export to Word. However, WriteNow now uses external filters for import and export. That means that T/Maker can produce and cheaply distribute new filters. They're working on one specifically for Word, and if it isn't available now, it will be out shortly.

Other notable new features include full cursor-key support; the ability to hide graphics in documents, which speeds up the already excellent performance; a built-in utility that counts characters, words, and paragraphs; both static and dynamic time and date stamps; and a Window menu — useful since you can have many documents open at once. “Smart quotes” are available for those who prefer them.

WriteNow has a wonderful interface, as intuitive as the original MacWrite interface. You really don't need to refer to the excellent manual to get started. The basic writing tools and functions are right where they should be, and there are very few surprises in using them. This is the way a Mac application is supposed to work.

There are a few things that I wish T/ Maker had done differently. I don't like the way line spacing is controlled. Instead of clicking on icons in a ruler or using menu commands to select single, space-and-a-half, or double spacing, you use an icon to adjust the spacing one point at a click (or hold the mouse button down continuously and watch the increments zip by). To double-space 12-point type requires 12 clicks; to get it back to single spacing (after it's too late to Undo) requires 12 more clicks. Not only is that too much unnecessary labor, it doesn't always produce optimal spacing. Some very small-bodied fonts look double-spaced with less than exactly double their size as line spacing, while the reverse is true for some large-bodied fonts. Word actually makes such distinctions. While the system used is totally flexible, presets that take into account type size and style would have been nice — at least for single, space-and-a-half, and double spacing.

One nice touch is that line spacing can be fixed or flexible. Fixed spacing freezes the actual distance between lines, regardless of what size of type is in the line or whether there are graphics in the line. Flexible spacing allows the actual spacing to adjust to fit large characters, super- and subscript, and graphics.

What you see is really what you get with WriteNow. The program can handle up to four columns of text. It shows the actual columns on the screen with the actual column breaks. As you edit or add text, you can see the breaks change to reflect your editing. The screen also shows headers, footers, and footnotes as they will appear when printed. The only thing that keeps the
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QUICK CLICKS

13. LIFETIME WARRANTY

Quick Clicks

1. The ability to find and replace material is vital to writers. The WriteNow Find/Replace function is excellent. You can search for a single wild-card character and find and replace based on font, size, or style.

Footnotes are well done. Very long footnotes are broken over multiple pages (or columns) as necessary. Your footnotes can contain graphics as well as text. Unfortunately, your footnotes are exactly that: notes at the bottom of the page where they are referenced. There's no provision for automatically creating endnotes.

The spelling checker has an interface that I wasn't used to, and its buttons and shortcuts were also new to me. However, it's a very easy module to learn, and far less complicated than several less capable spelling checkers. It shows well-chosen suggestions in buttons, but this seems to slow things down at times.

WriteNow comes with three dictionaries. The 50,000-word dictionary is what will be used if you don't take any other action. It's a good, fairly complete dictionary, and adding and deleting entries is simple. But if you have a hard disk, you should use the excellent 100,000-word dictionary. There's also a blank (empty) dictionary that you can use to create your own custom dictionary.

For the more technically oriented, superscripts and subscripts can themselves be superscripted and subscripted to as many levels as you desire. WriteNow provides left, center, right, and decimal tabs to aid in creating tabular material, and you can easily add leaders before any tab. Leaders can be adjusted by changing font sizes.

If you're a writer shopping for a new word processor and you don't need the page-layout or indexing features of the $400 programs, WriteNow will serve all of your needs for half the price. If speed is important to you, you're not going to find a faster word processor. A few things need improvement, but overall WriteNow is a superb program and a real (and rare) bargain.

— Steven Bobker
Microsoft Works 2.0

For years, Microsoft Works has been the only acceptable integrated package for the Mac. Version 2.0 should keep things that way. In addition to the four original modules (word processing, spreadsheet, database, and telecommunications), Microsoft has added color, an object-oriented draw mode that can even be used for page layout, a macro maker, and improvements to its word processor, spreadsheet, and database.

Works' word processor isn't a power user's model, but it's more than adequate for a memo or quick letter. Version 2.0's new features include color, decimal and center tabs; a spelling checker, which is a version of Spellswell, with a 60,000-word dictionary (you can also get an expanded dictionary with a 100,000-word dictionary for $14.95 directly from Working Software); the ability to search for and replace tabs and hard returns; and the ability to print three-up mailing labels in cooperation with the database. Also, Works now supports RTF (Microsoft's Rich Text Format), so Works word-processing documents can be shared with numerous Mac word processors including WriteNow, Word, and MindWrite, as well as some programs in the DOS world.

But perhaps the most powerful and important addition to Works' word processor (and spreadsheet) is the new draw layer. This object-oriented module is reasonably full featured, offers eight colors (black, white, red, green, blue, cyan, yellow, and magenta), and makes it possible for the user to do page layout without investing in a dedicated program. While the word processor itself can't create multicolumn documents, the draw layer lets you create text objects in columns and paste text into them. More than that, it lets you link the text objects and keeps track of what text flows to and from which objects, allowing you to edit the text even after it has been placed and flowed. It works, in a limited way, very much like PageMaker. You can also use the more traditional tools to form rules, boxes, and graphics — creating quite a nice newsletter. While there's no limit to the number of columns that you can link, you can't have more than 32K worth of text in linked columns.

Nonetheless, the draw layer is surprisingly powerful and probably sufficient for most casual uses. It offers all the usual functions you would expect in a stand-alone draw program, such as grouping, layering (send to front/back), polygon and arc tools, auto scrolling, and nudge arrows that will move a selected object one pixel in the indicated direction. About the only common tool that's missing is a rotate function.

But the draw layer can do more than just create graphics and simple page layouts. One of its most powerful functions is its ability to work with imported graphics, Excel charts in particular.

If you copy an Excel chart to the Clipboard and paste it into the Works draw layer, it will initially appear as a single object. That's pretty standard. But if you select it and choose Ungroup, that single object becomes a collection of independent elements — each of which can be manipulated. So now if you want to highlight a single value along an axis, all you have to do is select it and apply whatever format you want. Excel's legends, which normally are pretty limited in their positioning, can now be disassembled, placed, and customized to your needs and tastes — in fact, you can even take a legend apart and scatter the pieces around. This feature alone is practically worth the price of admission.

Unfortunately, once you've done your manipulations, you can't return the chart to Excel, so any changes you make to the related worksheet won't be reflected in an updated chart. Still, if you've ever wanted to be able to do this type of operation, Works 2.0 is a godsend.

And if you really want to jazz up your page layouts or charts, the draw layer lets you spread text along an arc or line. The process is pretty simple: Just type some text, copy it to the Clipboard, draw (or select) a line or arc, and choose Spread Text from the Format menu. The text will now flow along the indicated path. Instead of pasting the text as a single object, Works pastes each letter as an independent object. This makes it possible to optimize the effect by adjusting the spacing one letter at a time — the nudge arrows are particularly useful. And since each letter is an independent object, you can also add whatever formats you like.

Works' spreadsheet isn't as big or complicated as that of Excel (with which it can share data in SYLK or tab-delimited formats), but it is just as powerful in some ways.

Works contains far more functions than Multiplan but not as many as Excel — coming up short mostly in the
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use of named ranges and linked spreadsheets. Works also returns a 1 or 0 rather than Excel's TRUE or FALSE in logical values. In linguistic terms, Works speaks a different dialect than Microsoft's other spreadsheets, but not an entirely different language. Fixing any importation flaws shouldn't be too painful.

Version 2.0 sports an expanded number of rows (16,382 versus 10,000 in version 1.1); the number of columns (256) remains the same. Also new in version 2.0 are date and time functions, the inclusion of cell notes, and accessibility to all cell attributes in a single dialog box that appears when you double-click on a cell. Works 2.0 also lets you freeze column and row titles in place and lets you place borders around selected cells. As with the word processor, the spreadsheet supports up to eight colors of text, but for some curious reason, the color option is not directly available in the Charting mode.

The cell note feature is especially nice. One of the most dangerous things about spreadsheets is the difficulty of documenting assumptions and formulas. Works not only lets you attach these Post-its but also puts a little black square in the upper-right corner of any documented cell—alerting you that you have something to say about the contents of that cell.

The spreadsheet's graphics are also fairly powerful. While the gallery of chart styles is smaller than that of its big brother, Works gives you more control over what gets plotted and how it's presented. The spreadsheet's graphs can also be enhanced with the Draw facility. While Works charts are initially drawn in black and white, you can paste them into the draw layer, disassemble them, and add whatever colors you wish. This gives you access to the color options, although it would be nice to have the charts in color from the start.

The database has remained essentially unchanged from earlier versions, but there have been a few additions. For example, you now can paste most of the same calculations accessible in the spreadsheet into your database. You can also rename functions that add the contents of a field, on either a page-by-page or global basis.

Still, there are a few shortcomings to the database. Most critical is the inability to count the number of records that meet a selection's criteria automatically. Also, the database should be able to sort on more than one key at a time; the spreadsheet can, why not the database?

Another failing is the limited range of compatible formats. The database can import tab- and Return-delimited files, but that's it. If you ever have to deal with comma-delimited files, you'll have to convert them into an accept-able format first.

All macros are available from all applications and can be assigned Option-key equivalents. The trouble is, they can't be edited; if you make a mistake, you have to enter the whole thing from scratch.

At a list price of $295 (and a street price around $190), Works 2.0 is an excellent value. You get a worthwhile word processor, a reasonably powerful spreadsheet and database, a usable drawing package, and functional communications. Considering the amount of functionality Microsoft has added, it's remarkable that the price hasn't been raised. For users on a budget or offices needing broad-based functionality rather than specialized power, Works 2.0 could be the perfect solution.

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MacSchedule

Although MacSchedule looks simple, it has substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. MacSchedule’s main limitation is that it can produce only Gantt charts, but that’s not too big a problem, since they are an industry standard and most people understand them intuitively.

MacSchedule is graphics oriented and always uses the same basic form, which is then filled in, added to, and modified as necessary to produce the schedule you want. When you update, the same tools you used to create the schedule are there to help you change it.

Projects and jobs are planned visually. Tasks or subtasks are listed in the leftmost column, and you then use the tools provided to indicate when the tasks are to occur.

Schedules can be divided yearly, quarterly, monthly, biweekly, weekly, or daily. You can also omit the time notation to create free-form schedules.

MacSchedule doesn’t limit your plans to your screen size. Quick-acting horizontal and vertical scroll bars are provided. If you have a screen larger than the standard Mac Plus or SE display, you can enlarge the working window to use the full area available. If you then open the schedule on a Mac with a smaller screen, the window will automatically resize itself to fit.

The header lines normally show dates. The four control arrows in the upper-right corner (next to the Toolbox) shift the time scales to whatever is appropriate for your schedule. You can also paste a graphic into the area above the task titles. Just keep in mind that whatever you paste will be scaled down to fit into that rather small rectangle.

The actual task lines are created using the Toolbox (in the upper-right corner of each document) and the Options, Symbol, and Fill menus. The Options menu lets you control what your schedule actually shows. You also use this menu to date-stamp tasks, add headers, narrow the columns (to fit more on a given page), and extend the time line to multiple pages. The Symbol menu lets you select from a set of predefined starting and ending symbols. The bottom item on the menu allows you to create custom symbols using a FatBits-like editor. The Fill menu gives you a choice of either a gray or black fill pattern. There is no color support in this version.

Once you have a schedule, you can copy, cut, paste, insert, or delete lines as needed. If your lines are numbered, MacSchedule will renumber them as necessary to account for additions or deletions.

Task bars can be very simple or quite complex with many overlaid milestones. The ability to combine overlay symbols with a variety of fills makes for great versatility.

Text and titles can be added anywhere you want them. However, each text string is limited to a maximum of 30 characters, so it’s hard to add long notes without going into another program. Text that is placed over the grid (assuming you’ve left the grid turned on) can be hard to read, so MacSchedule thoughtfully provides a Clean option to block out the grid lines behind text.

The Font and Style menus offer normal fonts and a limited range of styles (plain, bold, italic, underline, outline, and shadow) and sizes (9 to 18 points). You can also align any text string to the left or right of its field, or you can center it in the field.

Schedules can be linked to other schedules — particularly useful when a schedule has more information than can be conveniently shown on a single page. MacSchedule lets you structure the information using a series of top-down, hierarchical links that the program itself creates under your guidance. Linked files are accessed by either clicking a task title (to move down to a subordinate schedule) or clicking the close box (to link up a level). You can print whole sets of schedules using the Print Nest or Print All commands. Links can be edited if necessary.

The somewhat restricted format is both the program’s strongest and weakest point. In its favor, this format makes for a program that is simple to learn and use and very powerful. On the negative side, the restrictions may make the program unsuitable for your job. MacSchedule may not be perfect, but it should be considered by anyone who has to plan and coordinate jobs and projects.

— Jake Paden
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Quick Clicks

**Databases**

**MBA Series**

Generation Four's MBA series (Multiuser Business Administration) is a set of 11 multiuser business applications running on ACIUS' 4th Dimension. MBA is also an automated programming environment for people intrigued by the easy 4D interface but who aren't professional programmers.

The series consists of an electronic-mail package, an inventory control system, project and telephone logs, a mass-mailing system, a telemarketing sales and ordering system, and five other databases. Each module of the full-featured applications is built on the Generation Four Application Development Shell (G4 Shell).

The G4 Shell grew out of Generation Four's 4D classes, and will help you learn 4D programming. For creating custom applications, the G4 Shell has done much of the hard work for you, providing most of the standard user features for custom applications. The G4 Shell consists of a modular file structure and a set of subroutines (called procedures in 4th Dimension).

User file functions will appear in 4D's Custom mode when you create an application. These include import/export, backup/restore, search and sort routines, and an automatic custom-report generator.

Generation Four provides many of the basic user interface features, such as standard alerts and dialog boxes. One handy thing G4 does is deliver you straight to the desktop when you quit the Custom mode, instead of dumping you into the User mode (as do most 4D applications). In Generation Four's case, the 4D User mode is for the programmer; it keeps track of the application files and reports. Users can't get into this mode unless they use the programmer's password.

The G4 Shell is set up so that programmers can combine MBA or custom applications into a single larger application. Users have the ability to switch between different files - even from a data-entry layout.

I focused on two of the applications: NetMail and Clients. The first thing you notice about them is that they're well-designed visually, with a simple interface. The screens are uncluttered and balanced, and the use of color is effective but not garish.

The Client application is very useful for keeping track of phone calls, meetings, and correspondence and the actions that result from them. A mail-merge system is also included. Since this is a multiuser application, Client can be used as a working record for a group of people.

There are two main files in the Client application: Clients, who are people, and Contacts, which are records of conversations. The Contacts file includes space to write notes while you're on the phone. A dot next to a phone call reminds you that you need to follow up on it. The Clients file contains a handy keyword field for topical searches and links to the Contacts file. The reporting features let you automatically generate printouts of labels and various lists. There is also a feature for generating seven types of graphs.

NetMail is not the best mail system on the market, but it is one of the least expensive. The price is $189 for an unlimited number of users - the same as every MBA module. NetMail is not a desk accessory, so you can either run it all the time with MultiFinder and lots of RAM or just check in with it periodically. And NetMail is a fully relational database, giving you the ability to tie it to address files or the other MBA modules.

Most of the documentation for the MBA series is contained in a DA called UserGuide. The benefit of online documentation is that everyone in a multiuser system gets a copy. However, I found the DA approach much less convenient than having paper to browse through. A printout feature would help.

The combination of the MBA Series and version 2.0 of 4th Dimension (due out by the time you read this) adds up to an attractive choice in the Mac database market and an excellent business network database solution. If there are little things that bug you, you can change them, and you don't need a master's in computer science to do it. If you're developing your own application, the purchase of a single module is worth $189 for the G4 Shell, which can save weeks of in-house development time.

— John Rizzo
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MultiDisk

ALSoft's MultiDisk is the newest program for partitioning Macintosh disks. Software partitioning fools the Mac into thinking that a hard disk contains several smaller disks, called volumes, each of which can be mounted on the desktop independently from the others. MultiDisk will compete directly with FWB Software's Hard Disk Partition and with Symantec's HD Partition, which is part of Symantec Utilities for Macintosh (SUM).

MultiDisk works well and has features not available from its competitors. For example, you can resize a partition without losing its contents. This means that when you create a partition, you don't have to allocate extra space initially just to allow for future growth. Resizable partitions can be shrunk as well as enlarged.

Typically, the free space on a disk is not in one contiguous area. As files are created, modified, and deleted, both files and free space become divided into separate pieces, resulting in fragmentation. MultiDisk has the unique ability to create partitions using all the available free space on a disk, even if that space is fragmented. If you want to make sure that all of your partitions — and your other files as well — are unfragmented, you can always use ALSoft's excellent DiskExpress utility (see January '89 Quick Clicks). MultiDisk also permits partitions themselves to be partitioned, although this ability seems to me to be treading dangerously into the dark waters of features. As a final enticement, MultiDisk will convert existing FWB and SUM partitions into its own format, although the results are not resizable.

MultiDisk supports all the features made standard by its competition. Partitions can be password protected and even encrypted. You can select partitions that you want mounted automatically at startup time. If you set a password-protected partition to be mounted automatically, you will still be prompted to enter the password when your Mac boots. The newest version of MultiDisk fixes a bug that caused crashes when using encryption on a Mac SE or Plus. Encryption now seems speedy and reliable on all Macs.

MultiDisk consists of two files: an INIT that you put in your System folder and a desk accessory. Choosing the desk accessory displays a dialog box that is the interface to all of MultiDisk's functions. Power users will appreciate the numerous shortcuts available; for example, each button in the dialog box can be selected from the keyboard. Surprisingly, however, there is no way to select partition names using the keyboard.

MultiDisk does have a few limitations. You cannot erase a partition from the Finder. You have to use the desk accessory, and the arrangement is awkward. You must first unmount the partition, then click the Modify button; the resulting dialog box has an Erase button. Unfortunately, the Modify dialog box also displays the partition's password if it exists, since Modify is also used to change passwords. So, if you want to initialize a password-protected partition, you need to be sure no one is watching. Resizable partitions are to blame for the initialization anomaly; they are created with large directories that would be destroyed by the normal initialization process.

MultiDisk can create only HFS partitions, whereas FWB's Hard Disk Partition can create both HFS and MFS volumes. I found that MultiDisk crashes a Mac Plus running PowerStation 2.5. This turns out to be PowerStation's fault. Steve Brecher, author of PowerStation, identified and fixed the problem almost instantaneously. For those of you disk hackers who are handy with a file editor (translation: Don't do this unless you know what you are doing), here is the patch:

Search for 42A74BAA4A524A9F66000092 and change it to 4A80660000C42F0D2A780904 then search for A90B4E5E4E75 and change it to A90B2AF6028.

I appreciate having resizable partitions that I can create without having to unfragment my hard disk first. ALSoft's literature describes MultiDisk as "sensational" and "the ultimate." While I regard this as hyperbole, MultiDisk is nonetheless a step forward in the world of partitioning software and has found a home in my Apple menu.

— James Finn

MultiDisk

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<td>4-127 pts.</td>
<td>7-24 pts.</td>
<td>7-72 pts.</td>
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<tr>
<td>Maximum recommended document size (in pages)</td>
<td>Over 2,000</td>
<td>240</td>
<td>50</td>
</tr>
<tr>
<td>Number of open documents</td>
<td>Unlimited*</td>
<td>1</td>
<td>30</td>
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## Mail Merge
<table>
<thead>
<tr>
<th>Mail merge</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Number of editable, on-screen columns (WYSIWYG)</td>
<td>4</td>
<td>1</td>
<td>1</td>
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<tr>
<td>On-screen auto-numbering footnotes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Automatic repagination</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Graphics in same line as text</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Multiple headers and footers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Extensive Undo</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Variable line spacing (in points)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Selective font, size, style, and ruler changes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</table>

## MacUser Magazine's Best New Word Processor
<table>
<thead>
<tr>
<th>MacUser Magazine's Best New Word Processor</th>
<th>Yes</th>
<th>No</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search for a word</td>
<td>2.4 sec</td>
<td>7.6 sec</td>
<td>9.7 sec</td>
</tr>
<tr>
<td>Spell Check document</td>
<td>6.3 sec</td>
<td>2 min 34.0 sec</td>
<td>1 min 48.0 sec</td>
</tr>
<tr>
<td>Copy &amp; Paste large area</td>
<td>8.8 sec</td>
<td>1 min 0.9 sec</td>
<td>12.3 sec</td>
</tr>
<tr>
<td>Change font size of document</td>
<td>10.7 sec</td>
<td>50.2 sec</td>
<td>16.2 sec</td>
</tr>
<tr>
<td>Change font of document</td>
<td>10.8 sec</td>
<td>37.1 sec</td>
<td>15.2 sec</td>
</tr>
<tr>
<td>'Save As' a 12-page document</td>
<td>3.5 sec</td>
<td>9.4 sec</td>
<td>19.6 sec</td>
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<tr>
<td>Retail Price</td>
<td>$195</td>
<td>$125</td>
<td>$175</td>
</tr>
<tr>
<td>Happy Users</td>
<td>Yes</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

* Number determined by Macintosh system constraints.

---

## Happy Users!

**Our users love WriteNow**—a claim our competition can't easily make for their products.

How do we know? Because our users tell us—on registration cards, on the telephone, on bulletin boards, and in letters.

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---

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- Cursor Key Support · Windows Menu · Decimal Tabs
- Case Change · Hide Pictures Option · "Smart Quotes"
- Fixed Line Spacing · MultiFinder/Network Compatibility · and More!

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**DATABASE MANAGEMENT**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acis 4th Dimension</td>
<td>399</td>
</tr>
<tr>
<td>Activation</td>
<td>75</td>
</tr>
<tr>
<td>Apple Computer HyperCard</td>
<td>42</td>
</tr>
<tr>
<td>Ashton Tate dBASE Mac 1.0</td>
<td>295</td>
</tr>
<tr>
<td>Botland Reflex Plus</td>
<td>189</td>
</tr>
<tr>
<td>Claris FileMaker II</td>
<td>237</td>
</tr>
<tr>
<td>Fox Software F o xBas e+</td>
<td>208</td>
</tr>
<tr>
<td>FoxBase+ Multi-User</td>
<td>319</td>
</tr>
<tr>
<td>FoxBase+ Runtime</td>
<td>158</td>
</tr>
<tr>
<td>Microsoft Microsoft File 2.0</td>
<td>179</td>
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<tr>
<td>Odesta Double-Helix II</td>
<td>335</td>
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<tr>
<td>DataDesk Professional</td>
<td>Special 289</td>
</tr>
<tr>
<td>Preferred Publishers Database</td>
<td>75</td>
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<tr>
<td>ProVue</td>
<td>Special 209</td>
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<tr>
<td>Software Discoveries</td>
<td>45</td>
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<tr>
<td>RecordHolder Plus</td>
<td>119</td>
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**NETWORKING SOFTWARE & HARDWARE**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>CE Software</td>
<td></td>
</tr>
<tr>
<td>Quick Mail</td>
<td>159</td>
</tr>
<tr>
<td>Farrallon</td>
<td></td>
</tr>
<tr>
<td>PhoneNET AppleTalk</td>
<td>9</td>
</tr>
<tr>
<td>PhoneNET D1n 8 or D89</td>
<td>35</td>
</tr>
<tr>
<td>Timbuktu</td>
<td>65</td>
</tr>
<tr>
<td>TrafficWatch</td>
<td>145</td>
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<tr>
<td>LaCie</td>
<td></td>
</tr>
<tr>
<td>SilverServer</td>
<td>89</td>
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<tr>
<td>Microsoft</td>
<td></td>
</tr>
<tr>
<td>Microsoft Mail 1-4 users</td>
<td>195</td>
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<tr>
<td>Olduvial Software Clip Share</td>
<td>109</td>
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<tr>
<td>Font Shaver</td>
<td>149</td>
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<tr>
<td>Shika NetModern V2400</td>
<td>479</td>
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<tr>
<td>SuperMac Software</td>
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<tr>
<td>Acknowledgement</td>
<td>329</td>
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<tr>
<td>Multi-User SuperLaserSPOOL</td>
<td>199</td>
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<tr>
<td>TOPS</td>
<td></td>
</tr>
<tr>
<td>Tops 2.0 Mac , Tops Dos</td>
<td>119</td>
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<tr>
<td>or Net Point</td>
<td></td>
</tr>
<tr>
<td>Tops FlashBox</td>
<td>125</td>
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<tr>
<td>Tops Repeater</td>
<td>125</td>
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<tr>
<td>Tops FlashCard</td>
<td>169</td>
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<tr>
<td>InBox-MacConnection</td>
<td>48</td>
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<tr>
<td>InBox-Starter Kit</td>
<td>149</td>
</tr>
<tr>
<td>InBox- Mac +8</td>
<td>149</td>
</tr>
<tr>
<td>inBox-Teleconnector D1n8 or D89</td>
<td>39</td>
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**PRINTERS & DIGITIZERS**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Digital Vision</td>
<td></td>
</tr>
<tr>
<td>Computer Eyes-Mac</td>
<td>209</td>
</tr>
<tr>
<td>Kozal Technologies Corp.</td>
<td></td>
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<tr>
<td>MacVision 2.0 (Digitizer)</td>
<td>219</td>
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<tr>
<td>Mac Director</td>
<td>115</td>
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<tr>
<td>Kurta IS A6B Tablet</td>
<td>265</td>
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<tr>
<td>Cordless 4 Button Cursor</td>
<td>65</td>
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<tr>
<td>SeikoSpek SP1020 (Interpreter Comp.)</td>
<td>Special 235</td>
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<tr>
<td>Summarigrams</td>
<td></td>
</tr>
<tr>
<td>Bit Peer Plus</td>
<td>325</td>
</tr>
<tr>
<td>Thunderware ThunderScan</td>
<td>189</td>
</tr>
<tr>
<td>Special 409</td>
<td></td>
</tr>
</tbody>
</table>

**ENDNOTE 1.1 by Niles & Associates**

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**EDUCATIONAL/CREATIVE SOFTWARE**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Ars Nova Practice Musica</td>
<td>75</td>
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<tr>
<td>Barron's Barron's SAT</td>
<td>35</td>
</tr>
<tr>
<td>Bible Research The Word (KJV or NIV)</td>
<td>165</td>
</tr>
<tr>
<td>Bogus Productions Studio Session</td>
<td>40</td>
</tr>
<tr>
<td>Shing Quartet, Country or Heavy Metal</td>
<td>15</td>
</tr>
<tr>
<td>Super Studio Session</td>
<td>75</td>
</tr>
<tr>
<td>Bright Star Technology Alphabet Blocks</td>
<td>32</td>
</tr>
<tr>
<td>Talking Tiles</td>
<td>69</td>
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<tr>
<td>Broderbund</td>
<td></td>
</tr>
<tr>
<td>Jam Session or Black &amp; White Movies</td>
<td>30</td>
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<tr>
<td>Sensor Geometry, Calculus or Physics Type!</td>
<td>99</td>
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<tr>
<td>Where in the World is Carmen SanDiego?</td>
<td>27</td>
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<tr>
<td>Coda Mac Drums</td>
<td>32</td>
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<tr>
<td>Penelope</td>
<td>52</td>
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<tr>
<td>Markids Educational Prog. (ea)</td>
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<tr>
<td>Simon &amp; Schuster Tutor IV</td>
<td>35</td>
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<tr>
<td>Springboard Top Honors</td>
<td>59</td>
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<tr>
<td>Family Matters or Atlas Explorer</td>
<td>28</td>
</tr>
</tbody>
</table>

**GOfer by Microlytics, Inc.**

GOfer is the ultimate desk accessory for finding hidden facts. Give GOfer a phrase, fact or date and send him looking through floppies, hard disks, RAM disks and most networks. Search for up to eight items simultaneously. GOfer allows you to view, cut and paste. MultiFinder and Hypercard compatible plus AND, OR, NOT and nearby search criteria. GOfer a real find. ....... $44.

**BUSINESS SOFTWARE**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Abacus Concepts StatView II (Mac+, SE, II w/68020 &amp; 68881)</td>
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<tr>
<td>StatView SE+ Graphics</td>
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<td>Access Technology Trace 2.1</td>
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<tr>
<td>Ashton Tate Full Impact</td>
<td>249</td>
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<tr>
<td>BrainPower Arch/Text</td>
<td>182</td>
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<tr>
<td>StatView SE + Plus</td>
<td>175</td>
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<tr>
<td>Math View Professional</td>
<td>144</td>
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<td>DataScan</td>
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<td>Bravo Technologies MacCalc</td>
<td>77</td>
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<td>Chang Laboratories C.A.T.</td>
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<td>Claris MacProject II</td>
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<tr>
<td>SmartForm Designer</td>
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<tr>
<td>Individual 101 Macros For Excel</td>
<td>37</td>
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<tr>
<td>Mainstay Capture</td>
<td>42</td>
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<tr>
<td>Mac Flow 2.0 or Mac Schedule</td>
<td>115</td>
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<tr>
<td>Meta Software MetaDesign</td>
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<tr>
<td>Micro Planning Software</td>
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<tr>
<td>Micro Planner 6.0</td>
<td>325</td>
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<tr>
<td>Microsoft Microsoft Works 2.0</td>
<td>189</td>
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<tr>
<td>Microsoft Excel 1.5</td>
<td>255</td>
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<td>Nole Press WriteMaker 3.0</td>
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<td>For the Record</td>
<td>153</td>
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<td>Parescomp Mio</td>
<td>159</td>
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<tr>
<td>Pro Plus WildStreet Investor V3.0</td>
<td>469</td>
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<td>Safari Software BuK Mailer 3.2</td>
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<tr>
<td>BuK Mailer Plus</td>
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<tr>
<td>Components GL</td>
<td>389</td>
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<tr>
<td>Select Micro Systems, Inc. Extafile</td>
<td>219</td>
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<tr>
<td>MapMaker</td>
<td>215</td>
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<tr>
<td>Shana Corporation Fast Forms</td>
<td>87</td>
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<td>SoftView MacWriter</td>
<td>47</td>
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<tr>
<td>Form Set Business Forms</td>
<td>59</td>
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<tr>
<td>Synex Mac Envelope 4.0</td>
<td>55</td>
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<td>Mac Invoice</td>
<td>23</td>
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<tr>
<td>Systat Systat 3.2</td>
<td>458</td>
</tr>
<tr>
<td>(Specify MacPlus, SE or Mac II)</td>
<td>165</td>
</tr>
</tbody>
</table>
DataDesk Professional by Odesta

DataDesk Professional is the data analysis package that lets you see, explore and understand the meaning of your information. Even if you're not a computer wizard, you can use DataDesk Professional's icon-based point and click user interface to generate histograms, bar charts, scatter plots, box plots and rotating plots. Let DataDesk bring the power of statistical vision to your Macintosh. ... $289.

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Aegis Development
Doug Clapp's Word Tools 2nd Edition 42. WorksPlus Spell 1.1
A.L.P. Systems
MacProof 3.0 115. Word Finder
Deneba Software
Big Thesaurus 54. Sensible Software
Selling Coach 3.0 Professional 105. Sensible Spell Check
Electronic Arts
Thunder! II 49. Writing Now 2.0

UTILITY SOFTWARE

ALSoft Disk Express 49. Redux
Font/DA Juggler Plus 42. ScreenSaver
Master Juggler Special 64. OldWear Software Icon-It!
Berkeley System Design
Stepping Out II 52. Read-It OCR Personal
Central Point Software
Copy II Mac (Includes MacTools) Read-It O.G.R 30
CE Software
QuickKeys (Macro Program) 53. SuperMac Software
ModiPackage Plus Utilities 27. SuperSpool 5.0
Farrallon Computing
Screen Recorder 135. SuperSpool 2.0
Fifth Generation Systems
Suitecase II 44. DiskIt 1.4
FastBack 54. Sentence 2.0
Power Station 54. Symantec Utilities for Mac (S.U.M.)
Print 15. Williams & Maslas
IJC View Special 69. myDiskLabeler w/Color
Icon Simulations
On Cue 36. myDiskLabeler w/LaserWriter Option
TMON 95. myDiskLabeler w/LaserWriter Option
Microlytics, Inc.
GOLifer Special 44. Working Software
Microseeds INITPicker 31. FindSwell 2.0 (Document Finder)

DESKTOP ACCESSORY PROGRAMS

Affinity Microsystems
Tempo II Special 93. Electronic Arts Desk Tools Plus
Affinitie Special 45. Mainstay
Beyond Inc. Menu Fonts 2 29. Thinks N' Time
Borland SideKick V2.0 68. Solutions, International
Bright Star Technology
Hyper Animator 79. Super Glue
Casady & Greene, Inc
QuickDesk 1.4A 32. SmartScrap & The Clipper V2.0
CE Software DeskTop 3.0 27. Symmetry
Deneba Software Comment 2.0 54. HyperDesk (Req. S12K)
Electronic Arts
Desk Tools Plus 31. TENpunk

SHOWCASE F/X by Aegis

Aegis' SHOWCASE F/X is the feature packed special effects and animation system for fonts and graphics. Enhance your graphic images with powerful, unique headlines by applying styles to any Macintosh font. Distort, rotate and rescale graphic images and fonts. Create animated text, and play it back at 60 frames per second! For high impact presentations and desktop video, you can't beat Aegis' SHOWCASE F/X. ... $199.

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Abalon InterFax 12/48 329. Practical Modem 2400SA
Anchor Automation
MacPac 2400E w/software & cable 179. MacCommPack (2400SA)
Best Data Products SmartDine w/ microphone & cable Special 229
2400/1200 w/software & cable 169. Williams & Maslas
Epic Epic 2400 Int. SE 315. PromoPac 2400M Ext.
Epic 2400 Int. Mac II 315. (Software & Cable)
Hayes Microcomputing
Smartmodem 1200 299. Supra Corporation
Smartmodem 2400 449. Supra Modem 2400
Practical Peripherals
Practical Modem Mini 1200SA 79. U.S. Robotics

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Mac Commpack 2400 by Practical Peripherals

The Mac Commpack 2400 package contains all you need to start high speed telecommunications now. The Mac Commpack 2400 includes a Practical Modem 2400 SA, Microphone 1.0 software and cables to connect the modem to any Mac. ... $229.

Blank Media

SMART ART II by Emerald City Software

SmartArt from Emerald City Software brings custom text effects to your favorite word processor, page layout or presentation program. With SmartArt you simply select one of the pre-programmed effects, customize it with the powerful, but simple controls, and place it in your document. SmartArt comes with the fifteen most wanted text effects for a word processor, desktop publishing and graphics design. ... $95.

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Mind Write 2.0 95
Mind Write Express 145
Aegis Showcase F/X Special 199
Allan Bonadio Associates
Expressionist 2.0 79
Alius Corporation
Alius Persuasion 389
PageMaker 3.0 399
Ashton Tate
FullWrite Professional 269
Broderbund
DTP Advisor 47
Caire Chromium 585
Claris MacWrite 5.0 110
Emerald City Smart Art Special 95
Leterset Ready, Set, Go! 45.5
QuickLetter 275

Programs Plus

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FAX 203/381-9043
Customer Service 203/378-3662
800/832-3201

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| Abalon ProPoint (ADB Mouse) | CH Products | Impulse Micro Cabinet | DataDesk |
| (Mac SE & Mac II) | (Turns Joystick into Mouse) | t/O Design Audio Digitizer w/soundware 139. | MAC-101 ADB Keyboard/Platinum |
| Micsaver Mac | Ergotron | Mousecleaner 360° | Farallon Micsaver Mac SE |
| MacRecorder Sound System | ImageWriter or ImageWriter II Cover | Mousecleaner (Mac SE or Mac II) | ImageWriter Rainbow Pack (6 Colors) |
| Goldstein & Blair | ImageWriter Black 6-pack | Special 50. | ImageWriter LO Four Color Ribbon |
| Impulse | ImageWriter L/O or Grappler L/S | Special 50. | ImageWriter LO Four Color Ribbon |
| Audio Digitizer w/soundware | ImageWriter LG Black 9. | Special 50. | ImageWriter LO Four Color Ribbon |
| I/O Design | ImageWriter LG Black 9. | Special 50. | ImageWriter LO Four Color Ribbon |
| Mac Luggage in Navy or Pia. | FlashPamper | ImageWriter LO Four Color Ribbon | Special 50. |
| Mac Recorder Sound System | IbmageWriter Special 50. | ImageWriter LO Four Color Ribbon | Special 50. |

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LightningScan is a hand-held, high resolution image scanner for the Macintosh. Its design allows fast scanning of photographs, images from books and magazines, drawings, and logos. Its speed and flexibility make it an ideal tool for all Macintosh graphic applications including desktop publishing and design. After use, the scanning unit is easily stored in any desk drawer...

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DISK DRIVES/HARD DISKS/UPGRADES

<table>
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<tr>
<th>Item</th>
<th>Cost</th>
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<tr>
<td>MacSnap Plus 2 (Mac 2 Plus to 2MB)</td>
<td>$439.00</td>
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<tr>
<td>MacSnap 25L or 1024 Option (1MB or Mac Int Memory Exp)</td>
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<td>SCSI Interface/Port</td>
<td>$109.00</td>
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<tr>
<td>MacSnap Toolkit (torx driver, opening &amp; ground)</td>
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<td>Platinum Color, Optional Built-In Modems</td>
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<td>MacBottom HD-84</td>
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<td>Rodime 1000 RX (Int, 100MB MacInt)</td>
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<td>Video Technology</td>
<td>Laser 100k External Drive $185.00</td>
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<tr>
<td>MacBottom Hard Disk Drives by PCPC</td>
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“Although this category, unlike spreadsheets and word processors, had a lot of new players this year, one seemed to us to be the clear leader. 4th Dimension, the powerful first product from ACIUS, takes the kudos.”
MacUser, February 1988

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

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

“Users with no experience or interest in programming can build a barebones database in 4D’s ‘Design Environment’ just by pointing, clicking, and naming files and fields.”
“...For searches and sorts - database operations that are performed interactively - 4D’s performance curve is probably the best of the four programs (Omnis 3 Plus, Double Helix II, dBASE Mac, and 4th Dimension).”
David Brandt, MacWEEK, January 18, 1988

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

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

“In general, Macintosh software is better than software for other personal computers... 4th Dimension redefines those high standards.”

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read somewhere recently that (for the Macintosh as well as those other computers) “networks and connectivity will be the desktop publishing of the 90s.” If this is the level of development we’re aiming for, I say we’re setting our sights too low. And before any rabid DTPers decide to take out a voodoo contract on me, I am not putting down desktop publishing. DTP on the Mac is a wondrous thing, and particularly so for someone like me who started on newspapers when they were still using lead type and Linotype machines. (And, yes, that is a current picture at the bottom of the page.) A goodly percentage of this magazine is desktop-published. My letters to my parents are desktop-published. All this notwithstanding, I think we still have plenty of room for lots of amazing developments in DTP. However, that’s a subject for another — or some else’s — column.

Anytime we begin to develop a new technology or new ways to use an existing technology, we do ourselves a dis-service if we limit our view to just what we can see initially — either ex- or implicitly. We need to decide where we want to go independently of whether we currently have the means to get there; there’s no sense in crippling the enterprise from the start by being shortsighted.

That’s why I think we need to take connectivity far beyond the (analogous) scope and impact of desktop publishing. We need networks and connections that make those we are so proud of today look like an exhibit in the Smithsonian — an old exhibit in the Smithsonian. Why stop at companywide networks when we can be shooting for nationwide or worldwide networks? When you aim for the farthest point, even in falling short you end up well past where you’d be working on the cautious and unimaginative principle. It’s not even as if this were so much pie in the blue sky. There’s fiber-optic cable being installed all over the country by the telephone companies; surely they’ll need help figuring out ways to use up all that bandwidth. There’s the Macintosh and, in particular, the Mac interface, which offers comparatively simple and easy-to-learn access to significant computer power. We’ve got the parts; now we need the vision. (Can you take a hint, AT&T?)

In that context, here’s what I think the companies and developers working on connectivity options should be shooting for — at a minimum. Any of us should be able to walk into any office, apartment, or hotel room and plug our Mac into a modular jack. (Of course, this presupposes that sometime in the next decade Apple will produce a computer that can be carried around comfortably — that’s a hint, Apple.)

Once the machine has been dropped onto a desk and plugged in, we should be able to log on to a network with access to the research facilities of major libraries (the New York Public, the Library of Congress, the Bodleian, the British Museum — you get the idea). We should be able to do more than just access the card catalogs or indexes; I want to go straight to the book. If downloading large files isn’t any more efficient and less time-consuming than it is now, at least we should have some equivalent of the current interlibrary loan arrangements — or have the book faxed directly to the user. I want to be able to reach not just fax machines with my computer but also telephones, my bank, shops, and all the people I have to send money to once a month (and the one or two people who send me money once a month — get the hint, Z-D?).

Whenever anyone starts talking of large electronic connections, questions of security and paranoia pop up. I am a child of the 60s and have gone through (not without reason) the full spectrum of paranoid reactions to easily accessed public records, government Big Brotherism, and so on. Even so, as I keep harping on here, there is no technology without attendant risks.

Let me rephrase that: Any technology without some attendant risk of misuse is probably trivial.

I was born too early to be comfortable with the idea of doing all my reading on-screen, but not so early that I am opposed to the concept ideologically. Computer access to the Oxford English Dictionary, Brewer’s Dictionary of Phrase and Fable, and the original (and still champion) Roget’s Thesaurus would suit me just fine. But browsing around a library’s book and periodical stacks would suit me even better. How about Mac-compatible CD-ROM versions of all those reference books (this one’s yours, Microsoft)?

With only a small part of this “dream network,” I could have told you where the quote in my first sentence actually came from. Only then I’d have had to think of another lead for this column.

Notes from the Hinter Lands

Why stop at companywide networks when we can shoot for nationwide or worldwide networks?

By Louise Kohl

UP CLOSE AND PERSONAL
We’ve gotten several letters and
Ten Reasons Why FileMaker® Users Are Switching To Panorama™

1. Panorama’s drawing package is far superior for creating and revising forms. In fact, no other database comes close to Panorama’s drawing capabilities. If you’ve ever struggled with FileMaker® to get a form to look just right, you’ll really love the Panorama difference.

2. Panorama dramatically improves data entry speed and accuracy. If you’re not the best typist in the world (or even if you are) you’ll appreciate our exclusive data entry short-cuts like Clairvoyance® and Value Bars.

3. Recordable macros make anyone a power user. Customize your databases by adding macro buttons and menus.

4. Powerful mail merge does everything but lick the stamps. Panorama can organize and maintain accurate mailing lists, create and print customized form letters and mailing labels, and even calculate postage.

5. Outlines are an indispensable organizational tool you won’t find in any other database. Panorama organizes your data into an outline structure on command, then automatically calculates summaries for each outline level. You can expand the outline to show the detail, or collapse it to see the big picture.

6. Panorama’s built-in charts eliminate the hassle of transferring data to a separate charting program. Each chart is totally integrated with the data, and instantly updates to reflect any change.

7. Panorama’s exclusive Flash Art gallery revolutionizes the way databases handle pictures. Until now, using pictures in a database meant tediously pasting in one picture at a time. Panorama’s Flash Art avoids this time-consuming process by letting you key in pictures by name.

8. Panorama lets you work with both form and spreadsheet views of your data at the same time. Panorama’s row/column spreadsheet view is simple and intuitive to use.

9. Panorama can import your existing FileMaker® data in seconds (over 10,000 records per minute). As an extra bonus, your files will actually shrink by 40 to 90 percent when converted into Panorama. Panorama can also convert data from 4th Dimension™, Double Helix®, Excel, Works®, and many more — all in seconds.

10. If the first nine reasons sound good, wait till you see how incredibly fast Panorama is. Like its predecessor OverVUE, Panorama establishes a quantum leap in database performance. Panorama out-searches, out-sorts, out-calculates, out-forms, and generally outclasses the competition.

I would like to feel that I was given this space not because I am female but because I have something to say.

I have some indication that someone is paying attention. On the other hand, I would like to feel that I was given this space to fill not because I am female but because someone thought I had something to say. And mine is hardly the only “woman’s voice” in MacUser; nor did my voice suddenly appear just because there’s now a picture attached to it. I am not new and never have been a card-carrying member of the women’s movement, largely because I think that indulging in rhetoric and exhortation to battles that cannot be won is a waste of time. As a journalist, I have been particularly put off by the heavy-handed attempts to perform surgery by hacksaw on the English language. Language changes when society changes. And the battles to change society are the ones where we have to get our hands dirty and may not be here to see the outcome. A lot of these battles are specific to women, as I know from experience. But many are simply human battles that anyone with any integrity and a sense of self-worth has to fight. I’m more interested in the ultimate perfectibility of mankind than in the temporary superiority of any one half of it.
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—Bob Schwabach, Universal Press Syndicate

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Here are seven reasons why, if you’re serious about telecommunications, you should consider owning MicroPhone II:

**Power train.** MicroPhone II is charged by the most powerful scripting engine for telecommunications, offering variables, string and math functions, arrays and file manipulation. You develop scripts with either the program’s learn mode or its point-and-click script editor.

**Design.** Surprisingly, with all its unparalleled power, MicroPhone II is simple to use. Menus, dialog boxes and on-screen controls are well organized and pleasant to look at. Its “outstanding” manual is easy to read, clearly laid out and contains a thorough index.

**Speed.** Routinely clocked at 18,000 bits per second over ordinary telephone lines, MicroPhone II is the fastest telecom software around. Its file transfer protocols — XMODEM, 1K XMODEM, YMODEM, YMODEM-G, Kermit and ZMODEM — are all optimized to make your files fly across the country or around the world. The intelligent ZMODEM negotiates the most treacherous channels of a packet-switched network and resumes broken transfers with no loss of data.

**Color options.** MicroPhone II lets you assign color icons to your scripts, thus turning the icon bar, shown here, into your control panel. The icon bar can be scrolled, resized and placed vertically or horizontally anywhere on the screen, awaiting your next click. Choose icons from the large collection provided with the software, or create your own.

**Cruise control.** Flexible scripting means that MicroPhone II can run on automatic while you’re taking care of other important business. Whether collecting your electronic mail in the background, or calling Paris at midnight to transmit the daily sales report in French, the program is always at your service, saving you time and money.

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But enough talk. Start using MicroPhone II today and find out for yourself why Jim Seymour and John Dvorak are the great communicators. After all, having invested all this money in the best hardware in the world, don’t you deserve the best software?

Jim Seymour:
“... arguably the best communications software ever written.”

John Dvorak:
“... stunning. Fast, slick; it does everything except slice bread.”
Sales of the Macintosh II soared. Apple was buoyed by the flood of cash; the company even boosted prices on the Mac II last fall. Dealers found the Mac II such a powerful sell that street prices stayed near list. Machines were often in short supply. The Mac II demonstrated a lot of what retailers call "pull through," dragging LaserWriters and AppleTalk networks out the door with it.

The success of the Mac II revitalized the Apple dealer network, giving Apple the strength to cut marginal dealers and demand of the survivors a higher level of support for Apple customers. The success of the Mac II also validated John Sculley's two basic business strategies: listening to customers rather than preaching to them, and seeing Apple desktop computers and those who use them as parts of a larger whole rather than as isolated entities.

And at IBM, what hath the PS/2s and OS/2 wrought? In the past two years, the PS/2s have brought down on IBM unprecedented disdain from such uncustomed IBM-bashing quarters as The Wall Street Journal and The New York Times. The PS/2's Micro Channel Architecture has been hooted at as "voodoo technology," and the incompatibilities with earlier PCs have angered customers who feel that their huge investments in PC/AT-bus machines and cards have been forgotten by IBM. Similarly, OS/2 — still big, clumsy, expensive, and without significant value for the overwhelming majority of users — has earned even more disdain and sells today as a novelty, not as a tool.

What about advancing IBM's two most important strategic directions — knocking off the PC-clone vendors and tying together the IBM product line, from mainframes at the top to PCs at the bottom, under its SNA/SAA scheme?

The PS/2s have actually boosted sales at IBM's biggest clone-making competitors, which delivered more performance and value in systems built around the standard PC/AT bus, a market that IBM simply abandoned until very recently. Sales of PC compatibles from Compaq, Tandy, and at IBM.
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Dell, ALR, and many others have boomed over the past two years, while PS/2 sales have until recently sunk well below Big Blue’s expectations.

And how did OS/2 contribute to IBM’s goals? Its delays, cost, and clumsiness have highlighted rather than solved the incompatibilities in IBM’s line, drawing attention to DEC and other vendors that have avoided building systems that cannot talk to each other.

IBM’s failure to deliver a quality operating system for its PCs has brought into question, in many large companies, IBM’s understanding of those companies’ needs.

PS/2 sales were so sluggish for the first year that IBM was reduced to talking about the machines’ success in Europe and forced to “fix” through new models (the Models 30, 50, and 80) while essentially abandoning the sleepy Model 60.

IBM’s corporate profits sagged badly during this time.

The company where no one ever gets fired offered early retirement to thousands of employees and moved thousands of others out of IBM plants and offices into sales jobs. And IBM’s dealers were forced, shortly after the PS/2s’ introduction, back into the gray-market business.

IBM’s dealer pricing for PS/2s made them profitable only when bought in huge quantities, so dealers returned to ordering many more computers than they could sell, immediately dumping their overstock onto the gray market. IBM made things worse with a quota system that forced them to order in large quantities, their IBM Authorized Dealer status would be rescinded.

As a result, the PS/2 gray market flourished, with machines selling at street prices as low as $10 to $15 more than IBM’s deepest dealer prices. And Bill Lowe, head of IBM’s Entry Systems Division and the prime force behind the PS/2s, is no longer with the company and is widely believed to have been driven out by the prospect of a career stalled by the failure of the PS/2s.

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Danny Goodman

Age: 30 something. It's hard to tell on guys with beards.


Hobbies: His idea of a good time is to scan the comprehensive quotes of the great Serbo-Croatian poets while enjoying a good glass of Chenin Blanc. Napa Valley, of course. He prefers non-computer keyboards, like the one on his Bechstein grand piano. A compulsive researcher!

His Page Recognition Software: OmniPage, of course. According to Danny: "In preparing a book, or working on a special project, I need to get at information quickly to avoid disturbing my work flow. With OmniPage, I can scan virtually any font, or font size, in any column format, and easily place it into an existing file. I'm building a library of articles, relevant to my work, on a variety of subjects."

Favorite Quote: From the New York Times: "OmniPage has the potential to do for scanners what the Lotus 1-2-3 spreadsheet did for the sale of PCs."

Things Disliked Most: "Neil Simon plays done by actors from California and guys who claim to have met with beings from other planets. Most of whom also happen to come from California. No seriously, what upsets me most is some of the over-promising in this industry, especially when it comes to page recognition software."

Favorite Scan: "I'm working on a library of articles from magazines and professional journals. You might call it the ultimate scan. I want to develop a HyperCard front end, and tie it all back to Focal Point II, which is really the center of my computing universe."

Future of Page Recognition: "I hate to type, that's why I develop HyperCard products that type for themselves. OmniPage helps to eliminate excessive key strokes. I can relate to that. How else does my publisher expect me to get a book out in a matter of months? Being able to cut and paste between vast libraries of data, extrapolating ideas, is the very essence of page recognition. With OmniPage's versatility we're not just managing pages any longer, but entire blocks of thought. It's a product that delivers on the promise of the future—finally."
I'm ticked off. Last year around Ed-dy Award time, I wrote a special column. The Macintosh market had grown so large that I felt some excellent business products were overlooked in the Editors' Choice Awards selection process. There just weren't enough categories, but we didn't want the Eddies to become like the Emmys, with so many categories that the awards became meaningless.

I decided to make up my own awards so some of these deserving products could get the applause they deserved, and so that you could have a little extra information to help you make your next purchase decision.

Unbridled Greed

For example, in 1988 several significant word processors were introduced, but only one can get an Eddy, so I might have given an award to WriteNow 2.0 from T/Maker as the “Best Business Word Processor” because of its speed, ease of learning, and ease of use. It doesn't have the myriad features of the high-end processors, but most business users don't need all those features and can save some money by buying WriteNow. In last year's column I also made up some less serious categories for sheer entertainment. This year I might have made up a category called “Best Celebrity Endorsement” and given it to Wingz for snuggling Leonard Nimoy to tout the product (but couldn't they have paid him a bit extra to shave?).

Why am I ticked off? Because, as you may have guessed by now, I can't continue the tradition of Pinstripe Pick Awards (Pinnies) that started last year. And why not? Because software publishers are greedy and petty. After the column appeared last year, several companies called MacUser and demanded their statues, just as though they had been awarded Eddies. Even though I promised no statues or award ceremony and was just trying to bring their products to the attention of the people who could use them, they still wanted gold statues. In short, they got greedy. They wanted more than a pat on the back and some free publicity — they wanted gold. It took much explaining to convince them that they weren't going to get a statue, and some of them got quite miffed about it. It was an awful mess that took up a lot of people's time and resulted in some hard feelings, so it was decided that there would be no awards of any kind other than the Editors' Choice Awards in MacUser.

So, this year there will be no Pinstripe Pick Awards. I can't create my own categories like “Best Backup System” and let you know that an excellent way to back up your hard disk is to use Redux from Microseeds in conjunction with the 45-megabyte Syquest removable hard disk. It's a shame, too, because the business user often has different needs that a specialized award could address. Many small companies can use every mention they can get to promote their products, and “Best Small Product from a Small Company” could have meant a lot to a product like Screen Gems, a collection of marvelous little utilities for the Macintosh II, from Microseeds.

Some people have long complained about the greed of companies that make products for the Macintosh. The biggest complaint is almost always about high prices. It's true that you can buy a hard disk for an IBM PC for less than a Macintosh hard disk, but on the other hand, companies can sell a lot more hard disks for the PC than they can for the Mac; they can make up in volume what they could have made on each unit. And there's also more competition in the IBM PC market, which drives prices lower. These same arguments apply to almost any hardware product for the Macintosh — higher prices do not necessarily indicate greed. This doesn't mean that there are no greedy hardware companies — just that prices aren't the only barometer.

What about high prices for software? The volume and competition arguments also apply here. Additionally, Macintosh software is harder to develop than software for other computers (although with OS/2 the IBM PC world is getting difficult as well). And while it may seem that a few disks and a manual can't cost much to produce, there are development costs, marketing costs, support costs, and generally a lot of overhead associated with a major product.

So, if you can't judge a company's greed by its pricing, how can you tell? Here's one way to separate the greedy from the people just trying to make an honest buck. Start with price. If a software package costs less than...
Hey Mac, Nisus™ Is Not Just Another Word Processor.

Here's why:
Want to draw a picture without ever leaving the program? Easy.
Want to wrap text all the way around it or let the text flow right through? Easy.
Want to see it all in glorious color? Easy.
Need to find a particular word or phrase by searching through all files, open or not? Easy.
Need to use our superior dictionary or thesaurus? Easy.
Want to undo what you just did, or any number of things you did before? Unlimited Undos. Easy.
Want to use the fastest word processor on the market? Easy.
It's all easy when you have Nisus. Ask your favorite dealer.

S200, the company just can't be greedy. After distributor and dealer markups, a product priced under $200 isn't bringing in a very high per-unit profit. For hardware, compare prices with equivalent hardware for other computers. If the price of the Mac version is within 25 percent of the IBM version, it's probably not a greedy company. Next look at support. Companies that provide a lot of support are spending a lot of money on it, and that's usually a sign that they're not greedy. But if you can never get through, your calls are never returned, or the company charges for support, you may have found a greedy company. Then look at upgrade policies. Companies that offer free or reasonably priced updates are usually not greedy.

Also look at warranties. Hardware warranted for only 90 days is a possible greedy indicator. For software, if the product is warranted to do anything, it's a sign that the company isn't very greedy, since most companies warrant software to do nothing. So don't mistake high prices for greed. With computer products, as with all things, you often get what you pay for. Good support, reasonable update policies, and high quality can justify those high prices. On the other hand, don't be fooled. There are a lot of greedy companies out there. I found out the hard way.

PinStripe Picks
Some products from 1988 that could have been Pinnie award winners:
Focal Point II: (TEPointO) Could have been a shoo-in for "Best Small-Business Organizer." Much improved over the previous version.
MacWorkStation: (Apple) Bringing the ability to apply the Mac interface to the mainframe world would have been good for a "Best Connectivity Product" mention.
Persuasion: (Aldus) Wish I could have mentioned it as "Best Business Presentation Tool."
MORE II: (Symantec) A powerful outliner, organizer, and fantastic presentation tool, it would have been my only real contender for "Business Product of the Year."

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86 MACUSER MAY 1989
Laser Quality Under $1000*!

The Hewlett-Packard® DeskJet with the Grappler® LS interface offers 300 DPI at 1/3 the price.

You purchased a Macintosh for its ability to produce quality output. Problem is, you can’t afford a laser printer. At $2000 and up, your only real alternatives have been dot matrix printers or regular trips to the local copy store.

Why settle for dot matrix output when you really need laser quality? The Grappler LS easily connects the DeskJet to your Macintosh, providing:

- 300 DPI resolution
- 14 pound portability
- Small footprint, smaller than an ImageWriter™II
- Inkjet refills for less than $20
- Compatibility with H.P. LaserJet, DeskJet, and LaserJet compatibles

Only the Grappler LS provides full 300 DPI graphics (laser quality), and allows you to print both portraits and landscapes. With the standard Apple printer driver provided in the Grappler, you get complete WYSIWYG text and graphics because your printer acts the way your Macintosh expects it to. The Grappler LS is fully compatible with hundreds of popular software titles including Excel®, MS Word®, MacDraw II®, Power Point®, Super Paint®, and PageMaker®. And because the Grappler LS comes complete with cable, Apple driver, installer, fonts and a powerful spooler, there is no need for additional purchases.

GRAPPLER LS list price: $149

**The Panasonic® 1124 with the Grappler® LQ means Mac 24 Pin Printing Under $500!**

Until now, Macintosh dot matrix printing has meant only two things: 9 pin, narrow carriage output for about $600, or high quality, wide carriage output for about $1400. The Grappler LQ opens up a world of dot matrix printers for the Mac, at a fraction of the cost. These include popular Epson, Okidata, NEC, Toshiba and Star Micronics models, as well as all compatibles.

Now the choice is yours!

For example, consider the Panasonic 1124 printer. With output at 180 DPI and the ability to run continuous feed or multiple part forms, this sturdy printer will get the job done with crisp and clear efficiency. The Grappler LQ uses a standard Apple printer driver so your printer will act the way your Macintosh expects it to, providing compatibility with hundreds of popular software titles (see Grappler LS above). The Grappler LQ gives you full 180 DPI output and allows you to print both portraits and landscapes (sideways on the page). And the Grappler LQ comes complete with cable, 3 fonts, Apple driver, installer and a powerful spooler. All you supply is the Macintosh and the printer.

GRAPPLER LQ list price: $149

**Average total selling price. Printer suggested retail $529.95**
Every Jasmine hard disk drive comes complete with an impressive bundle of software that includes the highest-rated utility programs available. These include Symantec™ Utilities for Macintosh, Redux™ from Microseeds, DriveWare™ and DEScryptor™ which are our own comprehensive operating and proprietary encryption tools, DemoWare™ (including 416 Dimension, FileMaker, Illustrator88, WriteNow, QuicKeys, and QuickMail), plus over 5MB of Public Domain and Shareware Software.
“We don’t charge extra for the software for the same reason Stradivarius didn’t charge extra for the bow.”

Dennis Chang, President, Jasmine Technologies, Inc.

It seems that some of our customers are a bit taken aback when they finish unpacking their new Jasmine hard disk drives. For there, staring back at them is over $500 worth* of top-rated software that they didn’t order or expect. A bundle that saves them a bundle. In some cases, almost as much as the purchase price of the hard disk itself.

So the question we often get asked is: How can Jasmine afford to do that? President Dennis Chang explains.

“Actually, what we ask ourselves is just the opposite. How can we afford not to do that? We want our customers to get optimum benefit and performance from their hard disk drives and that’s what our software package is designed to do. Look. When Stradivarius was making his violins, he could have charged extra for the strings and the bow. But when your goal is quite simply to be the best, you can’t cut corners.”

Evidently a lot of Mac users are very much in tune with that philosophy.

Because in less than three years, Jasmine has become one of the leading suppliers of peripherals for the Macintosh. With a line that not only includes hard disk drives, but tape backup systems, mass storage components, removable media systems and a remarkable new intelligent fileserver, DirectServe."

Plus the DirectPrint™ page printer that uses liquid crystal shutter technology instead of mirrors and a laser.

Moreover, the critics have been equally impressed. Jasmine products have consistently received some of the industry’s most impressive reviews.

If you’d like more examples of how we work to be the best, consider the following: Our two-year warranty is twice the industry standard. Our unconditional 30-day money back guarantee was one of the first. And our User Guides and technical support hotline personnel have created legions of enthusiastic followers.


After all, when it’s easy to afford the best, why fiddle with anything less?

Jasmine

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*Upon invoice separately ©1989 Jasmine Technologies, Inc. DirectServe, DirectPrint, DSLector and DriveWave are trademarks of Jasmine Technologies, Inc. Simmons™ Utilities for Macintosh by Symantec, Redux™ by Microsoft, 3th Dimension™ from AppsWareNow™ from F:\Maker, Illustrator 8.5™ from Adobe, FileMaker™ from Shannon QuickKeys™ and QuickMail™ from CESoftware.
"Daddy says he owes his success to who he met in college, who he met in business and to Mommy who told him to save his information on Sony data cartridges."

Yes, it certainly is important. Because a data cartridge is used for critical document storage. So it goes without saying that reliability is its most important asset.

And reliability is unmatched in Sony data cartridges.

After all, reliability in a data cartridge means only one thing: no loss of data. And, when it comes to that, Sony data cartridges have been proven measurably better.

As the two charts on this page show, Sony data cartridges have the lowest dropout rate of any data cartridges made. Even after 5,000 passes.

Perhaps that's because only Sony manufactures every single

part of their data cartridges.

Or perhaps it's because Sony has such a long history of painstaking perfection in data storage for every media.

Including the invention of the 3.5" floppy disk format.

The benefit of all our expertise will not only help your firm, it will also help you at your firm when you tell them: To make sure your critical documents are safe, just save them on a Sony.

SONY
THE ONE AND ONLY

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THE 4TH ANNUAL EDITORS' CHOICE AWARDS

1988

It was the year of color; it was the year of viruses. It was the year of the 68030; it was the year of expensive and hard-to-find RAM. It was the year of the first PostScript clones; it was the year of higher prices. And now that it's over, it's time for MacUser's 1989 Editors' Choice Awards.

BY THE EDITORS OF MACUSER
I f you had plenty of money to spend—or could convince your boss to spend it on you—it was a good year. 1988 saw color display systems come into their own, even if the impending release of Apple’s blueprint for 32-bit color may eventually make some of these early attempts obsolete. Scanners and gray-scale monitors appeared all over the place, as did image-processing hardware and software. By the end of the year, tools to create digital art, manipulate and retouch that imagery, and produce color separations were all available.

O n the other hand, if you believed in the “small is beautiful” and “Apple is the friend of the common man” philosophies that characterized the Mac’s early years, then 1988 left you out in the cold. Sure, a lot of the more interesting products still claim to run on a Mac Plus or even on a 512KE, but don’t try doing anything very significant on those platforms. Kudos must go to TMaker, Jasmine, and Qume for contributions that don’t leave out the low-end (and low-budget) user.

**Most Significant Product**

**Vaccine**

Vaccine, from CE Software, is a great demonstration of the philanthropic nature of Mac users. Many thanks to Don Brown for setting an example for dealing with the virus crisis by giving away such great antiviral software.

**Best New Emerging Technology**

**Sound Accelerator Board**

Digidesign’s Sound Accelerator Board, with its combination of sound sampling, sequencing, and MIDI tools, has made the Mac the preeminent computer for music and digital signal processing. The board also has a Motorola 68000 Digital Signal Processing (DSP) chip, which we believe will open the Mac to a widespread use of sound.

**Best New Storage System**

**Syquest Removable Hard-Cartridge Storage System**

Many manufacturers market the Syquest Removable Hard-Cartridge Storage System under their own labels, but we felt strongly about recognizing the technology rather than any single company’s implementation of it. Syquest gives you a fast, inexpensive way to store data (from $100 to $200 per 40- to 44-megabyte cartridge—versus at least $1,000 if you were to buy a whole new hard disk with the same capacity).

**Best New Utilities and Desk Accessories**

**Symantec Utilities for Macintosh**

Symantec Utilities for Macintosh is the clear winner in this category. A very neat package that quells a basic fear—losing data—with a well-crafted product. Honorable mentions go to Fifth Generation Systems’ Suitcase II and ALSoft’s MasterJuggler.
Best New Professional Financial Package

**Timeslips III**

Time billing — tracking time spent on various clients’ accounts during a day — can be well-automated by a personal computer. By far the best program we’ve seen for this task is *Timeslips III* from North Edge Software. The program uses a desk accessory to turn the time clock on and off and then gathers the data into a master file. If you need time billing, this will do the job.

Best New Personal Financial Package

**Quicken**

For its ability to demystify the world of accounting programs, Intuit’s *Quicken* is the hands-down winner in this category. Maybe it’s because the program promises nothing more than an electronic checkbook and then surprises you by delivering an entire personal or small-business accounting system — or maybe it’s because it costs only $49.95. For both reasons, it received our unanimous vote.

Best New Connectivity Product (Mac to Non-Mac)

**NetWare**

Although it only just made our deadline — we received our full system in December — Novell’s *NetWare* wins here. With an installed base of more than 2 million PC nodes, this file-server-based LAN system will open lots of doors for the Mac. And since this version uses AppleTalk Filing Protocol to make PC servers and DOS files visible and available to Mac users under the Chooser, we’re favorably impressed. The only other product we considered seriously was our honorable mention, Insignia’s *SoftPC*, which emulates a PC on a Mac II.

Best New Networking Product

**Liaison**

We chose Infosphere’s *Liaison*, which offers a software-based method of bridging AppleTalk groups. This package turns your Mac into a hardware bridge — no need for an external bridging device with this low-cost software solution. Honorable mention in this category goes to CE Software’s *QuickMail* electronic-mail program.

Best New Programming Language

**LightspeedC 3.0** and **Allegro Common Lisp**

Here we have our only tie. THINK’s *LightspeedC 3.0* wins because of publisher Symantec’s willingness to listen to developers who used earlier versions and then do something about their suggestions. A superb source-level debugger heads the list, but there are also a number of other improvements. Its award partner is Coral’s *Allegro Common Lisp*, the best implementation of this high-level symbolics and object-capable language yet to make its way to the Mac. If you’re thinking artificial intelligence on the Mac, this is the language to use. Honorable mention goes to Digitalk’s *Smalltalk/1+, which almost made object-oriented programming a real development environment for the Macintosh... finally.

Best New Desktop Presentation Product

**Persuasion**

Aldus’ *Persuasion* takes the prize because it was designed to be a visual presentation product, not a glorified outliner. This means that you’ll need to think visually about your presentation and will be hard-pressed to sedate your audience by reading notes that are also shown on-screen. By opening the door to new ways of thinking, *Persuasion* has extended the presentation field in exciting new directions.
For the most part, Apple’s clear direction with the 68030 family is upward, and that means those of us still working with lower priced systems will be increasingly left in the lurch. With nothing but a higher priced strategy in sight (this is written in January 1989; with luck, things might have changed by the time you read it), Apple has staked its claim to the high ground of high margins.

This is the fourth year we’ve awarded these handsome statues, the Eddies. We’ll give out this year’s collection at a gala awards dinner in New York City this April at the Macintosh Business Conference. The rules for eligibility are (relatively) simple: A product had to ship between October 15, 1987 (that was the deadline for last year’s awards; from now on, our period follows the calendar year) and December 31, 1988.

Winning is a little more complicated. First we distributed ballots to the editorial staff during the first week of January. Then the collected votes
**Best New Relational Database**

**FoxBASE+/Mac**

This one was relatively easy: Fox Software's FoxBASE+/Mac. If all it offered was the ability to read and execute DOS dBASE code, it would have been worthy of note. But it's blindingly fast and has much of the Mac look and feel grafted onto its DOS roots. It could be more graphic, but we believe that when you look at databases it is performance and dBASE compatibility that really make the difference. Honorable mention here goes to Odesta's Double Helix II for its visual and object-oriented approach.

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**Best New Spreadsheet**

**Full Impact**

For introducing the first substantial improvements to the Mac spreadsheet market, Ashton-Tate's Full Impact takes the Eddy in this category. While its memory management is weak (in part because of an ambitious effort to use virtual-memory techniques), the program's page layout, graphic capabilities, excellent macro language, and third-party developer tools put it in a class by itself.

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**Best New Telecommunications Product**

**Acknowledge**

In this category, the Eddy goes to Acknowledge from Lamir for the way it has extended our expectations for telecommunications. By combining a procedural telecommunications language and MultiFinder background support, along with a run-time capability that allows custom turnkey applications to be written and distributed, the program has opened new telecommunications doors. We hope Lamir's checkered distribution problems are finally over, and we salute it for offering us a glimpse of what telecommunications might be like in the near future.

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**Best New Word Processor**

**WriteNow 2.0**

T/Maker's WriteNow 2.0 wins this one hands down. While retaining the original product's simplicity and ease of use, this upgrade is a significant improvement in power. Mail-merge features, a 100,000-word spelling checker, and direct opening and saving of various file formats from within the program are part of what makes this a superb package.

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**Best New Science/Engineering Product**

**Mathematica**

This was the year of Mathematica from Wolfram Research. Mathematica adds a whole new dimension to computing by combining the intelligence of a mathematics professor with the computational power of the Mac II. Honorable mentions in this category go to Abacus Concepts' StatView II, which offers powerful statistical-analysis tools, and to Swivel 3D from Paracomp for its 3-D modeling features.

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**Best New Desktop Video**

**Color Space II**

Mass Micro's Color Space II board is the best of the genlock devices we've seen. This board allows graphics, type, and imagery produced by the Mac to be overlaid onto live or taped video. The system wins over its competitors for the stability and clarity of its output and gives an indication of what multimedia may look like as we enter the next decade.

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**Best New Paint Program**

**Studio/8**

This category introduced most of us to what made the Mac different: MacPaint. We're glad to report that the venerable program has found a more-than-worthy successor: Studio/8 from Electronic Arts. This professional paint program offers every imaginable tool (including many surprises) and the ability to work with all the colors a Mac II can display. It requires a Mac II with at least 2 megabytes of RAM, but that's a small price to pay for this much power.
AutoCAD® on the Mac®.
A new window of opportunity opens.
AutoCAD, the world-standard CAD software, now runs on your Macintosh® II.

Your designs reflect the quality of your thinking. And your drawings reflect the quality of your designs. Put AutoCAD on your Mac II and nothing gets lost in the translation.

AutoCAD's extensive set of drawing tools enhances your productivity. Its effectiveness is proven every day by over 175,000 architectural, civil, construction, aerospace, electrical, cartographic, facility, industrial, manufacturing and mechanical design professionals around the world.

AutoCAD has been refined through ten major upgrades. You get menus full of powerful, high-precision drawing and editing commands, numerous drawing entities, and a multitude of easy-to-use features. You can window, zoom, fillet, scale, layer, annotate and associatively dimension, hatch, stretch and scale. And a simple click can undo anything or everything.

AutoCAD on the Macintosh also supports the features that have made Apple the acknowledged leader in user interface design, offering pull-down, tear-off, and pop-up menus, complete support for MultiFinder™ and the Mac windowing system, along with file dialog boxes to make access to your drawing files quick and easy. Clipboard support allows the transfer of AutoCAD drawings to a wide variety of Macintosh applications software.

A Better Perspective. AutoCAD is an advanced three-dimensional modeler that helps you solve design challenges on your Mac the way you would with physical prototypes. AutoCAD makes 3-D easy with user-defined construction planes, dynamic viewing and multiple viewports.

You can also model complex surfaces with AutoCAD using sophisticated tools such as tabulated cylinders, surfaces of revolution, ruled surfaces and Coons patches so you can represent surfaces accurately.

For even greater utility, AutoCAD provides entity handles that allow external applications to associate alphanumeric information, such as part numbers and capacity ratings, with graphical elements in the drawing. This associativity is creating an entirely new generation of useful third-party applications software.

A Reflection of You. AutoCAD is an open-architecture system including AutoLISP, an embedded programming language that lets you program AutoCAD to reflect your way of doing things. Add your own menus to enter your own commands, write macros, develop custom symbols and drawing functions, or program standard procedures for document production and management.

Hundreds of third-party programmers have used AutoLISP to develop entire systems that make AutoCAD perfect for applications ranging from chemical engineering to technical publishing. Many of these programs run on the Mac II and more are on their way.

Maintain Your Standards. AutoCAD is the most extensively used, most broadly supported, widely taught design software in the world. AutoCAD is backed by over 1,400 highly-trained dealers and 150 Authorized Training Centers in 60 countries. We'll make sure you get what you expect from your CAD investment. That's what standards are all about.

Opportunity knocks just once. The CAD software you standardize on today will determine your productivity for years to come. To see a demonstration at the dealer nearest you, call Autodesk at 800/445-5415, extension 25, at your earliest opportunity.

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were tabulated (but not by Price-Waterhouse). Next the senior editors locked themselves into a room and argued. Eventually we either came to blows or reached an agreement. While a few of us were carted off to the hospital, the rest carted the winners’ names off to the engravers to be emblazoned on statues.

THE EDDY
The Macintosh industry’s premier award, MacUser’s Eddy, is 18.5 inches of solid bronze and weighs 10 pounds, wet or dry. It was sculpted by well-known Mac artist Mike Saenz and given its name by MacUser’s art director, Lisa Orsini. A 1989 redesign substituted a Mac SE for the 128K machine in the statue’s hands. The Eddy is awarded solely on the basis of quality and over the years has gone to every size and kind of company, from giants such as Microsoft to smaller ventures such as Greene and Symmetry.

BEST NEW DRAW PROGRAM
Illustrator 88
Once Postscript became the sine qua non of laser-printing languages, it was only a matter of time before someone used it to create a drawing program. In our opinion, the best of the bunch is Illustrator 88 from Adobe, the creators of the language itself. Honorable mention clearly goes to Aldus for FreeHand, but Adobe’s knowledge of the language gives Illustrator 88 the edge in performance.

BEST NEW IMAGE-PROCESSING HARDWARE
NuVista
Frame grabbers, boards that capture a single image from either a live film/video or scanned image, were once the exclusive domain of workstations. However, with the appearance of the TruVision NuVista board, frame grabbers came to the Mac. This 1988 Eddy winner offers full 32-bit color capture, and the quality of the image is startling. Honorable mention here goes to Data Translation’s 16-bit Color Capture board, which adds genlock to a frame grabber.

BEST NEW IMAGE-PROCESSING SOFTWARE (BLACK AND WHITE)
Digital Darkroom
Silicon Beach’s Digital Darkroom is the winner here. By offering the tools of digital photo retouching for both monochrome and gray-scale imagery at a very reasonable price, this product should become a part of every scanner user’s arsenal.

DATA TRANSLATIONS' PHOTOMAC PROVIDES THE FIRST POWERFUL AND REASONABLY PRICED COLOR-SEPARATION AND RETOUCHING PROGRAM FOR THE MAC. BY COMBINING COLOR CAPTURE, COLOR CORRECTION, DESIGN CHANGES, PROOFING, AND FULL FOUR-COLOR CYAN, MAGENTA, YELLOW, BLACK (CMYK) SEPARATIONS, THIS IS A SUPERB COLOR PREPRESS PACKAGE THAT SHOULD START TO MAKE THE END PRODUCTS OF DTP AS EASY TO CREATE AS THE PAGES THEMSELVES.

BEST NEW IMAGE-PROCESSING SOFTWARE (COLOR)
PhotoMac
Data Translations’ PhotoMac provides the first powerful and reasonably priced color-separation and retouching program for the Mac. By combining color capture, color correction, design changes, proofing, and full four-color cyan, magenta, yellow, black (CMYK) separations, this is a superb color prepress package that should start to make the end products of DTP as easy to create as the pages themselves.
**Best New Music and Sound**

**Alchemy**
Blank Software's Alchemy takes the prize in this category. For all the action in the MIDI and sequencer side of the Mac music world, there have been few sampling editors. Alchemy is a high-end program that allows sampled sounds to be fully edited, and it should become increasingly important as sound develops into a major component of the Macintosh experience. Honorable mention goes to Farallon's MacRecorder, a more accessible and affordable hardware/software package that allows sounds to be sampled and captured.

**Best New Recreation Program**

**Crystal Quest**
Crystal Quest with CritterEditor from Cassady & Greene was the clear entertainment winner. The first version was addictive enough, but the new version with the CritterEditor lets you import your own digitized sounds ("He's dead, Jim") and draw original bad guys, as well as ed game play itself. Honorable mention goes to Arkanoid by Discovery Software. One of our editors has found giving up cigarettes easier than giving up either of these games.

**Best New Add-in Board**

**Orion SE 25**
We think that you just can't beat the Orion SE 25 from MacPEAK. This board gives 4.33 times the performance of an SE, and it's the accelerator of choice for everyone around the MacUser offices who works with an SE. Not only does this board result in performance that is faster than a Macintosh IIx, but it also turns your SE into a machine that outperforms the new Macintosh IIfx. Honorable mention goes to Radius' Accelerator 25 SE.

**Best New Input Device**

**Focus S 800GS**
Agfa's Focus S 800GS gray-scale scanner wins this one, both for the clarity of its 400-dot-per-inch (dpi) scans and for its remarkable software. What really makes this one our winner is the quality of its software — the wide variety of file output formats allows a scanned image to be imported directly into almost any application you might desire.

**Best New Color Display System**

**T16 Color Display System**
In the world of color display, what you see is what you get. To our eyes, the best 8-bit color system is the E-Machines T16 Color Display System with its flicker-free screen, clear display, and small footprint. Honorable mention goes to RasterOps for its Trinitron 24-bit System.

**Best Monochrome Display System**

**Two Page Display**
The Radius Two Page Display took this one, both for the clarity of its image and for the utility of the two-page format. After working with this, going back to a 6-inch screen is pure agony. Honorable mention here goes to the Taxan Crystal View II, a super monochrome system at a very affordable price.

**Best New Output Device**

**CrystalPrint Publisher**
Oume's CrystalPrint Publisher laser printer and the Jasmine Direct Print version of the same hardware introduced the first PostScript clone to the Macintosh printing market. The liquid-crystal shutter at the heart of both of these printers can print pages faster than any of Apple's LaserWriters. If that isn't enough, the printer is about half the size and weight of Apple's, one-third less expensive than the NTX, and comes with its own on-board RISC processor and 3 megabytes of RAM.

**Best New CAD/CAM Package**

**VersaCAD 2.0**
Finally, a full-featured CAD program for the Mac: VersaCAD 2.0 from Versacad. Not simply a rewrite of an MS-DOS program, this is a CAD program with all the tools and capabilities of a powerful mini-computer program, with an added touch of Macintosh. Its sophisticated Bill of Materials and Drawing Library features represent some of the best use of HyperCard we've seen to date.
As you can see, there is a noticeable difference between the new DirectPrint™ page printer from Jasmine and the Apple® LaserWriter® II NTX.

Both give you 300 dots per inch resolution. But the DirectPrint gives you a superior printed image, with a full range of deep, rich blacks and velvet grays. In a lot less time. For a lot less money.

Why is the DirectPrint better?

For starters, DirectPrint is not a laser printer. It uses liquid crystal technology that's as simple and reliable as the LCD in a wristwatch.

DirectPrint has fewer moving parts than a laser printer, which bounces images off a moving mirror. And fewer moving parts can mean greater reliability.

Of course DirectPrint is compatible with the PostScript® page description language, so you can print text and graphics from all your favorite software programs.

35 popular type fonts are built-in. Plus you can choose from a wide range of additional fonts produced by leading type companies such as Bitstream, Compugraphic, and The Font Company.

DirectPrint has an extremely powerful and efficient four-MIPS RISC processor (backed by 3MB of RAM) that is designed specifically for printing. So, your "when-will-it-ever-print" waits are over. Complex images requiring lots of PostScript calculations are output many times faster than laser printers costing $3,000 to $10,000 more.

Last, but not least, are these additional ways DirectPrint is better:

1. Our No-Risk 30-Day Paid-Return Trial Policy. We're so
confident that DirectPrint is the very best page printer available for the very best price that we'll pick up the Federal Express shipping costs—both ways—if you wish to return DirectPrint after test-driving it for 30 days.

2. DirectPrint's No-Nonsense One-Year Warranty.

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We rest our case.

All it takes to have a DirectPrint delivered to your home or office is a single phone call. (We gladly accept MasterCard, Visa, or American Express.)


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Then, compare the Jasmine DirectPrint to any laser printer. And see the eye-opening differences for yourself. After all, the proof is in the printing.

The DirectPrint page printer works equally well with Apple and MS/DOS-based systems. It weighs only 35.2 pounds, is 15.7" wide, 13.4" deep, and 9.1" high.
Remote Control

Remote access, formerly a hardware-intensive process, brings Macs closer together through software.

When Alexander Graham Bell invented the telephone, he also pioneered remote access. Although people first saw the telephone as a communications device, they later discovered that they could also use it to gather information from the comfort of their own homes or offices in a matter of hours. Not bad, considering that the alternative was to rely on the postal service to exchange information between remote locations in a matter of weeks or sometimes months.

While the mail service may not be that much faster today, remote access has advanced so that the exchange of information involving computers takes only minutes to complete. Now Mac users can obtain files, mail, and other information from a remote Mac or network over ordinary phone lines with the help of a modem and software.

Why all the fuss over remote access? Suppose you work for a company with offices in Boston, Dallas, and San Francisco, each equipped with a network of Macintoshes. You work out of the San Francisco office and need to gather information for a business proposal you’re presenting at the end of the week that must include all regions serviced by the company.

From the local network you gather the figures for the Western region, but you also need information for the Central and Eastern regions, which aren’t on the office network. Calling the regional managers and explaining your needs to them is one way to get the information, but it’s hard to find them in. Even if you do luck out, trying to explain to managers in Boston how you want a spreadsheet reflecting materials costs done could be frustrating, considering that they might not understand exactly what you need. At this point, mailing them a disk with a template to fill in would be the easiest solution, save for flying out to Boston yourself. But between telephone tag, mailing out templates, and getting the templates back, you won’t have the necessary information for at least a week. And after that, you still have to write up the proposal.

You’re never going to make it by the deadline.

Through remote access, however, you can get to the information in Dallas and Boston almost as easily as you do at your office. You can leave mail, transfer files back and forth, and make sure the data you get is what you need.

Besides exchanging files between computers, remote access lets people in different locations work on the same project on their individual Macs simultaneously. It also allows for network management and the downloading and uploading of electronic mail.

METHODS TO THE TECHNICAL MADNESS

Remote access comes in two flavors — hardware oriented and software oriented. Hardware-based remote access involves a black box that is attached to a modem connected to a CPU. It connects an individual computer to a network or one network to
Remote Control

another. And this access is one-way — the network into which you've dialed cannot access your Mac.

One hardware solution is the Hayes InterBridge hooked up to a Hayes modem. This setup is exclusive in that it can reach only a network where another Hayes InterBridge and Hayes modem are connected. Other less exclusive systems include a modem (by any manufacturer) hooked up to products like Shiva's NetBridge or Solano's S-Server. There's also Liaison, a software package that turns a Mac into a black box. With Liaison on the Mac taking the place of the bridging device, the only other hardware you need for remote access to another network is a modem (see our review in Bridges, April '89).

Once connected to a network, you can get to files on any attached servers as well as to network printers and other peripherals. The only thing you can't access directly with just the hardware is another computer — even though it may be hooked into the network. Farallon Computing's Timbuktu gives you access to other computers along a network, provided that they are also equipped with Timbuktu. The software will not dial into a network — the bridging device hooked up to the modem does. Timbuktu doesn't go to work until your Mac connects with the network. Once connected and running under Timbuktu, your computer in its remote location can access those on the network designated as Timbuktu hosts (that is, the Macs on the network with Timbuktu installed). From your Mac you see a host's desktop, and you can send files to the printer, create documents, and generally control the other Mac. With the latest release of Timbuktu, you can transfer files to and from the host.

You can use a software method for direct connection between two Macs in different locations. Software-based remote access can take many forms, from the familiar TTY (Teletype) emulator to sophisticated programs that allow you to operate the remote computer as if it were the local computer. Software packages that let you do this include the ones we will look at here: Timbuktu Remote from Farallon Computing, Telefinder from Spider Island Software, and Okyto from Freesoft.

As with Liaison, a modem is the only other hardware required for this process (aside from the Mac). With Liaison, however, you dial another Mac, not a network. Software access is two-way — a user on the other end can get to the files on your Mac.

MODEM MATTERS

Seeing that software-oriented remote access requires a modem, you
have some issues to consider. Your modem must be asynchronous — the signals going between the two computers need not happen at timed intervals.

For compatibility you need to know what your software requires. Okyto and Telefinder, the programs we look at here, require a Hayes-compatible modem — only Timbuktu Remote makes allowances for non-Hayes command sets. In fact, Timbuktu Remote works with any modem that operates at 9,600 bits per second (bps). If you’re using another package, make sure of the modem requirements before purchasing. You’re probably better off using a Hayes modem because it is a standard for most remote-access programs.

The amount of time a remote-access task takes depends largely on the speed of the modem. The faster your modem can send and receive data, the quicker you can get your work done. On standard phone lines with a modem, 9,600 bps is about the greatest speed attainable. However, there are no standards for 9,600-bps modems — 9,600-bps modems from different manufacturers cannot communicate with each other at this level. Instead, each drops down to 2,400 bps before making the connection. Nothing will happen to your data, but you’ve paid a lot of money for a 9,600-bps modem that operates mostly at 2,400 bps. One other important note: Modem settings between locations must be the same to prevent errors in sending.

Once you’ve decided on a modem and have a Mac-compatible cable (available at any authorized Apple dealer), you need a phone line that can ring directly into your office. If you get a line that goes through a switchboard, every time a computer dials up your system, your operator will be assaulted by a high-pitched carrier detect signal.

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You’re probably better off using a Hayes modem because it is a standard for most remote-access programs.

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YOUR JOURNEY BEGINS

Before accessing information remotely, you must decide what you want to accomplish. A wide variety of programs allow access to another Mac over a modem, but they also have a wide range of abilities.

By definition, any remote-access

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Scenario 3: Here’s a hardware solution made possible with software — Liaison. With Liaison, a CPU becomes the bridge. The only external hardware needed for remote access is a modem. Liaison lets you designate which peripherals will be accessed from remote locations. A copy of Liaison must be on both computers.

Scenario 4: Software-based remote access lets you connect directly to another computer, such as your office Mac. With Timbuktu Remote, you can take over the office computer from the remote location. Telefinder lets you observe the other desktop but not control it, and Okyto is purely for transferring files.
Remote Control

Timbuktu Remote provides high-level remote access — your system takes over the remote machine entirely. Through high-level access, you can perform such operations as safely prototyping applications or programming bug fixes and installing them on a remote system.

It also makes possible remote system support for managers. For those with more modest needs, there are lower level remote-access programs like Telefinder and Okyto that are easier to use. This case of use also reduces the chance of damage caused by operator error.

Timbuktu Remote literally gives you the screen graphics of the remote Mac. You can move the cursor, manipulate menus and icons, and run programs just as if you were the remote Mac. The screen will also update itself constantly.

Timbuktu Remote installs as an INIT when you boot up your system. It remains low-profile until you decide to connect with another Mac by choosing Timbuktu Remote from the Apple menu. You select the remote site you want to access, and Timbuktu Remote dials up and gives an attention beep to whoever is on the other system, though a second user need not be present for you to access a computer. You or the remote user must have set Timbuktu Remote on the remote Mac to answer incoming calls.

Once you've made the connection, you can do three things — type mes-

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

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The Business of BBSing

H
coking a couple of Macs together to exchange files back and forth is simply
not enough. Any computer should have access to your Mac to exchange files,
but this isn't all you've envisioned. People should be able to leave mail for
each other and to post messages to anyone signing on, and those messages should
be broken up by topic so people can have ongoing discussions on any subject. The
files you want exchanged? Suppose you put them in a library, organized by subject
and . . .

What you're talking about here is setting up your own bulletin board system
(BBS) — a miniature information service open to anyone with access to your
computer. What do you need to do this? Any microcomputer with a modem and a
generous amount of hard-disk storage could do it with Red Ryder Host BBS from
Freesoft, a BBS construction kit used by many Mac-based BBSs around the country.

Red Ryder Host BBS gives you the tools to construct menu systems and data
libraries where users can store files and messages. It follows the same paging
approach that CompuServe and other large information services use to communi-
cate with users. A page can consist of a menu or a block of text or any combina-
tion thereof. Each page has a unique address that can be used to call that page up later.

Through its system of pages, menus, and file handlers, Red Ryder Host BBS
supplies you with a deceptively simple engine for generating tremendously complex
BBSs. Everything from terminal-emulation preferences to roundtables and special-
interest forums can be set up with this program. Bulletin boards can expand to
include thousands of users.

A word of caution, though: Red Ryder Host BBS is not for the fainthearted. Being
a sysop (systems operator) is very demanding and requires many hours of
dedicated time to maintain an active BBS. Even though Red Ryder Host BBS does
make constructing a host system relatively easy, you should be certain you have the
resources to expend before diving into the information service business.

One of the best host systems available for the Mac, Red Ryder Host BBS already
has a large network of experienced sysops available for help and advice in setting
up your own BBS. If you're unable to find help through this network, Red Ryder Host
BBS is a subtopic in GEnie — another source of information and support.

CHANNELING A MAC

While it doesn't have all the capabilities of Timbuktu Remote, Telefinder
creates its own niche in the remote-
access market. Telefinder generates its
own version of the desktop when com-
municating. The "desktop" will have
icons for all mounted disks. There are
also mailbox icons for anyone who has
access to the remote computer, along
and an icon for conferences (confer-
ences are large mailboxes open for
anyone to view and add to). In the cen-
ter of the desktop is a window in which
you can exchange messages if there is
another user on the remote Mac.

You can't take over the remote
Mac, but you can copy files and send
mail. You can't observe what the other
user is doing — the screen doesn't up-
date to include new files or folders. Un-
like other remote-access programs,
Telefinder will communicate in text-
ome mode, so that a remote user can
read your files even if you are not both
working in the same program. Also,
with Telefinder running under Multi-

Virex is the first comprehensive
solution to the threat of Macintosh
computer viruses. Virex is unique
among anti-viral programs because
it both DETECTS the presence of
computer viruses AND REPAIRS
application and system programs on
files, disks and servers.

Virex was written and is updated
by Robert Woodhead, the author of
Interferon and a leading authority
on computer viruses.

Virex uses a simple icon-driven
interface. You just select a file or
disk, click the diagnose or repair
icon and let Virex do its work. A
comment window tells you what
Virex finds. Help is always on-line.

Virex combats all known Macin-
tosh viruses including Scores, nVIR,
Hpat and INIT29. HJC Software
plans to update Virex if and when
new viruses occur.

Virex runs on the Plus, SE and
II, with a minimum single disk drive.

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3 Bins
Automate three paper supplies. Letterhead, plain paper and a standard size envelope satisfy most office needs. Make your Apple, HP, QMS, Canon or other fine laser printer work harder so you get more done—several times more.

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As the number of users of a laser printer rises, the number of paper types needed on demand also goes up. You may need four bins. Fits most popular laser printers. Holds up to 220 sheets per bin plus 50 envelopes.

6 Bins
Companies with complex operations need more ways to use laser printers. With automated supplies of paper and envelopes, the right choice is only a keystroke away. When time is money, BDT's the answer.

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BDT Products, Inc., 17152 Armstrong Ave., Irvine, CA 92714

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Remote Control

Finder, you can perform multitasking operations such as transferring a file in the background while holding a conference with a user on the remote Mac.

To set up, you copy the Telefinder host onto the remote Mac's hard disk and the other Telefinder application onto the local Mac. Telefinder, which is available for $145, is as intuitive as the Mac itself. Anyone familiar with a Macintosh desktop will feel immediately at home in Telefinder, which runs on a Macintosh Plus or higher. To run a Telefinder session, you must set the remote Mac to receive incoming calls.

OKYTO'S MANY DUTIES

From the creator of Red Ryder comes the multitasking package Okyto. It was written with the first-time remote-access user in mind. Of the three packages mentioned here, Okyto is the easiest to use, and it will work even on the Mac 512K.

Like Telefinder, Okyto offers low-level access, file transfer, message sending between two remote Macs. You don't necessarily need a modem to use Okyto. Suppose you're lazy and don't feel like walking across the office to get a file from a coworker's computer. If the other Mac runs Okyto and is on the same AppleTalk network as yours, you can simply call over to it.

Just as with Timbuktu Remote and Telefinder, with Okyto the remote Mac must be set to receive an incoming call. Before attempting to hook up with the remote Mac, Okyto brings up a dialog box that lets you select the mode of transmission — modem (it must be a Hayes), AppleTalk cable, or ImageWriter cable.

Okyto uses windows and dialog boxes to communicate and operate, unlike Telefinder's desktop. It can still list available files and transport files back and forth without an operator being present at the remote computer. (With its scripting facility, Okyto can run unattended on both sides!)

What really makes Okyto unique is its ability to multiplex. By multiplexing, Okyto can carry on several transmissions with the remote system simultaneously. This means you can upload files, download files, and have a
How To Break The Font, DA, F-Key And Sound Barriers With Your Mac

If you're a power user, there are a couple of indispensable utilities designed to quicken your pulse and take you further and faster than ever before. Both are from ALSoft, the leader in resource optimization software design.

The first utility of its kind was Font/DA Juggler Plus. With it, you'll gain unlimited access to all your resources. Way beyond the ordinary font, desk accessory (DA), FKey and sound barriers of your Mac.

It's 100% MultiFinder compatible, too. Plus, these resources don't need to be physically installed in your System File. What's more, with Juggler Plus, all your downloadable PostScript™ font, screen font, DA, FKey and sound files can now be accessed and shared by every member of your network. Just the resources you need are now available at the click of your mouse. To save an average of 40% of your disk space, you can even compress memory intensive sounds and fonts. When you call for them, Juggler Plus will automatically decompress them on the fly. Resource Resolver is another powerful feature which will effectively resolve both sound and font ID numbering conflicts, eliminating any potential confusion. But that's just for starters.

MASTERJUGGLER DOES EVEN MORE.
MasterJuggler is the new generation, super-charged sports model of resource optimization utilities. With all the powerful features of Juggler Plus and many more, enabling you to do much more, too. Like opening multiple applications or documents from within any application. Switching between open applications from a convenient pop-up menu. Or hiding the current application's windows before selecting another application. MasterJuggler gives you unprecedented power and flexibility. Now you can instantly see or print any name or number conflicts among the resources you are using. Plus, you can assign an interesting variety of sounds to 7 different Mac operations or you can build your own sound library by converting digitized sound files into Macintosh and HyperCard sound resources.

Whether you're in a large network or you're one person with a Mac and a mouse, Font/DA Juggler Plus and MasterJuggler will make a big difference. All for a very small price. Call now for orders or the Bonus dealer nearest you, 713/353-4090.

Font/DA Juggler™ Plus
RESOURCE OPTIMIZER
$59.95

MASTERJUGGLER
RESOURCE OPTIMIZER
$89.95

REMOTE CONTROL

Remote access, like Pandora's opened box, brings up some troublesome issues in the face of wondrous technology. Not only do you run the risk of having an unauthorized individual get to your own files, but someone can also get to files on computers you can access remotely. To address the issue of security, all three programs employ password protection.

Timbuktu Remote has password protection at different levels. Through the Security dialog box, a user can select the access capabilities for remote users. A remote user can Control and Observe, Observe Only, or have no such privileges at all (Neither). You can permit other remote access, including Read Files From Disk, which permits the remote user to copy files from your disk; Write Files to Disk lets a remote user copy files to your disk; and Remove Files From Disk lets a remote user remove files from your hard disk.

With Okyto, a user can choose to have three entry passwords: one for Full Clearance, one that only permits a user to send files to another system, and one that only permits a user to add files to the local system. A wrong guess at a password forces the user to exit the connection and reconnect before trying again. There is no limit to the number of guesses — except, of course, save for the user's patience.

Telefinder has only one initial password window, which comes up before you attempt to dial for a connection. A user can set up for as many as three attempts at the correct password and as few as one try before the connection is aborted.

Perhaps the best form of security with remote access is a callback modem. An initial call to a remote Mac sends a message that you want access. In the interim, the remote Mac checks to see if you're in a user database; if you are, the modem on the remote machine returns your call and automatically logs you on to the Mac.
COMMUNICATIONS IN THE NEW AGE

William Gibson, author of the bestseller *Neuromancer* (West Bloomfield, Mich., Phantasia Press, 1986), foresees a world that is wired from end to end by a huge network of computers. Through this network, data is exchanged and business deals are made. Also in the network are data thieves, modern-day cowboys who travel communications' back roads, ready to raid corporate memories in search of data. In Gibson's world as in our own, information is power.

In Gibson's vision of the future, people work at home. The computers in their houses let them work without need of an office. Companies as we know them are gone. With a facility in each employee's residence, the need for great office complexes has evolved into a need for great complexes of readily accessible data.

Sure, this may sound like science fiction. But in fact, a similar scenario is happening now. More and more employees work at home hooked into the company computer. As computers become more sophisticated and communication becomes more refined, the number of workers who work out of their house, car, or anywhere where there is an outlet to plug into is going to grow. Remote access will turn the back road of networks into tomorrow's super highways.

How To Get Extra Hard Drives Without Paying For Them

Imagine being able to put your hands on additional hard disks at will. First one and then another. Until you have all the extra disks you need at your fingertips. MultiDisk is the indispensable utility from ALSoft which lets you effectively add disks through an innovative technique called disk partitioning.

With MultiDisk, you can divide your original disk into multiple new disks. By grouping files into separate partitions containing fewer files, you can also achieve faster access, greater file protection against directory damage and virus attack as well as improved overall disk performance. That's especially important if you're a power user with lots of files.

When you partition with MultiDisk, you can also assign a separate password to each partition. Plus, you can quick-encrypt the files in any partition to achieve an even higher level of security.

Whether you're in a large network or you're one person working with a Mac and a mouse, MultiDisk will make a big difference. All for the small price of just $69.95. Call now for orders or the Bonsu dealer nearest you, 713/353-4090.

How To Eliminate Holes In Your Hard Disk

Each time you use your Mac, your hard disk gets a little slower. The big culprit is something called fragmentation. It occurs whenever you add or change files, and it causes parts of files to wind up here, there, and all over your disk. Like holes in Swiss cheese. Soon, there are more holes than cheese. Which means your hard disk gets slower and slower, and so does your Mac.

How do you get organized and up to speed again? Optimize with the very best Optimization software you can get for your Mac. It's called DiskExpress from ALSoft. DiskExpress does it all, too. Like prioritizing all files, compacting big desktop files, graphically displaying free space, detecting potential problem areas on your hard disk, effectively erasing free space to safely prevent unauthorized file recovery plus lightning fast file defragmentation to get your files back together and whole again.

Whether you're in a large multi-user network or you're one person working with a Mac and a mouse, DiskExpress can make a big difference. All for the small price of just $69.95. Call now for orders or the Bonsu dealer nearest you, 713/353-4090.
IMAGINE HOW CONFINED YOUR WORLD WOULD BE WITHOUT FASTPATH.

One of the nice things about the Macintosh is that every one comes with a network built in. It's called LocalTalk, and it works perfectly if your need is to connect a small group of Macintoshes and peripherals, and speed is not of the essence.

WHEN THINGS GET A LITTLE CROWDED.

Unfortunately the problems begin when you need to link lots of Macs together, and you want the network to run at speed.

Then, it all becomes too much for a LocalTalk network.

And if you want to talk to a non Mac environment, it gets to be almost impossible.

Unless, that is, you Invest in a FastPath, Kinetics' answer to Macintosh connectivity.

WHY YOU NEED YOUR OPTIONS OPEN.

The Kinetics FastPath is a gateway that connects LocalTalk networks to Ethernet networks. It not only lets groups of Macs talk to each other over a high-speed Ethernet backbone, it allows them to talk to DEC VAXes, UNIX hosts and workstations, PCs, remote networks and other Macs.

FastPath immediately increases overall network performance and productivity. And because you can run software based on AppleTalk, TCP/IP or DECnet protocols, it keeps your connectivity options open for the future.

Your large network is made even more manageable because of the innovative LAN Ranger software included with every FastPath. And LAN Ranger uses the Macintosh Interface to provide the network manager with the first graphical view of an AppleTalk inter-network.

THE BEST CONNECTED MACINTOSHES.

FastPath is just one of our Macintosh to Ethernet networking products. We have a complete range of hardware and software connectivity solutions that open up a world of possibilities, including our EtherPort line that lets you connect Macs directly to Ethernet.

It's a smart business move to get a basic grounding in networking before you commit yourself. So, please call for a free copy of Kinetics' Network Primer, our user oriented introduction to networking.

And, of course, feel free to call us anytime and ask for more information about connecting Macintoshes to Ethernet LANs: call 1-800-433-4608; In California, call 415-947-0998.

We'll be glad to help you open up your world.
AppleTalk Filing Protocol sets some standards for file serving on an AppleTalk network.

AppleTalk is one of the most widely used network operating systems in the world. That fact may come as a surprise to those who don't follow these arcane matters. AppleTalk nodes up and running count in the millions, and it's not uncommon to find a large cluster of AppleTalk networks (called an internetwork) with thousands of computers, even of different types, working as an integrated whole. With the use of high-speed lines and modems, some AppleTalk internetworks span continents.

Obviously not every AppleTalk network is that grandiose. The kernel Macintosh AppleTalk network consists simply of a Mac running AppleTalk software, connected to an AppleTalk-equipped ImageWriter II or laser printer via LocalTalk twisted-pair cabling. In fact, that is most users' initial rationale for setting up AppleTalk: Several people want to share a single printer. But the network can be used to share other resources — such
as electronic mail, databases, gateways to mainframes — and will be used for other applications yet to be invented. What's more, all of these networking applications can be used simultaneously. AppleTalk lets you perform many tasks at the same time.

APPLETALK FILING CABINETS

One key ability offered by AppleTalk is the sharing of files over a network. I'll be explaining how that's made possible through the AppleTalk Filing Protocol (AFP). But for the moment, let's make real-world analogies for other resources on a network:

• Laser printer: the office copy machine — you do it yourself.
• Central print spooler: the office copy machine, with a group clerical assistant.
• Distributed print spooler: the office copy machine, with a personal secretary.
• Central file server: the central file room or library.
• Database file server: the central file room or library plus librarian.
• Distributed file server: the file drawers in your and others’ desks available everywhere.
• Server-based E-mail: telephone with phone-mail ability.
• Distributed E-mail: the place to put multiple folders, which can in turn contain multiple papers and pictures. In a hierarchical model, these relationships can be fairly strict — a kind of Chinese box. In its centralized version, the office has a file room that contains cabinets; the cabinets contain drawers; the drawers, folders; the folders, files, with additional organization within the file. The user has keys to

Figure 1: AppleTalk is based on the ISO/OSI network model. Users can replace some of the modules in the protocol stack with other products also based on the ISO/OSI model.
Get your modem off your desk... and into your desktop.

With an internal ProModem® for your Mac II or SE.

Modems are wonderful tools for communicating with other computers over the phone lines. However, until now they added to the clutter and complexity of your desk. With the ProModem 2400SE or ProModem 2400MII, you can keep your modem where it belongs: on your Mac's desktop.

If you plan to take your SE on the road or simply want the convenience of an internal modem, a ProModem is your obvious choice.

For the Macintosh® SE or SE/30.
The ProModem 2400SE mounts inside your SE or SE/30 and won't use up your only expansion slot. You will still be able to install an accelerator card or other add-on card if you like. The 2400SE installs in minutes with no modifications necessary. Our unique Pass-Thru port connects other serial devices to your SE without switch boxes or swapping cables. We even include an exclusive Status Lights DA that provides visual modem status just like an external modem.

For the Macintosh® II.
For Mac II owners, our ProModem 2400MII plugs directly into one of your Mac II's NUBUS slots. With the included software, you can switch between serial devices with a simple keystroke. The 2400MII even allows you to add an extra serial port in case you have more peripherals than ports. Unlike some internal modems, the 2400MII won't lock out your Mac's modem port. Our exclusive Status Lights DA provides visual status just like an external modem.

Plus! 4800 baud and error-free!
Our Plus series are fast and accurate with 4800 baud throughput and error-free transmissions. Purchase a ProModem 2400SE Plus, ProModem 2400MII Plus or simply buy the ProModem and add the Plus later. All Plus modems can operate at up to 4800 baud totally error-free using MNP™-5. That's because MNP compresses your data and automatically checks the accuracy of all of your information coming and going. Sending and receiving data takes up to half the time required with a standard 2400 baud modem.

Like all ProModems, the 2400SE and 2400MII are compatible with CCITT and Bell standards. You will also find the ProModem works the industry-standard AT command set. You can use whatever communications software you choose. Use Red Ryder®, Microphone II™, or Smartcom II™—the choice is yours.

Prometheus has manufactured computer products since 1981. Our only business is data communications for computers. All ProModems are designed and manufactured in the U.S. and include a 2 year warranty and free lifetime technical support. Depend on Prometheus—we'll be here to answer your questions long after the warranty expires.

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ProModem 2400MII $399

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Following Protocol

some of these drawers, folders, and files. In its decentralized version (as in TOPS), you give some of your coworkers the keys to the file drawers in your desk. And services like E-mail or Timbuktu (virtual-screen software that allows you to see the screen and files of another Mac on the network as if they were your own) have their own real-life analogies in message and conference systems.

The bottom line is that the Macintosh Hierarchical File System (HFS) is organized in the local operating system in the same manner as a file cabinet, and that Apple developed AFP to be the network extension of HFS. The development of AFP in turn laid the groundwork for AppleShare, Apple’s implementation of an AFP-compliant file server. But what is AFP and how does it relate to AppleShare and TOPS, central and distributed file servers (respectively) for AppleTalk? To answer that, we need to step back and take a look at the AppleTalk protocols and how AFP fits into the grand scheme.

APPLETALK AND THE AFP SERVER

You may have heard of the International Standards Organization/Open Systems Interconnection (ISO/OSI) seven-layer protocol cake, the stack of interrelated software and hardware layers that regulate the communication between computers on many networks, including AppleTalk networks. Quite simply, this stack of protocols constitutes the network operating system that helps define AppleTalk. The protocols accomplish many things, but their layering provides some very important abilities. One is that the network operating system can be run over any transmission medium. That means, among other things, that the bottom two layers may be swapped out for different media. (See “Making a Small Net Work” in this issue.)

Furthermore, AppleTalk packets can be intermixed with other networks such as 3Com, Novell, DECnet, and transmission control protocol/Internet protocol (TCP/IP) network file system (NFS) communications, and between multiple types of computer operating systems such as MS-DOS, OS/2, Pro-DOS, UNIX, VMS, and others. In this case, because they follow the ISO/OSI model, they can reside side by side over the wires without interfering with one another. These operating systems can even work with one another at the network level with the use of gateways to convert from one protocol to another. Furthermore, with Novell’s recent announcement of its Open Link interface, a given computer can use multiple network operating systems simultaneously.

AppleTalk can also operate over a wide range of speeds. The most common is 230,400 bits per second (built-in LocalTalk frequency), but the AppleTalk protocols can be useful over a range of 1,200 bits per second (for asynchronous AppleTalk — the minimum frequency for modems accessing an AppleTalk network) all the way up to 10 million bits per second (for Ethernet) and more. The point to remember here is not speed, but frequency: While data always moves at the same speed, regardless of cabling, it doesn’t always move at the same frequency. A higher frequency means that data packets occur more often. Different segments can be connected over AppleTalk to a common internetwork.

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protocol stack — just below the application layer in the presentation layer — along with PostScript, Adobe's page-description language. In the case of PostScript, the page description is presented in this layer to the laser printer, which then prints out the page. In the case of AFP, the description of files out on the network is presented in a form that the user's file system and applications can understand.

The AFP protocols that reside in the presentation layer allow users to share data files and applications that reside on a shared resource, such as an AFP file server (see Figure 1). Here's where AppleShare comes in. AppleShare is Apple's version of an AFP-compliant centralized network file server. Centralized AFP-compliant servers are also available from several other third-party developers, including Novell, Alisa, Pacer, IPT, DayStar, and others. These AFP-compliant servers run on various platforms including Macintosh, MS-DOS, UNIX, and VAX, as well as custom ones. When AFP-compliant server software is used, it doesn't matter what platform the server is on: It appears to the user as just another AppleShare server mounted on the Macintosh screen.

I use the phrase AFP-compliant here and not AFP-compatible for good reason. Any hardware or software that works over AppleTalk can be said to be AFP-compatible, but only AFP servers that can be accessed by the AppleShare client software or by applications that make direct AFP calls to the operating system are truly AFP-compliant. Companies can claim products that do not have all the features of Apple's AppleShare to be AFP-compliant (though they may be less expensive). On the other hand, other products claimed to be AFP-compliant have more features than AppleShare. At this time, TOPS is not all AFP-compliant.

THE AFP CLIENT

The AFP client software — included with the System software and the AppleTalk driver — was developed as an integral part of, and extension to, HFS and the Mac operating system. The single test that divides the compatible from the compliant is this: If the server cannot be mounted by using the AppleShare client rdev (a device related to cdevs and INITs) using the Chooser DA in the Macintosh System software (6.0 or later), then the server is not AFP-compliant.

Selecting the AppleShare icon within the Chooser list activates a network lookup for all AFP servers in the selected AppleTalk zone. The list of available AFP servers in the zone is presented to the user (see Figure 2). Double-clicking on a file server's

**Figure 3:** AFP client workstations and AFP servers can be on many platforms. AFP translates calls to and from the various operating systems so that standardized packets go out over AppleTalk.
name activates the AFP log-on dialog box. You type in your name and password, and the information is passed back to the AFP server.

You are then presented with the list of the server volumes you are authorized to mount on your machine.

After you have selected the volumes to be mounted, AFP handles the translation of local file calls in your machine into network packets (see Figure 3). These go out over the network to the File Server Control Program (FSCP) on the file server machine. The file server may be a Macintosh or another computer configured as an AFP server. Regardless, the FSCP translates the AFP file calls from the network into a form that the server machine's native operating system can understand. If the server is a VAX, the calls are translated into VMS. If it is an IBM PC, the calls are translated into DOS. All information coming from the server is converted back to AFP before it goes out over the network.

Clients can also be using alternate operating systems. On the Mac side, AFP translation is built into the Mac's operating system so that an AFP server can be accessed without the need for additional software. But other computers and operating systems can be adapted to access an AFP server: AFP client software can do the same conversion of AFP data into the client machine's native operating system. The PC client sees the AFP server as just another MS-DOS drive, while the UNIX user will see it as just another UNIX disk volume.

In the AppleTalk networking world, the trend is toward all machines speaking to the network with AFP, independent of their native file system. In the UNIX networking world, the equivalent of AFP is Sun's NFS protocol. With NFS, most machines act as both clients and servers, similar to TOPS in the AppleTalk world. It's one of the main differences between AFP and NFS: With AFP (up until now), machines are usually servers or clients. While they can act as both, no products have implemented this capability with AFP on the Macintosh platform. TOPS uses its proprietary TOPS Fil ing Protocol (TFP) network file system rather than AFP, and the company has announced that TOPS will migrate toward NFS. In both cases, AFP and NFS have similar intentions: to provide a standardized way of managing file access between machines over a network. While Apple and Sun duke it out over protocols, with the use of a GatorBox from Cayman Systems, you can convert AFP to NFS, and LocalTalk to TCP/IP Ethernet. AFP clients on the AppleTalk side can "see" an NFS server as an AFP server, gaining transparency between machine

---

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types, alternate file systems, and network operating systems.

**AFP-COMPLIANT OR AFP-COMPATIBLE?**

There are many other types of servers beyond AFP-compliant servers. These network applications are different from AFP servers, but since AFP is part of the AppleTalk protocol stack (and even part of the Mac operating system), any software that is compatible with AppleTalk should also be AFP-compatible. To be AFP-compliant, a server must give a user access to all the features of AFP. Network disk servers such as MacServe from InfoSphere are not AFP-compliant. Nor is the 3Com 3Server (though it has some features not yet found in AFP-compliant servers, such as built-in electronic mail and the ability to exist simultaneously on LocalTalk and Ethernet). The 3Com server will support AFP by the end of 1989.

Through the TOPS file server software, you can publish your own machine's disk volumes, accessible to other TOPS owners. Since TOPS uses its proprietary TFP, you cannot access a TOPS server volume using AFP. Like AFP, TOPS supports many different machine types and operating systems, allowing them to exchange files transparently. In fact, TOPS is attempting to accomplish a similar task as AFP and NFS, namely, to standardize the file format calls carried on the network and to have each machine translate from its own native file system to the common protocol format, then back again. Thus, all machines that can translate into the common language can speak with each other transparently. Sun has announced that TOPS will be transparently connected through gateways and multilingual modes.

Non-compliance with AFP can have its consequences, however. Currently, some applications, such as CE Software's QuickMail and ACIUS' 4th Dimension, make use of direct AFP calls, and in a non-compliant environment this can cause problems. Fox Software has avoided TOPS compatibility for its FoxBASE+/Mac database management system because of TOPS' non-compliance with AFP. These compliance problems emphasize a need for standardizing the way applications talk to each other and to servers on the network. This standard would extend further into a standardized application program interface (API), which would allow a new class of network applications. API will probably be built upon AFP, the basis for the future evolution of AppleTalk.

Reese Jones is the President of Farallon Computing of Berkeley, Cal., and one of the founding members of BMUG, one of the largest and most active Macintosh User Groups in the World.
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The Art of Persuasion and MORE II

Is MORE II much for Persuasion? This depends on your specific needs. Perhaps we can Persuade you to find MORE room for both.

Two years ago, desktop presentation was a two-horse town. First came PowerPoint, and then we had MORE. Albeit the first of their kind, these programs were limited in their capabilities, including color output. Then again, the high-end Mac was the Plus with its monochrome display. The advent of the Mac II and more affordable color-output devices made presentation packages de rigueur among Mac-applications. Want proof?

In the past year, five presentation packages have been introduced, each supporting the color of the Mac II and each offering color-output options: PowerPoint 2.0, Cricket Presents, StandOut!, MORE II, and Persua-

By Robert R. Wiggins

May 1989 MacUser 127
The Rules feature in MORE II enables you to set global or local rules for every formatting option available. The Print Preview capability gives you total control of your output.

When you print bullet charts in MORE II, the Print Preview dialog box lets you choose from many variations of handout and note page formats.

The biggest change to the outline processor is that it is finally truly WYSIWYG, and the formatting — such as labeling, line spacing, indentation, fonts, sizes, styles, and colors — is shown on-screen instead of only when you actually print. When you do print, there's a flexible Print Preview/Options window that shows what the printed page will look like and lets you set various options for the printout. And in these days of MultiFinder and memory shortages, you'll be happy to hear that MORE II uses virtual memory, which allows your outlines to be as big as you want (up to the size of your hard disk). No longer is the size of your outline limited by available RAM.

MORE OF THE SAME

In addition to new capabilities, the outliner retains all the features of MORE, so you can hoist a topic, mark and gather topics, clone topics, perform calculations, sort, and dial phone numbers. There's even a calendar feature that can create outlines. MORE II offers a spelling checker and Find/Replace commands, too, though they only operate in Outline view. A major enhancement in MORE II is the introduction of rules. Similar to style sheets, rules enable you to define each aspect of formatting (font, size, labeling, justification, tabs, etc.) as a rule. Rules can be global, for the entire outline, or can be attached to any sublevel. They are also hierarchical, so if a given sublevel has no rule defined for a particular formatting item, it defaults to the rule of its parent level.

The backbone of MORE is the outliner. You use the outliner to organize your thoughts and ideas and perform the kinds of functions already listed. But once you have your thoughts outlined, you can simply select the Bullet Chart option to have MORE II create a bullet chart automatically — just as MORE did, but with a twist. MORE II creates these charts as PICT-type...
MORE II's best feature is its powerful Slide Show capability. The Show Settings dialog box enables you to specify special effects, build types, and time limits for each slide. This drawing environment is similar to that of programs like MacDraw, with drawing tools (see Table I), layers, a grid (if you desire), and alignment and grouping commands. MORE II supports full color, too, so you can make some very attractive presentations on a Macintosh II. Bullet Chart view offers a Master Page capability as well, for making slide backgrounds.

The Rules capability is also available in the Bullet Chart view. MORE II keeps track of rules for bullet charts separately from those of outlines and tree charts. Headings that in Outline view are 12-point plain text by rule can, in Bullet Chart view, be 36-point bold and italic by rule.

The final view MORE II offers is the Tree Chart view, which is ideal for organization charts. Tree Chart view offers a drawing environment that is similar to that of Bullet Chart view, although less complete. Tree charts can be copied as objects and pasted into Bullet Chart view if you need the additional drawing tools or if you want to include an organization chart on a slide.

MORE OUTPUT, SLIDE CONTROL

Once you've created your bullet chart presentation, you need to present it. Like the other presentation packages, MORE II offers many output options and will print handouts and note pages in addition to slides. What sets MORE II apart is its Slide Show capability. While most presentation software offers one effect and one time limit per slide show, MORE II lets you specify a separate effect and time limit for each slide. MORE II also supports three types of builds, where each subheading on a slide is highlighted one at a time during the show. MORE II will also simulate this on output by creating multiple slides from a single slide with the build items.

If you run the slide show on a Macintosh II with multiple monitors, MORE II makes the monitor with the menu bar the "speaker's monitor" and the other monitors "audience monitors." The speaker's monitor shows the slides with their notes attached and can display a Control Panel that can be used to run the slide show — it even lets you show slides out of order. The Control Panel watches the times you have allotted for each slide and for the overall show, switching to red if you fall behind. There are many key equivalents that can also be used for navigating through the slides, and MORE II even supports a Kodak remote-control unit (there's a discount coupon in the box) so you can run the show from across the room with total control.

CREATING ARTISTIC ABILITY

The main problem facing many people who need to create a presentation is lack of artistic ability. MORE II comes with many example and sample presentations (both black-and-white and color) that can be used as templates for a new presentation. But the real power of MORE II for the less artistic comes from its Library feature. MORE II comes with many libraries of graphics, including clip art and many backgrounds. You can also create libraries of your own, and MORE II comes with a Mover utility for moving objects between libraries. Libraries can contain outlines, objects, rules, or graphics (bit-mapped or Encapsulated PostScript Format).

LESS TROUBLE, MORE FILLING

MORE was an excellent organizational tool. MORE II is an even better organizational tool but with full desktop-presentation capability as well. With its libraries, rules, and outstanding Slide Show mode, MORE II makes an excellent presentation vehicle. However, there are some minor annoyances in MORE II, such as the inability to specify which monitors do what in Slide Show mode. There is also a minor bug that affects shaded color backgrounds when you are using multiple monitors of different types. Nevertheless, these complaints are relatively minor. [Symantec is planning an update to address these complaints and any bugs that its customers may report. — Ed.]

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Persuasion extends the normal Print dialog box and allows you to print outlines, notes, and handouts in addition to slides. You can also print slides with a separate slide for each build.

SLIDING PERSUASION

If you switch to Slide view, you have access to Persuasion's excellent drawing environment and can polish your slides. Like MORE II and other presentation packages, Persuasion has a master layer at the back that consists of the master slide. Only Persuasion allows each presentation to have multiple master slides, which can be selected for use on each individual slide.

While Persuasion is not a full-featured outliner like MORE II, it does have a workable Outline view that makes laying out presentations just as simple.

Persuasion includes a spelling checker and a full Find/Replace mechanism, both of which work on text appearing only on slides as well as on text in Outline view or Notes view.

Persuasion has the standard drawing tools and grouping and alignment commands (see Table 1), as well as some delightful extras. Some of these extras include such commands as Send Forward and Send Backward—which can be used to position objects without having to resort to the dreaded "Send-to-Back Shuffle"—and the fabulous Regroup command. The Regroup command is used to regroup objects you’ve ungrouped—you don’t have to remember which were grouped with which. You can tell that the author has been frustrated by other drawing programs and has come up with some better ideas.

There are also several shaded fill patterns that make attractive backgrounds. A major difference between Persuasion and many other drawing environments is the addition of true layering to the pseudolayering of the Send to Back command. You can create true independent layers, which Persuasion uses for its build capability.

Persuasion also includes a powerful charting capability and offers ten kinds of charts. A user enters data for the chart either in Persuasion or imported from WKS files. Once a chart has been plotted, it can be ungrouped and the individual objects treated like any drawn object. You can even resize a chart and then choose Replot to have it perfectly drawn at the new size. One of the chart types is a simple table, which is useful for presenting tabular data.

Persuasion offers flexible output and can print note pages and handouts as well as slides. Using the layering mentioned previously, Persuasion also prints slides with builds, creating a
### Table 1: Summary of Features

<table>
<thead>
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<td>Centering</td>
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<td>Grouping</td>
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<td>no</td>
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<td>Layering</td>
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<td>Templates</td>
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<td>many, autotemplates</td>
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<td>Clip art</td>
<td>many, libraries</td>
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<td>Free-form text</td>
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<td>Slide show</td>
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<td>yes</td>
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<td><strong>Output</strong></td>
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<td>Handouts (slides per page)</td>
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<td>MAGICorp</td>
<td>Genigraphics, Autoigraphix</td>
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<td>Autoigraphix</td>
<td>MAGICorp</td>
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<td><strong>Import/Export</strong></td>
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<td>Text import</td>
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<td>Acta, MORE, plain text, WKS, MacWrite</td>
<td>MORE, ThinkTank</td>
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<td>Acta, MORE, plain text</td>
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<td>none</td>
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<td>Graphics import</td>
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<td>PICT, PICT2, EPSF, MacPaint</td>
<td>PICT, PICT2, EPSF, MacPaint</td>
<td>PICT, PICT2, EPSF, TIFF, RIFF</td>
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<td>PICT, PICT2, MacDraw, Illustrator (EPSF), MacPaint</td>
<td>PICT, Scrapbook</td>
<td>none</td>
<td>PICT</td>
<td></td>
</tr>
</tbody>
</table>
The Art of Persuasion and MORE II

separate slide for layer 1; layers 1 and 2; layers 1, 2, and 3; and so on. Since layers can include both graphics and text, you get total flexibility of slide output. Persuasion also has a Slide Show mode, and while it offers no special effects (other than those possible using builds), it is the only presentation program that allows you to blow up slides to fill the screen (useful for 19-inch and larger monitors).
Persuasion has many other features. It includes a spelling checker and Find/Replace mechanism that works not only on text in the outline but also on any text items anywhere on any chart. Persuasion has simple style sheets called text formats that make formatting easy. Put all these features together and you have an outstanding presentation tool.

HARD CHOICES
Both MORE II and Persuasion are excellent presentation tools, so choosing between them is difficult. Ideally, you should get them both and use each program in the situations it handles best. Since they both offer many import and export capabilities, a user can even move presentations and parts of presentations back and forth between the two very easily. If you're on a budget, though, that may not be possible, so you'll have to look at their relative strengths and choose based on how you will be using them and which features are more important to you.

Because of its strong outliner and its powerful Rules feature, MORE II is the better choice when you will be working primarily with text. MORE II's text builds are another point in its favor. If most of your presentations have to be done quickly, MORE II may be the better program for you. If you intend to do most of your presenting real-time on the Macintosh, especially if you'll be using multiple monitors, then MORE II is definitely the program you want, since it gives you absolute control over every nuance of an on-screen presentation and even offers the remote-control option.

With its very powerful drawing environment and graphic build capability, Persuasion is the better choice for presentations with more graphics. The excellent charting capabilities are another plus, obviating the need for a separate graphing program. Persuasion's autotemplates, multiple master slides, and color schemes make it the better choice if you don't have a strong artistic side. These features let almost anyone produce attractive and effective presentations quickly and easily.

One other issue to consider is how easily you can learn to use new software. While MORE II lets you create slides instantly, its more advanced features are harder to master, and some of
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MACUSER RATING
MORE II
Follows Mac Interface • • • • •
Printed Documentation • • • • •
On-Screen Help • • • • •
Performance • • • • •
Support • • • • •
Consumer Value • • • • •
Comments: Much improved outlining and organizational tool coupled with excellent presentation technology. Best Feature: On-screen presentation capabilities miles ahead of the competition, especially in a multiple-monitor setup. Worst Feature: Not always intuitive; higher learning curve to get most out of power-user features.

List Price: $395. Published by Symantec Corporation, Living Videotext Division, 10201 Torre Ave., Cupertino, CA 95014; (408) 253-9600. Requires Mac Plus or later model, 1 megabyte RAM, hard disk, and System 4.1 or later. Not copy-protected.

MACUSER RATING
Persuasion
Follows Mac Interface • • • • •
Printed Documentation • • • • •
On-Screen Help • • • • •
Performance • • • • •
Support • • • • •
Consumer Value • • • • •
Comments: Outstanding presentation tool with an excellent drawing environment. Best Feature: Extensive autotemplates and color schemes coupled with outlining tool and multiple master slides make it easy to turn out a beautiful presentation quickly. Worst Feature: Slide Show capability is limited. List Price: $495. Published by Aldus Corporation, 411 First Ave. S., Seattle, WA 98104; (206) 622-5500. Requires Mac Plus or later model, 1 megabyte RAM, hard disk, and System 4.1 or later. Not copy-protected.
Unlike most Mac programs, these word processors require years of study to use — the number of years needed to learn Chinese. But to those fluent in Chinese already, whether as a mother tongue or a second language, these programs may represent a quantum leap in communication ability. Until recently, the complexity of the language has left the vast majority of Chinese users with handwriting as their only means of written communication. There are Chinese typewriters, though the machines are large, expensive, and hard to use.

Instead of combining just 26 letters, the literate Chinese speaker, or software program, must master at least the 4,000 most commonly used characters, the semantic symbols of the Chinese language. Each character has a meaning and a one-syllable pronunciation. For each syllable available in Mandarin Chinese, there are five possible tones that denote different meanings. Any particular syllable and tone may be shared by dozens of characters. For instance, the characters represented by shi can mean city, scholar, or world, depending on how you pronounce it. In spoken Chinese, the context provides the only means of distinguishing, and puns proliferate.

Another complication is that Chinese consists of eight regional dialects with hundreds of local varieties that differ drastically that speakers from different regions generally cannot understand one another. This problem existed more than 2,000 years ago when the First Emperor used the standardization of Chinese characters across regional boundaries to unify the Warring States into the Chinese Empire. Over time, Mandarin became the standard dialect and the most widely used.

CHARACTER ANALYSIS
Some contemporary political rami-
with Character

In terms of software, a Chinese language program should consider the needs of second-language speakers, native Mandarin speakers, and speakers of other dialects. Although it should ideally allow for non-pinyin output, users would be well advised to take time to learn pinyin, because it seems to be here to stay. In light of the simplified/traditional character rift, the most friendly programs will support both, as the simplified-character user will find traditional character mastery a chore and vice versa. The most literate Chinese speaker, however, will inevitably have to master both.

With these standards in mind, we tested three software packages designed for word processing in Chinese: Kaibin ("Happy") Brushwriter, Feima ("Flying Horse"), and Mishu ("Secretary").

THE HEAVYWEIGHT
Kaibin Brushwriter promises to be everything to everybody. This pro-
gram offers five input modes (radical, pinyin, GB code, row column, and Telex), three user levels, six large printing fonts, and both simplified and traditional character output. Brushwriter is a heavyweight: Its 12 disks eat up roughly 8,000K. A trimmer version with only two of the fonts reduces this substantially. Installation is a time-consuming process, and Pacific Rim Connections, the American distributor, has given its share of telephone support at this stage. A piece of hardware included with the package must be attached with a 9-volt DC adapter, which, a footnote informs us, the user needs to provide. Another common cause of installation difficulty, also relegated to a footnote, is that storing file icons in folders will cause the system to crash. This creates an unwieldy clutter of more than 100 files on the desktop, only one of which — the application itself — can be opened.

With incomprehensible names such as AE8G"F8K and khrkey.zap, these icons portend the unpleasant reality that awaits the unsuspecting Mac user. Brushwriter is an IBM-type software program dolled up with menus, icons, and a mouse. Kaihin has sacrificed WYSIWYG altogether. Little boxes indicating anything from tabs to page layout litter the screen and undermine the very intention of the Macintosh interface. Only one screen font is available in only one size, so to get an idea of what your document looks like you must resort to a Show Page command and a little imagination. These quirks are doubly maddening in light of the absence of Chinese "even if you are a stranger to English. The 36 most commonly used characters for simplified Chinese belies Kaihin’s boast that Brushwriter allows you to type in Chinese “even if you are a stranger to the Chinese language ... provided that you have legible Chinese text to copy from.” Fortunately, though, the Beginner Level is very forgiving and second-guesses you when you make inputting mistakes. You may also select an option to show menu items in English. The 36 most commonly used characters can be generated merely by pressing one key and then Return, a time-saving function that unfortunately cannot be accessed under the other input methods. The program also includes stickers for labeling your keys. User Phrase, a feature on the Special menu, is a time-saver that allows you to program in commonly used character strings to reduce the steps involved in repeated entry. Inputting English words or phrases requires selecting the English input mode.

The documentation consists of the user manual, a character construction key, and a typing tutorial — all in Chinese — and a supplementary manual available only in English. The manuals contain most of the information you need, but their presentation doesn’t simplify your job of learning this program. Evidently the developers in Singapore are not aware of most user difficulties. Since they know the software, they say, they don’t encounter such problems.

In sum, Kaihin Brushwriter may be the only alternative to pinyin-driven systems and thus the logical choice for non-Mandarin speakers. If you desire some of its extravagant offerings, such as large fonts and horizontal or vertical axis printing, or if you wish you could trade in your Mac for an IBM compatible, it is perhaps the best you can do at this point. But for most Mac converts, Brushwriter is downright archaic and hardly worth $600 and half of a 20-megabyte hard disk.

**CREATIVE VOCABULARY?**

Feima presents a far more manageable solution to some of the problems of Chinese word processing, while taking advantage of the Mac interface. It offers both simplified and traditional characters, but only in one font and one size. A pinyin-based system, this program makes use of a Pinyin Pad that floats above the text of your document. You can move the pad around the screen when you need to see the area underneath it.

Character selection takes place
MicroNet Technology, Inc.

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FAX: (714) 837-1164  •  AppleLink: D1656  •  CompuServe: 76004,1611

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- Time Minder: $108

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- Adobe Illustrator 88: $307

### AEC Information Management
- AEC Information Manager: $575

### Ageis Development
- Doug Clark's Word Tools 1.2: $42

### Affinity
- Affinity File: $45
- Tempo II: $79

### Aludis
- Aludis Freehand: $346
- PageMaker 3.0: $397

### Alys
- DiskExpress 1.5: $34
- Font/DA Juggler Plus: $39
- Master Juggler: $63
- MultiDesk: $32

### Altrix
- Fontastic Plus: $54
- PosterWindow: $230

### Ashton-Tate
dBASE IV: $294
- Full Impact: $248
- FullWrite Professional: $259

### Bedford
- Simply Accounting: $121

### Bible Research Systems
- The Word (KJV, NIV, NKJV, RSV): $179

### Blith Software
- Omnise 3+ & Express 3.3: $395

### Bootware Software
- ResumeWriter - Student Version: $18
- ResumeWriter - Professional: $60

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- Eureka! The Solver: $128
- Reflex Plus: $188
- SideKick 2.0: $65
- Turbo Pascal 1.1: $66
- Turbo Pascal Tutor 1.0: $46

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### Bright Star Technology
- Alphabet Blocks (Req. 1mb): $30
- Hyper Animator (Req. 9mb): $78
- Talking Tiles (Req. 1mb): $68

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- Print Shop: $36
- Type!: $19

### Caesar
- OmnPage: $565

### Casady & Greene
- QuickDex: $31

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- DiskTop 3.0: $26
- MockPackPlus 3.1 Utilities 4.4: $27
- QuikMail 2.0 (10 Users): $159
- QuickKeys 1.3: $53

### Central Point Software
- Copy II Mac 7.2: $19
- PC Tools Deluxe: $40

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- Claris Card: $645
- FileMaker II: $235
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- MacDraw II: $509
- MacPaint: $101
- MacProject II: $392
- MacWrite 5.0: $99
- SmartForms: $328

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- Mac Art Library: $159
- CompuServe
- CompuServe Starter Kit: $23

### Connect
- MacNET: $49

### Cricket Software
- Cricket Draw: $168
- Cricket Graph: $118
- Cricket Paint: $265
- Cricket Presentations: $104
- Plotter: $104

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- MailPlus Plus W/Cable: $144

### Deneba Software
- Big Thesaurus: $53
- Canvas 2.0: $159
- Coach Professional: $104
- Coach Thesaurus: $33

### Digi-Clic Software
- Calculator Construction Set: $36
- wwPaint
- (V16) Classic Clip Art • (V38) For Publishing • (V56) Animal Kingdom • (V78) Special Occasions • (V98) Special Occasions: $10
- Printer's Helper • (V11) Industrial Revolution • (V13) Old Earth
- Avmac: $158
- Island Life: $43
- World Class Fonts
- Vol 1 & 2- The Originals • Vol 3 & 4- The Resume
- Writer - Professional: $36
- The Word (KJV, NIV, NKJV, RSV): $179
- The Word (KJV, NIV, NKJV, RSV): $179
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- The Giants: $43

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- Comic People (Vol. 1 Office Days): $24

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within the Pinyin Pad using the standard or phrased methods. Standard pinyin entry allows input of pinyin alone when the tone number is unknown, as well as pinyin together with a tone number to shorten the list of characters to choose from. The well-conceived phrased pinyin method lets you type in a series of up to 12 syllables. The program automatically chooses characters for you and displays them within the Pinyin Pad. Any characters that are incorrectly chosen — and there usually are some — can be replaced with a few mouse clicks.

A handy variation of the phrased method allows you to input correctly strings of numbers, such as “four million, five hundred seventy-two thousand, two hundred nineteen,” by using the Caps Lock key. The program would otherwise select a series of undesired homonyms. Another impressive feature lets you input letters from the Japanese syllabary to combine with characters in creating Japanese text. Feima reserves 196 spaces for the user’s own vocabulary. These characters may be drawn from Feima’s 4,060-character auxiliary dictionary. Or you can create characters not included in Feima’s dictionary with a floating Create Pad that works on the fat-bits theme.

Editing will be a breeze for the veteran Mac user, as Feima provides most basic Macintosh editing functions. A ruler can’t be inserted into the text, however, and the program doesn’t support spacing and margin changes within a document. Nor does it accommodate more complicated word-processing functions such as centering text, or even multiple fonts. If you want your printout to show 20 characters per row, it will correspond to the screen display in true WYSIWYG fashion. You may also choose 30- or 40-character long lines, but since the screen fonts are larger than the printing fonts, the screen display won’t reflect the change. The present version can’t be printed on the LaserWriter, except through screen dumps.

Differentiating between the various pads and input modes is confusing at first. The use of certain keys to perform functions within the pads is counterintuitive. The keypad – and = keys are used for deleting. If you accidentally hit the Delete key within the pad, you’ll lose some of your document. Also irksome, Feima doesn’t let you punctuate the text directly, rather forcing you to select punctuation via the Pinyin Pad and a punctuation code — and this only from the standard pinyin method. With practice these idiosyncrasies can be compensated for and character input begins to grow on you. It starts to feel easy, speedy, even fun! After all, it may not be as fast as typing English, but it’s probably faster than you’ve ever typed in Chinese.

You will likely find yourself wishing that the Feima developers had listed characters in order of most common usage, rather than in the arcane dictionary order that detracts from overall efficiency. The use of the Control key before each tone number calls for repeated awkward hand motions. Certain irregularities in the available characters are disturbing: Some commonly used characters seem to be missing, certain simplified characters show up on the traditional character lists, and some characters available by one method seem to be missing with another.

Like Brushwriter, Feima does not support the Hierarchical File System, and the manual neglects to clarify this point. The manual is in English and is locally clear, but the sequence of information requires repeated flipping back and forth before you can grasp all the basics. The index helps, but the manual falls short of its stated goal of introducing the Mac to the uninstructed. The Feima people are committed to developing innovative and user-friendly Chinese language software for the Mac environment, and future versions — as well as a database and spreadsheet under development — promise to shift more of the burden from the user. Once you’ve bought the $385 package, upgrades are available for just $45.

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through the ingenious use of a desk accessory that turns MacWrite and Microsoft Word into Chinese word processors: quite an accomplishment for a little thing! This no-frills program offers just pinyin input and only 3,755 simplified characters. Consuming a modest 292K, it's the only one of the three programs that can be used with less than a megabyte of memory. Unlike Kaihin and Feima, which encounter bit-mapping problems, it can also accommodate the Mac II screen.

A user not only can choose between MacWrite and Word, but also can paste material from Mishu into HyperCard, MacPaint, MacDraw, and any other program that reads PICT files. The Mishu window generates a pop-out menu that gives a user a choice of using the DA with MacWrite, Word, or a PICT program. Selecting any of these brings up a character selection box, which displays ten characters at a time in the order in which they should be: according to frequency of use. You can use the keyboard or the mouse to indicate your choice. Your character selections will then be held in a character-buffer box, which stores up to ten characters waiting to be entered into your main text. Keyboard shortcuts are available for 30 commonly used characters. The developers had the foresight to assign characters, when possible, to sounds associated with them. Character repetition is quite common in Chinese and can be accomplished with a keyboard command. Chinese numerals are automatically entered when you type numbers into the Mishu Window. You can add or edit characters with ResEdit, FontEdit, or FONTastic. Text created in the PICT character buffer box can be pasted into the Scrapbook or any paint program, though it cannot be edited.

As opposed to version 1.5, version 2.1 of Mishu has new fonts that let a user paste documents into PageMaker and ReadySetGo! with no compatibility problems. Printing out documents isn't a problem thanks to System 6.0.2 — a laser printer will print out Mishu documents. Suzhou, Mishu's standard font (and the Venice of China) offers 9- through 24-point sizes, just like MacWrite. You input characters using the Mishu window that appears at the bottom of the screen when the Mishu DA is selected. This program recognizes pinyin with no tone numbers.

The manual is brief, clear, and to the point. It anticipates the information you need to know. In reading it, you not only feel well prepared for using Mishu, but you also gain some insight into how it works. Of course, the design of the program means there simply isn't a lot to learn — a testimony to the developers' sincerity in working with the Mac. This program has certain limits because the Macintosh system was not designed to handle large numbers of fonts. Mishu uses 20 fonts to infiltrate characters into MacWrite via the Clipboard. Documents more than 200 characters long may slow the Mac down a bit, so the creation of lengthy documents could cause frustration. LaserWriter printing requires System 6.0 and is ploddingly slow.

Mishu is unassuming brilliance at work: a simple solution to a complex problem. If you think WYSIWYG should be taken for granted and find learning new programs tedious, Mishu will make your day — especially with a price tag of $89, a mere 15 percent of what the others cost. Just make sure that you can live with simplified characters and a finite selection of them.

There is probably no Chinese word processor that doesn't require compromise. They're simply too new. The good news is that later versions continue to be developed. Before you make an expensive decision, be certain that the publisher or dealer will provide you with low-cost upgrades.
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MacUser Labs presents a triple bill: LocalTalk versus Ethernet, TOPS versus AppleShare, and five Macs vying for the title of Fastest File Server.

When you bought your first couple of Macs and a LaserWriter, the salesperson told you that every Macintosh came with a built-in network. All you had to do was buy a few inexpensive PhoneNET connectors and plug them together to have your Macs communicating effortlessly with your printer. No muss, no fuss. So you did, it worked, and the computer dealer had another satisfied customer.

But times have changed, and simple Mac-to-printer connectivity is no longer enough. You started with two Macs; now you have a dozen. You want to send E-mail to coworkers hundreds of feet — or miles — away. Your work group needs to share sales figures and
other records on a multiuser database. And instead of relying on floppy disks and SneakerNet to transfer files, you want to send them over the wires at the click of a mouse.

Congratulations — you’ve graduated from stand-alone computers to a small work group. Electronic work groups are the true lifeblood of most organizations; even large networks consisting of hundreds of Macs are usually broken down into work groups of 5 to 15 machines.

But as your needs have grown, so have the system requirements. LocalTalk and a few cables are no longer enough. To optimize your work group’s performance, you may need more powerful tools, such as Ethernet or a file server. But where do you start? Is a network speed booster such as Ethernet worth the cost? Or would a file server be a better choice?

To help you spend your networking dollars wisely, MacUser Labs evaluated the options in the three areas that most affect work-group performance: the circuitry that sends electronic signals between computers, the type of computer used as a file server, and the server software. We did our testing on a network containing 2 to 15 Macintoshes, since that represents the typical work-group configuration. Our coverage is in two parts. The first report looks at communications circuitry and server hardware, while the second pits AppleShare against TOPS in the software arena.

The cheapest way to transmit network signals is to use LocalTalk, which consists of the Mac’s built-in circuitry plus the appropriate cables. Our first report, “Signals and Servers,” compares the cost-effectiveness of LocalTalk with that of Ethernet, a popular replacement that’s available either as an internal card or an external box. Ethernet is much faster than LocalTalk; unfortunately, it’s also much more expensive. Does Ethernet pay for itself on a small network? Read on and see.

For many people, upgrading a network means adding (or upgrading) a file server. A file server is simply a computer (some kind of microprocessor) with a hard disk attached, running special software. On a busy network, file servers can handle many chores. They can be print spoolers, repositories for shared files and multiuser databases, or the “post office” for an E-mail system. Unlike the files on your own hard disk, which are for your eyes only, the files (and folders) on a file server are potentially accessible to everyone on the network.

On a Mac network, the file-server hardware is usually another Macintosh. But since Apple now offers five kinds of Mac (six by the time you read this), the choice isn’t as clear-cut as it might first appear. Can you use a Plus for a file server, or will you need a IIfx? What about the new SE/30? Or how about a cheap PC with a DayStar server? How much RAM should the server have?

MacUser Labs compared the file-server performance of five different Macintosh models and one PC. We also checked their RAM requirements and evaluated when upgrading a file server might be more worthwhile than switching to Ethernet. You’ll find our recommendations in the first report.

Once you’ve chosen your communications protocol and file-server hardware, you must still decide on server software. Our second report, “Two for the Node,” looks at the competition between TOPS and AppleShare. Their approaches to file serving are vastly different; AppleShare is a centralized server requiring a dedicated Mac, while TOPS can be distributed over the entire network. The right choice for your network depends on its size, applications, and security concerns.

The performance tests and feature comparisons in these reports will help you determine the right configuration for your particular situation. Along the way, we’ve sprinkled a few tidbits about other options, including new LocalTalk alternatives from TOPS and Dayna, and the latest in file servers from Jasmine and from Information Presentation Technologies. When you’re finished reading, you’ll have all the information necessary to harness the horsepower you need for your work group.

— Aileen Abernathy
Signals and Servers

By John Rizzo

Networking — not the kind you do over lunch but the communication between computers — is revolutionizing the way we work with other people. Documents that once were photocopied and hand-delivered are now sent electronically. The niceties of networking enable us to share information via multituser databases. Instead of chatting by the watercooler, we send E-mail.

Today, most Macintoshes are part of work groups — small networks consisting of 2 to 15 Macs. As the size and complexity of the shared information increases, so does the need for speed. No one likes to watch the hands on the clock cursor spin for minutes at a time while a large file is copied between machines.

You’ve finally decided to bite the bullet and upgrade your network, but where do you start? Leafing through the magazine ads, you see a bewildering array of software, add-on boards, and cabling schemes. To help you sort out the options, MacUser Labs set up a 15-node network of Mac Pluses, SEs, IIs, IIx, an SE/30, and even a PC. We then conducted exhaustive tests on three key components of small networks: communications circuitry, file-server hardware, and server software. The first two of these are covered in this report; the third — a comparison of TOPS and AppleShare — is the subject of the following report (see “Two for the Node”).

The speed of intercomputer communications is one of the limiting factors in network performance. Accordingly, our first series of tests pitted LocalTalk, the Mac’s built-in circuitry, against Ethernet, a popular replacement, to see which was more productive and cost-effective at the workgroup level. We developed benchmarks that mimicked the typical tasks performed on a small network (see sidebar, “Network Benchmarks”) and put LocalTalk and Ethernet through their paces using an SE with an AppleShare file server.

We then used the same battery of tests to evaluate the performance of five different Macintosh models plus a PC as file servers. This time around, LocalTalk and AppleShare were the constants, and the variable was the machine being used as a server.

Some of our results may surprise you. But before detailing our findings, let’s take a short detour through the Byzantine world of network communications, starting with AppleTalk.

Blueprint for a Network

AppleTalk isn’t a wire, a circuit, or a piece of code. It’s a set of specifications, a blueprint that defines everything about the Macintosh network. AppleTalk defines the built-in hardware that sends signals out of the Mac’s printer port. It also defines the signals themselves. It defines how files will be passed along the network, how Macs will recognize each other over the network, and how a file server will appear on your Macintosh’s desktop.

The blueprint for AppleTalk is based on an industry-wide standard for telecommunications protocols. This standard, called the Open Systems Interconnect (OSI) reference model, was developed to promote connectivity among different kinds of computers and operating systems. The OSI model is a modular approach that breaks up the different aspects of moving data through a network into specific, interconnected tasks called layers. There are seven layers in all, each building on the one below it. Because the layers are modular, each can be replaced with an equivalent layer that also follows the OSI model.

In AppleTalk’s implementation, LocalTalk makes up the bottom two layers. In effect, LocalTalk consists of three things: a chip near the printer port that sends and receives network signals, a software driver that controls data transmission, and LocalTalk cabling. The cables can be swapped out for PhoneNET or fiber-optic cabling. The chip and the accompanying software can be replaced by other OSI-based standards such as Ethernet.

Note that when you substitute Ethernet for LocalTalk, you replace only a small part of AppleTalk; the rest remains intact. Thus, you remain part of an AppleTalk network even if you switch to Ethernet.

The Ethernet Alternative

If you’re a network speed freak, you may be familiar with Ethernet, the most popular replacement for LocalTalk. Originally developed at Xerox, Ethernet is an international standard for network communications that has long been available on minicomputers and PCs. More recently, Apple has endorsed it as a high-speed alternative to LocalTalk. It can transmit data at frequencies of up to 10 million bits per second (bps), while LocalTalk pokes along at 230,400 bps.

Ethernet replaces the LocalTalk chip
with a board in the Mac’s expansion slot and has its own software driver, called EtherTalk, that handles data transmission. Instead of plugging a network cable into the Mac’s printer port, you plug it into the connector on the Ethernet card, and you’re ready for action.

Ethernet is faster than LocalTalk because of its high-powered transmitting hardware — not, as some people think, because of the thicker cable it often uses. Network signals travel at the same speed regardless of the wire. Ethernet is faster because it sends out more data during a given period. Higher frequency translates into greater speed from the user’s point of view.

Ethernet has other advantages besides speed, but they primarily benefit large networks. For instance, performance degrades at a much slower rate than on LocalTalk. A LocalTalk work group or zone peters out at somewhere between 30 and 50 nodes; Ethernet can support 254 Macs. Ethernet also lets you hook up to larger networks with different operating systems, such as that of DEC’s VAX minicomputers.

Speed Costs

Unfortunately, Ethernet is not cheap; add-on boards and external SCSI boxes run from $500 to $1,300 per Mac. But vendors are plentiful, so shop around for the best deal.

Kinetics was an early supplier of Ethernet boards for the Mac. Its EtherPort line includes add-on boards for the SE and II (S695) and the SE/30 (S795, not yet shipping at press time), and the EtherSC box for the Mac Plus ($1,150 - $1,250). FastPath 4 ($2,795) is a bridge that lets you connect an Ethernet network to a LaserWriter or to a LocalTalk network.

Dove’s FastNet line of Ethernet products (S599 - S1,249) is similar to that of Kinetics, with cards for the SE, SE/30, and II, and a SCSI box for the Mac Plus. Dove also makes the MarThon LAN 020 ($1,499) for the SE, a board that combines Ethernet connectivity with a 68020 accelerator.

The cheapest way to add Ethernet to any Mac is with Adaptec’s Nodem (S545 - S595), an external SCSI box that works with the Plus, SE, and II. A low-cost alternative for the SE is the IPI 1000 from Information Presentation Technologies. This $495 board contains an AMD 7990 Ethernet controller and features direct memory access (DMA), which delivers data directly to RAM, bypassing the CPU and freeing it for other tasks.

New arrivals to the Mac Ethernet market include 3Com, which is marketing the EtherLink/SE board (S595), and Novell, which planned April ship dates for the NAE/1000 (S495) for the SE and the NAE/2000 (S595) for the II and IIx. Even Apple offers an add-on board for the II and IIx — the EtherTalk Interface Card (S699).

If you’re thinking that these prices don’t seem that bad, keep in mind that LocalTalk, which comes built into every Mac, is free (except for the cables). If you’re like most of us, you’ll need to justify that need for extra speed. However, keep an eye out for two new LocalTalk replacements, FlashBox and DaynaTalk. They can send data faster than LocalTalk and are substantially cheaper than Ethernet (see sidebar, “More Talk”).

All Wired Up

The circuitry for both LocalTalk and Ethernet can transmit signals over a variety of cables, from twisted-pair wiring to coaxial cable to fiber optics. The standard LocalTalk cabling is twisted pair, a simple, two-wire scheme commonly used in phone wires. Ethernet generally uses coaxial cable, which is the same type of

Glossary

AFP — AppleTalk Filing Protocol, the part of AppleTalk that controls how users share files over a network. It handles access privileges and manages file- and record-locking. AFP is the standard network file system supported by Apple.

AppleShare — On the server side, Apple’s Macintosh-only implementation of a dedicated AFP file server. On the client side, AppleShare is available for both Macs and PCs, and it provides access to any AFP server.

AppleTalk — The set of communications protocols that defines how resources such as printers and file servers are shared on a Macintosh network. Both AFP and LocalTalk are part of AppleTalk. AppleTalk is based on an industrywide standard called the OSI reference model.

bridge — Hardware or software that enables computers on different networks to communicate.

client — A network node that isn’t a dedicated server and that accesses data from a server.

dedicated — Used exclusively as a file server. In other words, a computer that functions solely as a file server is dedicated.

distributed — All or part of local volumes can be shared with other computers on the network. Each node with a published volume can also be used simultaneously for other work. In a distributed network, file sharing doesn’t require the dedication of any one computer as a server.

Ethernet — The primary communications circuitry used in many mainframe, PC, and UNIX networks. Originally developed at Xerox, Ethernet became an international standard for high-speed telecommunications. Racing along at 10 million bits per second, Ethernet has rapidly become the most popular replacement for LocalTalk. Ethernet boards and boxes can be used with a variety of wiring schemes, including twisted pair, coaxial cables, and fiber optics.

EtherTalk — Apple software that implements AppleTalk protocols over Ethernet. Other vendors of Ethernet cards also use EtherTalk.

file server — The combination of a computer, hard disk, and specific software (such as AppleShare or TOPS) that allows the files at one node to be shared by users at other nodes.

LocalTalk — A combination of the communications circuitry
wiring used for cable television.

As mentioned previously, your choice of wiring has little effect on network speed. In fact, Du Pont's fiber-optic cabling operates at the same speed as Apple's LocalTalk wire when used with the Mac's built-in LocalTalk circuitry, and at Ethernet speeds when used with an add-on Ethernet card.

Although you don't need to worry about speed when choosing wiring, you might want to consider the maximum distance the wire can carry a signal. This is a concern mainly for large networks, but it's useful information if you plan to expand your work group.

How far a wire can transmit a signal depends on how wide the wire is and how shielded and grounded it is. In general, the fatter the wire, the farther it will carry a signal before petering out. Apple's LocalTalk cable can relay a signal only 1,000 feet. Farallon's PhoneNET, which uses telephone wire and specially shielded and grounded cables, extends the maximum distance to between 1,800 and 4,500 feet, depending on the gauge of wire used.

Fiber-optic cabling extends this even farther to 4,900 feet between nodes and can be used as a backbone for connecting work groups located some distance apart. It's impervious to electromagnetic interference and very difficult to wiretap—an important consideration for high-security installations. As you might expect, you pay a price for these benefits; Du Pont's fiber-optic cabling for the Mac costs a minimum of $300 to $600 per node. By contrast, PhoneNET is only $59.95 per node or $395 for ten nodes.

### Switching Signals

When should you replace LocalTalk with Ethernet? To find out, we tested both of them on a network containing 2 to 15 Macs. Using an SE with an AppleShare file sever, we measured the time it took to perform four tasks: print a file, copy a large file, open a server-resident file, and so forth.

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**More Talk**

Want to boost the speed of LocalTalk without paying the price of Ethernet? Then take a look at FlashTalk or DaynaTalk, two new LocalTalk replacements from the TOPS division of Sun Microsystems and Dayna Communications, respectively.

Each product consists of a hardware box, which sits between the Mac's network (printer) port and the LocalTalk wiring or PhoneNET box, and software that goes into the System folder. Both are designed to transmit network data at speeds between those of LocalTalk and Ethernet. FlashTalk's maximum data rate is 770,000 bits per second (bps)—almost three times that of LocalTalk. FlashTalk can carry data at standard AppleTalk speeds, but PCs could talk to Macs only at standard AppleTalk speeds.

Both FlashTalk and DaynaTalk were expected to ship by March and to cost $189 per node, while Ethernet costs $500 per node. Besides being cheaper than Ethernet, the new boxes let you spread out the cost by upgrading one node at a time, since they can still communicate with Macs that don't have a box attached. As our LocalTalk/Ethernet tests demonstrated, FlashTalk and DaynaTalk will probably be most useful on networks that frequently transfer large files. We'll have a full report in a future issue.

— John Rizzo

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that's built into every Mac, the software that controls data transmission and LocalTalk cabling, LocalTalk is rather slow (230,400 bits per second), but you can replace it with faster systems such as Ethernet. LocalTalk circuitry can transmit over a variety of wiring schemes, including standard unshielded phone wire, Apple's shielded LocalTalk cables, and fiber-optic cabling.

**mount** — To access a volume so that it appears on your desktop as a disk icon. When you insert a floppy disk into your Mac, it's displayed on the desktop as a disk icon. When you log on to an AppleShare volume or mount a TOPS server volume, an icon likewise appears on your desktop, allowing you to work with the remote volume as if it were attached to your own computer.

**network** — A group of computers connected in such a fashion that they can share information.

**node** — A computer, printer, or other device that's connected to a network.

**OSI reference model** — A standard for telecommunications protocols, the Open Systems Interconneot reference model breaks up the various aspects of moving data through a network into modular tasks called layers. Each layer can be replaced by another equivalent layer (such as substituting Ethernet for LocalTalk). AppleTalk is based on the OSI reference model.

**packet** — The smallest unit of data that can be transmitted over a network using a given communications protocol.

**publish** — In TOPS, making a volume available to other users on the network.

**SneakerNet** — The cheapest file-sharing system. It requires the human conversion of protein to energy, rather than electronic signals, to move files from one machine to another. An international standard for low-budget operations, it has been implemented by Nike, Adidas, and several other vendors.

**TOPS** — A distributed file-sharing system available from Sun Microsystems. Each node on a TOPS network can publish local folders or hard disks, which can then be mounted by other users.

**twisted pair** — A wiring scheme consisting of two entwined wires, commonly used in phone wire or network cabling.

**volume** — A storage unit—a hard disk, floppy disk, or even a folder (in TOPS) — that appears to the user on the desktop as a disk icon.

— Stephan Somogyi
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read a server-resident database. The tests were repeated as we steadily increased the number of Macs on the network to a maximum of 15 (see sidebar, “Network Benchmarks”).

Although Ethernet theoretically can transmit at 10 million bps, that doesn’t mean that it’s 40 times faster than LocalTalk in real situations. Our tests demonstrated that, at best, Ethernet is only about twice as fast as LocalTalk on a small network; the average gain was only 20 percent. This is because neither system operates at its maximum transfer rate. On either system, whenever a signal is sent out, it’s broadcast everywhere over the network at velocities near the speed of light. However, if another computer transmits a message at the same time, the two signals collide and must be sent again by their respective computers. As the number of machines in use increases, so do the chances for collisions. As a result, the average network speeds are slower than the theoretical maximums.

LocalTalk was designed for small networks, and it seems well suited to its task. Our benchmark tests showed that it can handle ten nodes without degradation. At 15 nodes, overall performance was about 10 percent slower. Obviously, the more nodes you add, the slower a LocalTalk network becomes.

Ethernet, on the other hand, was designed for large networks of several hundred nodes. Our tests showed a slight

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**Network Comparison**

We designed the benchmarks to simulate actual work-group conditions. The results don’t represent peak traffic, such as 15 people trying to download a 1-megabyte file at the same time; instead, they reflect the average network performance for a typical work group.

The same set of benchmarks was used to test two things: communications circuitry and file servers. For our comparisons of LocalTalk and Ethernet, we used the same server (an SE running AppleShare) for all tests. When testing servers, we always used LocalTalk circuitry and AppleShare software.

**Setting Up**

The testing for this Labs report was conducted in MacUser’s new NetWorkShop. We used 15 actual Macs for all the tests, rather than simulating extra nodes on a smaller number of machines by increasing the traffic per node. Our test work group consisted of Macs Plusses, SEs, IIs, a IIx, and an SE/30, each running the latest version of the System and operating from a variety of fixed and removable hard disks and floppies. For the tests of LocalTalk and file servers, we used Farallon’s PhoneNET cabling. For our Ethernet testing, we used “thin” Ethernet cabling (RG58) with BNC connectors, Ethernet cards from Dobe and Kinetics for the SEs and IIs, and Kinetics’ EtherSC boxes for the Plusses.

To determine the amount of traffic a typical Mac workstation generates, we monitored the traffic on MacUser’s office network using Farallon’s TrafficWatch. The MacUser editorial network is a busy one, with around 40 users accessing server-resident databases, transferring files, sending E-mail, and printing to the LaserWriters. We found that about three packets (bursts of data) per second were generated from each Mac that was in use. However, these measurements included Macs left idle while users attended meetings and such, so we increased our test work group’s traffic flow to 4.5 packets per second per Mac to ensure that we were pushing the mean.

In creating network traffic, we didn’t want each node to send out a constant stream of data. That’s not how people use a network. Typically users download a file from the server, then work on a file on their local hard disk, then send an E-mail message. Thus we needed to generate traffic in spurts separated by periods of inactivity. Each node needed to be on a different “spurt schedule” to add the randomness seen on real networks. Furthermore, the traffic generator needed to be a real application so the packets would be a realistic length.

To accomplish all this, we used a multiuser 4th Dimension database written especially for us by ACUS. The database was placed on a server where it could be accessed by each node that had a copy of the 4th Dimension program. Each node was set to read the database at a different interval between 25 and 39 seconds. These numbers were adjusted to give an overall traffic rate of 4.5 packets per second per node. Just as in an actual network with real file servers, from time to time several nodes were requesting information simultaneously.

While most of the nodes were busy creating traffic, the benchmark tests were done between one node and one server. For the file-server tests, all nodes were logged on to the server being evaluated. For our comparisons of LocalTalk and Ethernet, we used two servers: One was the “real” server handling the traffic flow, and the other performed the benchmark measurements. This ensured that the tests measured only network traffic, not server traffic.

**The Benchmarks**

We developed four benchmark tests to represent the different types of tasks performed in a work group. All measurements were taken four times and then averaged. The results for a given test were fairly consistent and did not vary by more than two or three seconds.

**Printing test.** We discovered that the amount of time required for a Mac on the network to print to a laser printer mainly depended on the printer and didn’t vary much under any of the conditions. Consequently we did not graph these results.

**4th Dimension Read (version 1.06) test.** We measured the time it took a workstation Mac to read a 4th Dimension database on the server and display a screen listing 53 records. This test was illustrative not only of multiuser databases but also of E-mail servers, which can work similarly. Some E-mail servers receive a request from a workstation (a user opening a message, for example), look through a database of E-mail messages, and send the message to the user. This task gave the servers a good workout and turned out to be more dependent on the server than on whether we used LocalTalk or Ethernet.

**Excel Launch (version 1.5) test.** We clocked how long it took a Mac to open Excel on the server and display an 86K (25 rows x 103 columns) spreadsheet file. This task proved to depend equally on the file server and on the network’s communications circuitry.

**File Download test.** The final test was to download a 500K PageMaker file from the server. This was the most circuitry-intensive task and the one where Ethernet proved to be the most valuable.

— John Rizzo
We compared the performance of LocalTalk and Ethernet at reading a server-resident database, downloading a 500K file, and opening a file on the server. All tests were conducted on an SE running AppleShare, for each pair, lower (less time elapsed) is better. The greatest difference between the two was for downloading a large file. If you rarely do this, you won't gain much from Ethernet, as evidenced by the other tests.

 degradation when we increased network size from 2 to 5 nodes. After that, network speeds were constant up to the 15 nodes we tested. Typically, you'd need to have several dozen nodes before you'd see degradation in Ethernet performance.

Ethernet was the clear winner in transferring large files; it cut the time to download a 500K file by about 43 percent on the average (see Figure 2). Clearly, a work group that uses its network primarily for passing large files — such as graphics, CAD, or scientific applications — would benefit greatly from Ethernet.

However, Ethernet was less helpful for other network tasks, which turned out to depend more on file-server speed. Ethernet was about 4.2 percent faster than LocalTalk when opening a spreadsheet file located on the server disk, and about 19 percent faster when reading a server-resident database. As we discuss later, the speed of these two functions was increased more by changing the Mac SE server to an SE/30 or II than by replacing LocalTalk with Ethernet.

Ethernet had no effect on the printing speed of a LaserWriter. Because a LaserWriter will run only on LocalTalk, you must have a bridge between the Ethernet card and the printer. We used Kinetics' FastPath 4 hardware bridge, which lists at $2,795, but you might want to consider Liaison, the innovative software bridge from Infosphere (Portland, Oregon), which costs only $295.

**Servers with a Smile**

OK, so upgrading the file server will boost a small network's performance more than switching to Ethernet will. But which Mac makes the best server? Using the same battery of tests, we tested the file-server performance of the Mac Plus, SE, SE/30, II, and IIX on a network of up to 15 machines. In each case, we used LocalTalk wiring and AppleShare server software.

The same hard disk, an Apple 40SC, was used for all the server tests. To ensure...
that the hard disk itself wasn’t affecting server performance, we conducted some tests using FWB’s Hammer 300 hard disk, which has a faster access time. The results were almost identical, indicating that your choice of hard disk has little effect on file-server performance.

For a small network, our test results point unquestionably to the SE/30 as the optimum file server. If you already have a Mac II in-house, it will work just as well, but it’s more expensive. However, a Mac II can be used as a server without a monitor, video card, or keyboard (see sidebar, “The Headless Server”), which reduces its cost. The Mac IIx should not be used as a file server; its performance was only marginally better than that of a II or SE/30, but it costs $1,800 more than a Mac II.

On a network with 15 nodes, the SE/30 cut the time it took another Mac to read a server-resident database by 60 percent over a Plus, and by 50 percent over an SE (see Figure 3). This Database Read test is important because it’s similar to how some E-mail systems work and therefore indicates how some database-based E-mail servers might perform.

The performance of an SE/30 or Mac II server was also less affected than that of the Plus or SE by the addition of more workstations. Overall, server performance for the Plus and SE slowed about 10 percent when the network was increased from 2 to 15 nodes, while an SE/30 or Mac II server was slowed by only 1 to 2 percent. When downloading a 500K file, an SE/30 or II server was slowed by about 5 percent when the network grew from 2 to 15 nodes, while the performance of the Plus and SE were slowed by 11 and 8 percent, respectively.

**The PC Blues**

If you’ve recently replaced your IBM PC/AT with a Mac, you might be wondering whether you can use the cheaper PC as an AppleShare file server. The answer is yes — you can purchase the necessary board and software — but we wouldn’t recommend it. We tested the FS100 PC File Server from DayStar Digital on the Compaq DeskPro 286, a popular AT clone. This setup produced a server interface that looked exactly like AppleShare to a Mac user, but the server’s performance was far below that of even a Mac Plus.

The FS100 server was nearly twice as slow as a Mac II on a network with ten nodes, and 36 percent slower than a Mac Plus. The PC setup was four times slower at the Database Read test than a Mac II, and it was almost twice as slow as a Plus. Using an IBM PC XT as an AppleShare server would produce even worse results.

Even worse, the FS100 server crashed whenever we tried to do anything with 14 Macs logged on to it. DayStar said that the server should support up to 30 nodes — if you add an extra line of information to the PC’s Autoexec.bat file. This information wasn’t in the manual at press time, although DayStar plans to include it in the next revision. However, the company said the extra line wouldn’t improve the server’s speed.

**Who Needs Memory?**

Finally, how much RAM should your file server have? As little as you can get away with. We found little difference in performance between 1 and 5 megabytes of RAM. AppleShare gets along fine with 1 megabyte; however, if you plan to run it concurrently with a spooler or E-mail, we recommend at least 2 megabytes.

**Choose Your Partner**

Overall, except for copying large files, a faster Mac-based file server does more to improve network speed than does adding Ethernet. And for a 15-node network, upgrading a file server is cheaper. An SE/30 lists for $4,998, which is less than $350 per node. Ethernet, on the other hand, costs more than $500 per node. So consider Ethernet only if you frequently transfer large files between workstations.

Our recommendation: upgrade your file server to an SE/30. It’s the best way to make your small network faster.

John Rizzo is MacUser’s technical editor. He’s a proud owner of one of the first 128K Macs.
Two for the Node
By Henry Bortman

So you’ve decided you need a file server, but you’re short on cash. You’ve heard about TOPS and AppleShare, but you don’t really understand the difference. How do you choose?

In our trial run of MacUser’s new NetworkShop, we gave both programs a workout so we could help you answer precisely that question.

A Question of Dedication

File-server systems can be either dedicated or distributed (see Figure 4). Apple’s AppleShare is a dedicated-server system. When a Mac is used as an AppleShare server, no one can use that machine to do any other work. You can run some applications — the AppleShare Print Server, a mail server, or dial-in access software — concurrently with AppleShare, and you still have access to DAs. But the Finder is nowhere to be found.

In a dedicated-server system, all file sharing occurs between a workstation and the dedicated server. User A can’t send a file directly to user B. Instead, A must copy the file to the server, and then B must copy it from the server.

With distributed-server systems, such as Sun’s TOPS, shared files are distributed around the network. Any workstation can be both a server (sharing its files with others on the network) and a client (accessing files that other users have made available).

As a result, user A can send a file directly to user B. Moreover, you can continue to use a Mac acting as a TOPS server for word processing, spreadsheet number crunching, graphics, and so on.

Actually, TOPS can be used in either distributed or dedicated mode. To make a TOPS server dedicated, you just don’t use the machine to do anything else. You can even have the best of both worlds — storing on a dedicated server those frequently used files that everyone needs to share, while maintaining the ability of users to share other files directly between workstations.

What’s the Protocol?

AppleShare wasn’t the first file-server software available for Macintosh computers — TOPS actually shipped earlier — but it set an important standard for the computer industry. AppleShare is based on the AppleTalk Filing Protocol (AFP), which defines the rules by which workstations share files on a server (for more on AFP, see “Following Protocol” in this issue). AFP controls who can log on to the server; who can access folders; and, in the case of multiuser applications, who can read and write specific segments of a file (such as the records in a database).

Apple would like everyone who implements file-server systems to follow the AFP guidelines. Novell, 3Com, and several other network vendors have either implemented AFP-compliant versions of their servers or have promised to.

Sun hasn’t, and it isn’t making any promises. Instead, TOPS uses TOPS Filing Protocol.

However, this doesn’t mean that TOPS and AppleShare are incompatible. A Mac can be simultaneously an AppleShare client and a TOPS server/client, and many people use them in tandem. For single-user applications, the major effect of TOPS’ failure to comply with AFP is that you can’t mount TOPS volumes from the Chooser. Instead, you must use the TOPS desk accessory.

With multiuser applications, the problems increase. TOPS doesn’t support the file- and record-locking calls defined by Apple as part of AFP. These ensure that two users can’t change the same data at the same time. Developers must choose between not supporting TOPS at all — for instance, the initial release of multiuser FoxBASE+/Mac, from Fox Software, won’t work on a TOPS network — or writing custom code. TOPS can also cause ACSIU’s 4th Dimension to get confused about file location.

Sun is aware of these problems and has said that they will be fixed in the 2.2 release of TOPS, expected later this year. Still, we suspect that as AFP develops in the future, new incompatibilities will arise.
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Network Comparison

We would like to see Apple and Sun work together to resolve whatever technical problems exist, since everyone would benefit from an AFP-compliant TOPS.

Accessing AppleShare

Users access AppleShare file servers with AppleShare client software. Beginning with System 6.0, it comes on Utilities Disk 1 of the System software. After installation, you use the Chooser to log on to and access, or mount, any AppleShare server — actually, any AFP server — on your desktop. This is one of the beauties of AFP: you never need to know whether the server you’re accessing is really AppleShare, AliShare (on VAXs), uShare (UNIX machines), or NetWare (the PC world). Everything is transparent.

More than one disk volume can be attached to a single server, and you can elect to mount any or all of them. You can also set up the system so that these volumes are mounted automatically each time you boot up your Mac. But there is a caveat. The number of users who can log on to a server simultaneously depends on your hardware platform. If you are running AppleShare on a Mac with at least 2 megabytes of RAM and a 68020 or 68030 chip (the Mac II, IIm, or SE/30), up to 50 users can get on at once. Otherwise, you’re limited to 25.

Turning on TOPS

TOPS comes with its own Installer, which places 11 new files in your System folder — if it works. We consistently crashed while trying to install TOPS 2.1 on Mac IIs, unless they already had an older version of TOPS installed. If you encounter this problem — Sun says only a small number of copies got out that way — call Sun Microsystems’ TOPS Division for a free upgrade. There’s also a workaround: Copy all the TOPS files to your System folder manually; then install the TOPS DA with Font/DA Mover.

The TOPS DA is the door into TOPS (see Figure 5). From it, you can publish — make available to other users — any disk or disks attached to your Mac, or any folders your local disks contain. Each disk or folder becomes a “server” that can be accessed by other TOPS users from their Macs. (You can even publish an AppleShare server as a TOPS server.)

By using a special Options dialog box, you can elect to have TOPS automatically publish or mount a volume every time you boot your Mac.

From the DA, TOPS clients can either copy files or mount published server volumes. TOPS’ Copy function is a quick and convenient way to move a file from one node to another. It’s one of TOPS’ best features, and it highlights the power of distributed servers. Unfortunately, in version 2.1 you must copy files one at a time.

If you want to do more than just a quick copy, you can mount a published volume, which causes it to appear as a disk icon on your desktop. Note that when one user publishes several different folders from the same hard disk, each as a separate server, clients must mount each folder/server as a separate volume.

This has advantages and disadvantages. On the plus side, it allows each user to be selective about what he or she shares with others on the network. But you can also get some very strange results. Say, for example, you publish two folders as servers, someone else mounts them, and you later drag one folder inside the other. The dragged folder will appear twice on the client workstation — once as a mounted volume in its own right and a second time as a folder within another volume.

Housekeeping

AppleShare requires not only that you dedicate a Mac as a server but also that you dedicate a human (or two or three) as system administrator. Actually, unlike a Mac running AppleShare, the administrator(s) can do other things. But ad-
Appldbre’s access privileges control who has access to what files and folders on a server. When AppleShare is installed in your system, selecting Get Privileges from the File menu brings up this dialog box.

Administrators are responsible for initialising the server, registering users and their passwords, creating groups, adding and naming volumes, making backups, and so on. Most of this work is done through the Admin program while the server is up and running.

TOPS ostensibly has no such requirement. That’s one of its selling points. But a TOPS network also can have problems. When workstations are used as servers, a System crash — I crash my machine daily, sometimes hourly — or a machine that gets inadvertently turned off can spell disaster for other users on the network if they are accessing its published volumes. This is less likely to occur with a dedicated server.

Of course, you can dedicate a machine as a TOPS server. But then someone has to set passwords, do backups, and be in charge of what folders or disks get published to the network. Sounds like a job for a system administrator, doesn’t it?

Except for very small networks, you’re likely to need some planning and management whether you use TOPS or AppleShare. With AppleShare, it’s built in. With TOPS, if you’re wise, you won’t need to learn the hard way.

Privileged Security

When you begin sharing files on a network, you must consider the problem of restricting unauthorized access to those files. AFP provides a complex set of protections — relative to TOPS — that restricts users’ access to folders (that’s folders, not files!) on a server volume.

These access privileges fall into two categories: who gets access and what kind of access they get (see Figure 6).

The answer to “Who gets access?” determines whether a particular folder can be accessed only by its Owner, by a Group, or by Everyone. A folder’s Owner is initially the person who creates it, although ownership can be reassigned with the Access Privileges dialog box. Group refers to a list of users whose IDs have been associated. At MacUser, for example, we have a production group, an edit group, a technical group, and so on.

Everyone in a particular group can share a folder, while access is restricted for those outside the group. Each user can belong to multiple groups, but a folder can be assigned to only one group at a time. Lastly, choosing Everyone means what you’d expect — no restrictions on who can access the folder.

The answer to “What kind of access privileges?” determines your level of access to a folder and is decided by the folder’s owner. Your choices are See Folders, See Files, and Make Changes (see Figure 7). The first two are self-explanatory. Make Changes, however, is something of a misnomer. You can make changes only to the folder itself, not to the files.

![Figure 6: AppleShare Privileges](image)

![Figure 7: AppleShare Security](image)
files it contains. Thus, if you don't also have either See Files or See Folders privileges, all you can do is drop files into the folder. After that, you can't even retrieve them, let alone edit them. This is precisely the idea: Apple calls such folders drop boxes.

Even worse, you can change the name of a folder even if you don't have any access privileges. This oversight has the potential to undo all the benefits provided by the rest of AppleShare's network security system.

**Deadly Default**

But there's a more disturbing problem with AppleShare's access privileges. Every time you create a folder on the server, it defaults to owner-only privileges. Say you create a folder and forget to turn on access for Group or Everyone. If you then move it inside someone else's folder, for which you have only the Make Changes privilege, it's black-hole time. The owner of the other folder can't open your folder, and you can't retrieve it to change the privileges.

This same deadly default occurs when you copy a folder from a local hard disk (where privileges don't exist) onto an AppleShare server. You can't copy the folder directly to someone else's protected folder on the server. You must first move the folder from your hard disk to the server desktop, change the privileges, and then drop it into the appropriate folder.

The only way out is to have the recipient of the underprivileged folder (or the system administrator) move it back out to the server desktop or into a folder that you can access so that you can modify its privileges.

Apple provides no way to set less intrusive default privileges. Fortunately, CE Software (West Des Moines, Iowa) does. The currently shipping version of MockPackage ($49.95) includes an INIT called FolderShare, which performs this much-needed function for AppleShare users.

Despite these problems, AppleShare offers a reasonable set of options for sharing files while restricting the uninvited, and it should appeal to many corporate buyers.

---

**Figure 8: TOPS Security**

<table>
<thead>
<tr>
<th>Hard Disk Test</th>
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</thead>
<tbody>
<tr>
<td>Password: password</td>
</tr>
<tr>
<td>○ Write-protected</td>
</tr>
<tr>
<td>○ One writer only</td>
</tr>
<tr>
<td>○ Many writers</td>
</tr>
<tr>
<td>□ Remember</td>
</tr>
</tbody>
</table>

When you mount a volume, the dialog box at right lets you access it either as read/write or read only. You can click on Remember to have the volume mounted automatically (if available) each time you boot your Mac.

---

**TOPS Security**

The security system for TOPS is not as extensive, but you may find it adequate (see Figure 8). Users can restrict access to their private data by publishing only selected folders. In addition, TOPS offers password protection on a per-server (as opposed to AppleShare's per-client) basis. If you enter a password when you publish a disk or folder, another user will need to enter the same password to copy files or mount it. TOPS has no owners or groups, nor are there different kinds of folder access. Passwords are all you get.

---

**The UNIX Touch**

Does your work environment include a UNIX machine? If so, you might consider using it as an AppleShare server. Information Presentation Technologies (IPT) markets uShare, an AppleShare-compatible server running under UNIX. The uShare server has a complete implementation of the AppleTalk Filing Protocol (AFP) and, for Mac users of the network, is indistinguishable from a Macintosh acting as an AppleShare server.

Since the server runs under the multitasking UNIX operating system, a dedicated machine is not required. What's more, uShare provides services beyond those available under AppleShare. These include electronic mail, print spooling, virtual disks, automatic backup, the ability to copy files to and from the UNIX file system, and integration of Macs into UNIX networks. Electronic mail is accessed by means of a DA that furnishes a Mac interface to the reliable UNIX mail system.

Does your work environment include a UNIX machine? If so, you might consider using it as an AppleShare server. Information Presentation Technologies (IPT) markets uShare, an AppleShare-compatible server running under UNIX. The uShare server has a complete implementation of the AppleTalk Filing Protocol (AFP) and, for Mac users of the network, is indistinguishable from a Macintosh acting as an AppleShare server.

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**IPT's Security**

TOPS' security is more limited than AppleShare's. When you publish a TOPS server volume (left), you can assign a password to the volume and choose from three access modes. If you click on Remember, TOPS will publish the volume automatically each time you boot your Mac.
for security. It's limited but easy. The folks at TOPS made a little booby in this department too. Even if you enter a password when you publish a folder or disk, anyone can walk up to your machine and unpublish it without having to enter the password. This makes it a cinch for someone with malicious intent to wreak havoc when no one's looking.

**Peak Performance**

We put AppleShare (version 2.0.1) and TOPS (version 2.1) through their paces using the same set of benchmarks that we developed for testing LocalTalk, Ethernet, and file-server hardware (see sidebar, "Network Benchmarks"). AppleShare outperformed TOPS at reading a 4th Dimension database and copying a 500K file, and it ran neck and neck when it came to launching an Excel file (see Figure 9). Increasing the number of nodes had no significant effect on the performance of either product.

Why did TOPS fall behind in the File Copy test? Here's what the TOPS engineers said. Regarding the 500K File Copy test, Version 2.1 was shipped with a buffer set at too low a value, degrading performance on large data transfers. This will be fixed in Version 2.1.1 (a free upgrade). As for the Database Read test: AppleShare automatically sets a RAM cache; TOPS doesn't. AppleShare may have cached in memory some of the database records that TOPS had to read from disk each time it accessed the data. You can manually turn on a cache for a TOPS server from the Control Panel—in fact, it's recommended, although we could find nothing about it in the manual. We tested with no cache.

We tested TOPS both in distributed and in dedicated modes. The difference was that in the distributed mode someone was typing at 80 wpm on the workstation being used as a server, while in the dedicated mode there was no other user activity. In some cases, TOPS actually performed better with typing than without. This may be because when we were typing, we were running a word processor. When we weren't typing (dedicated mode), we were in the Finder. Apparently, the Finder is a poor program for TOPS to run behind. The TOPS folks suggest that if you are going to dedicate a node as a TOPS server, then you should leave the TOPS DA open.

TOPS does have one critical performance issue that the test results don't show — the degradation of other user activity, such as typing or even moving the mouse. Making small data requests of a TOPS server has little effect, but copying large files causes things to grind to a halt. This is the most unsavory aspect of TOPS. A development effort to find a way to make it truly operate in the background would be time well spent.

**Casting a Wider Net**

Both TOPS and AppleShare support multivendor environments. TOPS is available as client/server software on both Macs and PCs, and it will work over LocalTalk or Ethernet on both platforms. There is also a server-only version available from Sun for its UNIX machines, and other vendors provide UNIX implementations of TOPS for Berkeley UNIX and A/UX. In addition, Pacer has announced plans to implement a TOPS server for VMS (an operating system used by DEC’s VAXes).

AppleShare is also available for both Macs and PCs. Apple provides non-Mac client software only for DOS machines, and it works only with LocalTalk, not with Ethernet. Third-party vendors have implemented DOS-based AFP servers, but they're very slow; both Alisa and Pacer have implemented AFP servers for VMS; and IPT sells AFP-compliant uShare for UNIX platforms (see sidebar, "The UNIX Touch"). Novell has also built AFP compatibility into version 2.15 of NetWare but, again, only in the server mode.

**Print Spooling**

The AppleShare Print Server (a separate product) runs on the AppleShare server. When you spool a file to the Print Server, how long it takes to regain control of your screen depends on how long it takes your job to make it across the network. Once you spool a job, you can't cancel it from your machine (unless you have Timbuktu), because the queue can be managed only from the server.

TOPS Spool (included with each copy of TOPS) spools to your local disk, giving you local control over your personal print queue. With local spoolers, screen

---

**Figure 9: Performance of AppleShare versus TOPS**

AppleShare was the clear winner when it came to reading a 4th Dimension database and copying a 500K file, but TOPS performed slightly better than AppleShare at opening an Excel file. In each case, a lower value — less time elapsed — is better.
Put the revolutionary BackPac on your Mac Plus or SE, and gain extra power and storage without losing portability. 20MB: $649. 40MB: $799. 80MB: $1099. 100MB: $1299.

The TalkBac 2400 Baud internal modem is Hayes AT-compatible, fits right into the back of the BackPac—and into your shirt pocket as well. $199.

For reliable mass storage, the DirectOptical Drive features a removable, erasable cartridge with 300MB of storage capacity on each side. $4995.

Only 12 ounces and about the size of a mouse, the stand-alone TalkBac 2400 Baud modem gives you greater performance per pound than larger modems. $269.

For the capacity of a hard drive plus the convenience of a floppy drive, the MegaDrive removable media system lets you store 10 or 20MB of data on a single, removable MegaFloppy disk. Awarded the 1988 World Class award by Macworld. (20MB model shown at right.) 10MB: $699. 20MB: $999.

We can’t show you the InnerDrive, since it’s already installed inside this Mac II. And since it’s incredibly quiet and 33% cooler than most other drives, chances are you won’t notice it even when it's running. (Also available for the SE.) 40/SE: $649. 40/II: $649. 80/SE: $949. 80/II: $949. 100/SE: $1099. 100/II: $1099. 140/II: $1499 (Mac II only).
art is always a state of mind.

The DirectDrive XL free standing mass storage sub-system offers 1.4 gigabyte capacity and optional tape backup. Custom configurable and powerful enough for dozens of applications from CAD to LAN to desktop publishing. (Call for pricing)

With the DirectServe dedicated file server running your network, you'll be able to share peripherals and send and receive files easier and more economically than ever before. (Call for pricing)

The DirectDrive Series gives you more than more megabytes for your money: They're thoroughly tested, incredibly fast, and come with 10MB of disk utilities, and shareware. 20MB: $549. 40MB: $699. 80MB: $999. 100MB: $1199. 140MB: $1499. 300MB: $2795.

With the amazing DirectTape backup system, backing up data is as easy as it is fast. Provides 40MB of storage for a single user, or an entire network. $899.

The DirectPrint 300-dpi printer is PostScript page description language-compatible and uses liquid crystal shutter technology for a superior printed image. $3495.

Jasmine
1-800-347-3228
Please circle 58 on reader service card.
Network Comparison

control returns more quickly, but your work may get interrupted later when the spooler sends the job to the printer. However, although this effect is very noticeable with Print Monitor and Super-LaserSpool, we found the disruption caused by TOPS Spool to be negligible.

The Bottom Line

AppleShare costs $799 per server, and there’s no per-node charge for the other Macs on the network. TOPS, on the other hand, costs $249 per node, which adds up quickly. Thus, AppleShare may seem like a real bargain — but it’s not cheap (see Figure 10). To get started with AppleShare in a typical configuration, you’re looking at close to $4,000 — the cost of a Mac Plus, a 40-megabyte hard disk, and AppleShare software. And the print-spooling software ($299) and user manuals ($129 for a five-pack — you get only one manual with the AppleShare disks) cost extra; they’re included with TOPS.

Jasmine’s DirectServe, due in March, promises to reduce the entry cost of AFP by 30 to 40 percent, but it’s still big bucks (see sidebar, “Shoestring Server”). And our recommended server configuration, an SE/30 with AppleShare, will set you back $6,000. For that price, you could equip 20 Macs with TOPS. But if you had a 20-node network, odds are that you would be taking a hard look at dedicating one of your TOPS nodes as a server. This brings the cost of TOPS and AppleShare pretty close together.

Who’s on First?

TOPS outsells AppleShare by a wide margin. It’s cheap and easy, and it works equally well on Macs and PCs. You can buy the software off the shelf, install it in your System folder, and go. No boards or server hardware are required. If you have a small network, small files, and a small budget, use TOPS. If the ability to move files directly between workstations is important, TOPS again.

If, on the other hand, most of your shared data resides on one node, you’re copying large files, or you have more than ten nodes, think about dedicating a server. Then the decision to use TOPS or AppleShare depends on your applications, your network environment, and your security and management needs.

Obviously, if you’re using software that doesn’t support TOPS, such as FoxBASE+/Mac, you must go with AppleShare. And choose AppleShare if you’re concerned about future AFP-compatibility issues.

If you want to run Ethernet on a mixed network of Macs and PCs, you’ll want TOPS. If you’re tied into a larger network that contains AlisaShare, PacerShare, or NetWare servers but you still want a local server, and if the consistency of the Chooser interface is important to you, AppleShare will provide it; TOPS won’t.

AppleShare also provides better security. The importance of this will probably grow with the size of your network, and for corporate buyers this may be the deciding factor.

If you can justify it and afford it, use both. Each system has its advantages, and together they make a powerful team. Analyze your present and future needs, talk to people who have used the systems, and then decide.

Senior Technical Writer Henry Bortman needs a file server just to handle the network in his own office.

**Figure 10: AppleShare versus TOPS, Cost per Node**

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<th>Number of nodes</th>
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</table>

TOPS as a distributed server costs $249 per node. AppleShare is initially more expensive, owing to the hardware investment, but it breaks even with distributed TOPS at around 15 nodes when a Mac Plus is used as a server, and at about 25 nodes with an SE/30 server. As dedicated servers, AppleShare and TOPS break even at about three nodes; AppleShare actually costs less per node than dedicated TOPS on larger networks.
If you want to improve network performance for a work group of 15 Macs or fewer, upgrade your file server instead of spending money on a speedy LocalTalk alternative such as Ethernet. The SE/30, Mac II, and Mac IIx are all comparable file servers, but an SE/30 is by far the cheapest. With a 40-megabyte hard disk, it's only $500 more than a regular 40-megabyte SE (that's $4,995 versus $4,495). Although it wasn't available at press time, the new Mac IIx should also perform well as a server. Plus it has more slots than an SE/30 and should be much cheaper than a II or IIx.

If you do decide on a Mac II or IIx, you can reduce the cost significantly by using Farallon's Timbuktu to access it remotely, thereby avoiding the expense of a keyboard, monitor, and video card (see sidebar, "The Headless Server"). This adds a measure of security as well.

One or two megabytes of RAM is all that's necessary in an AppleShare server, unless you're loading lots of other network applications (such as E-mail and spoolers) on the same machine.

If you have a small network (not more than 15 nodes) and are performing normal office functions — using E-mail, accessing a multiuser database, or transferring average-sized files (less than 200K) — the Mac's built-in LocalTalk circuitry should satisfy your needs. The additional speed of Ethernet probably isn't worth the cost. The smaller your network, and the smaller the chunks of data (or files) you are transferring over the network, the less value Ethernet adds.

However, if your work group is focused on large-scale operations such as CAD or 24-bit color imaging and you use the network mainly to pass around large files of 500 megabytes or more, Ethernet is a good investment, even if you have only a few nodes. But even if you opt for Ethernet, we still recommend an SE/30 as a file server.

The cheapest AppleShare file server is an IBM PC equipped with a LocalTalk board and AFP software such as that from DayStar, but it's also the slowest and poorest performer. A Mac Plus is a far superior server for the budget-minded, and it's much easier to set up too. But keep an eye out for Jasmine's new DirectServe. At $1,299 with AppleShare built-in, it's $1,300 cheaper than a Mac Plus/AppleShare combination (see sidebar, "Shoestring Server").

TOPS, the distributed file-sharing system, is a cost-effective alternative to AppleShare for small networks, especially if you're mixing Macintoshes and PCs. In fact, if your network has only five or so nodes, TOPS is probably a much better choice, unless you're working with large files. You don't have to dedicate a Mac as a server, and it's a plug-and-play product that's relatively simple to set up. In addition, for the price of an SE/30 and AppleShare software, you can buy 23 nodes' worth of TOPS, although you may not want to run it on a network that big.

If you publish folders on your hard disk for use by others, your work will be interrupted each time someone uses them. If only a small amount of data is accessed, the interruption is negligible. If it's a 500K file, however, you'll have to stop working until the file transfer is completed.

If you're running certain multiuser databases, TOPS may work fine even with a large number of nodes, because only small chunks of data are transferred. On the other hand, if you constantly access large files stored on the hard disk of one workstation, you'd do better to dedicate that node as a TOPS server. And if you're going to dedicate a single node as a server, you might want to reconsider AppleShare.

Finally, AppleShare plays by Apple's rules. It's AFP-compliant; TOPS isn't, and this can affect your choice of software. If you plan to use a multiuser application on a TOPS network, check with the vendor first to see if it supports TOPS and if there are any known problems. And consider the security issues — AppleShare's protection scheme is more extensive than that provided by TOPS.

### Inexpensive Alternative

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### Normal Work-Group Alternative

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Kudos

MacUser Labs would like to thank ACIUS, Inc., for writing the 4th Dimension database used to simulate network traffic. We are also indebted to Farallon Computing, Dove Computer, and Kinetics for loaning networking hardware.
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<td>691 S. Milpitas Blvd., Milpitas, CA 95035</td>
<td>(408) 945-6800</td>
<td>891 s. ,_ has Blvd . r.Qlltas, CA 95035</td>
<td>(408) 1145-8800</td>
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<td>Apple Computer</td>
<td>Contact your local dealer. AppleTalk Interface Card $198</td>
<td>(408) 945-6800</td>
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<td>Dayna Communications</td>
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<td>Dove Computer</td>
<td>1220 N. 23rd St.</td>
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<td>FastBit Computing</td>
<td>2150 Kitredge St.</td>
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<td>PhoneNet, $99.95 per node; $95 for ten nodes</td>
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<tr>
<td>Information Presentation Technologies</td>
<td>23901 Calabasas Road, Suite 200B</td>
<td>(818) 347-7791</td>
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### Network Comparison

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### Changing your mailing address?

It's a simple procedure to ensure that your next issue of MacUser will catch up with you as soon as you move. Please send your NEW address PLUS your current mailing label to:

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Please allow up to 60 days for change of address to take place.
MacSprint II is the $299 cache card that fuels your Macintosh II with 32k of cache memory.

MacSprint delivers high performance to your computer by knocking out the system wait-states. With MacSprint, your Mac II will average a 22% performance increase to a maximum of 30%. No knocks, no pings, no Nubus slot.

MacSprint is the high-octane solution for your Macintosh applications. It will accelerate MacDraw II by 30%, Filemaker by 28%, Excel and Freehand by 25%. To name a few.

See your local dealer today, and say, “Fill it up! Cache only, please.”
For years, conventional computer-aided design programs have given you powerful tools for drawing and drafting. But if you’re like most design professionals, you still work by hand. Because the typical CAD program feels just like a computer.

Now, there’s a whole new way to design. Dreams™. It combines serious CAD features with an elegant human interface. Which lets you think more about creating and less about computing.

We designed it with you in mind. On Apple® Macintosh® systems. It’s a mid-range, multi-purpose CAD program that gives you MacDraft®-like drawing tools, color layers, libraries, bezier and spline curves, advanced editing tools, PostScript® and much more. All with the most contemporary interface you’ve ever seen. Now you can be more productive without spending months learning how.

We can only tell you so much here. But the more you know, the better it gets. To find out more call 415-680-6818 Ext. 410 for the dealer nearest you. Where you can discover what’s way beyond computers.
Bitstream Breaks the Code

Shock waves are still rippling through the PostScript community from Bitstream's announcement that it has cracked Adobe's font-encryption scheme. All Adobe fonts are encrypted, allowing them to be read only by Adobe PostScript controllers. PostScript clone fonts such as Bitstream's can be used in PostScript printers, but they aren't processed in quite the same way and generally don't provide the same quality of output.

Bitstream's breakthrough means it will be able to produce fonts that can be processed by PostScript printers as if they were the real McCoy. Wasting no time, the company is converting its entire typeface library for use with PostScript typesetters. The fonts can also be used with PostScript-clone typesetters and 300-dot-per-inch (dpi) laser printers, meaning a user will need only one set of Bitstream typefaces for use with a wide variety of printers.

Bitstream plans to release more than 1,000 fonts by mid-1989, including many not currently available from Adobe. Pricing is $50 per font with a minimum purchase of four. Contact Bitstream at Athenaeum House, 215 First St., Cambridge, MA 02142; (617) 497-6222.

Bitstream also appears to be only one step away from figuring out Adobe's "hint" mechanism, which gives Adobe fonts their superior appearance at small sizes and low resolutions. If it can breach this final barrier between Adobe and its competitors, Bitstream will at last be on equal footing with the ruler of the PostScript universe.

Extending PageMaker

After lagging behind in the rapidly evolving color DTP market, PageMaker is catching up with the competition. A new Color Extension for version 3.0 lets users create color objects and import color Encapsulated PostScript Format (EPSF) and TIFF files. You'll be able to use Pantone colors and to include color specifications in PageMaker's style sheets. The extension supports color PostScript printers like the QMS ColorScript 100 and is compatible with Apple's 32-bit color system.

When installed, the extension becomes part of the basic PageMaker application. It can perform color separations of objects created within the program and of EPSF files. Color TIFF and PICT2 files cannot be separated; however, a PageMaker file can be saved as a PostScript file with color TIFF information intact. A color prepress house can take this file, along with the original TIFF file, and produce four-color separations.

The PageMaker Color Extension will cost less than $200 and will be sold as an upgrade to registered PageMaker owners. It should be available sometime this spring. Contact Aldus at 411 First Ave. S., Seattle, WA 98104; (206) 622-5500.

The Rumor Manager hears that PageMaker 4.0 will finally answer users' prayers with a search-and-replace feature and a spelling checker, among other goodies. Aldus is also working on ways to link PageMaker with high-end color prepress systems. Unlike Quark and Letraset, which have exclusive interfaces...
between their page-layout programs and Scitex and Crossfield, respectively. Aldus is developing a universal handshake that will link PageMaker to all the prepress players.

Aileen Abernathy

Clippings

TypeStyler: Broderbund delayed until May the release of TypeStyler, its type-customization program, in order to include ten fonts from Agfa Compugraphic. This generous addition will raise the price only $50 to $199.95. TypeStyler should certainly give LetraStudio a run for the money. TypeStyler is $300 cheaper; it comes with more fonts and can manipulate any other third-party PostScript font; and neither the program nor the fonts are copy-protected. Contact Broderbund Software, 17 Paul Drive, San Rafael, CA 94903; (415) 492-3200.

SmartArt: If you don't need all the frills of LetraStudio or TypeStyler, check out SmartArt from Emerald City Software. This DA lets you create special text and graphic effects on the fly from within any program. You pick the effect you want from its library of EPSF routines: enter the desired text; adjust the typeface, size, angle, color, or other parameters; then paste the high-resolution text or graphic wherever you need it. Volume I ($149.95) has 15 text effects and should be available when you read this. You can reach Emerald City Software at P.O. Box 2103, Menlo Park, CA 94026; (415) 324-8080.

Colorset: Tired of monotonous monochrome from your gray-scale scanner? With Colorset, a software and filter package, any gray-scale scanner can capture full-color images. You can scan the same image three times, each time with a different colored filter. Colorset's software combines the three images into a color composite that you can tweak with built-in color-correction tools. By the time you read this, the $199.95 kit should provide truer colors through better filters and improved software. Contact Studiotronics, 1031 S. Semoran Blvd., Winter Park, FL 32792; (407) 657-7018.

Pixelmaster Thermo-Jet: Howtek is now offering its Pixelmaster Thermo-Jet to the Mac world. This color printer uses a unique spinning head to deposit drops of melted colored plastic onto a traveling sheet of plain paper. Its resolutions are 240-x-240 dpi for graphics and 240-x-480 dpi for text. Replenishing its four inks involves occasionally inserting solid plastic "crayons" into slots that accept only the correct shape/color. Howtek claims per-page costs of 5 to 10 cents. The Pixelmaster, configured for a Mac, sells for $6,995, including a QuickDraw driver. A PostScript-compatible software printer driver is available for an extra $695. Contact Howtek, 21 Park Ave., New York, NY 10051; (603) 882-5200.

KeyMaster: Your favorite graphics and logos are now just a keystroke away, even in programs that don't support EPSF or PICT files. Alisys has released KeyMaster ($99.95), which can create a high-resolution PostScript font of up to 16 characters from imported artwork. Once you've converted your graphics into a font, you can resize images by simply changing the point size. Contact Alisys Corp., 720 Avenue F, Suite 109D, Plano, TX 75074; (214) 424-4888.

LetterPress: For those who believe too much is not enough, Image Club Graphics is offering LetterPress, a CD-ROM containing more than 600 PostScript typefaces licensed from International Typeface, American Type Founders, VGC, and other companies. The $5,995 type library, which is bundled with a CD-ROM drive, will ship in June. Contact Image Club Graphics, 1902 11th St. S.E., Calgary, Alberta, Canada T2G 3G2; (403) 261-7013.

Multi-Ad Creator: Multi-Ad Services has unveiled Multi-Ad Creator, a program that produces advertising layouts. Besides sporting many of the powers of page-layout software, Creator has built-in object-oriented graphics tools, including a star-burst balloon (the kind used with "WOW!" and "NEW AND IMPROVED") and full color support for both text and graphics. Special text talents include word spacing and letter-spacing control, wrapping both outside and inside objects, free rotation, and autoresizing of text to fill a given space. It can produce spot and four-color separations with control over screen angles. All of this adds up to a price of $995; volume discounts are available. Contact Multi-Ad Services, P.O. Box 3900, Peoria, IL 61614; (309) 692-1530.

Aileen Abernathy and Salvatore Parascandolo

BETWEEN THE LINES

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Until recently, even MacUser's DTP section was produced using conventional printing methods. We've now made the leap to bona fide DTP, and we're facing some of the real-world concerns of desktop publishers under production pressures. This month Bove and Rhodes discuss two common image-reproduction problems.

Getting the Picture

Desktop publishing has its ups and downs. On the one hand, you can get magnificent results, even on low-end laser printers. But on the other, mysterious problems behind the scenes can produce jagged images, banding, and moiré patterns, even on the highest-resolution equipment. Two of the downs are the size and complexity of scanned images, and bit-mapped graphics that contain dot patterns. These can easily get you into trouble in a production environment using even the best page-makeup software.

The Missing Link

Before discussing what can go wrong, we should explain some fundamentals. When you place a gray-scale image into any of the top page-makeup packages (PageMaker, Ready.Set.Go!, and QuarkXPress), they don't really import a copy of the image. Instead, they establish a name link to the original image file and concoct a space-saving, lower-resolution version of the image to display on-screen. When one of these programs prints the publication file, it follows the established links to the original image to print a high-quality graphic, not the lower-resolution display version.

The programs establish these links so that their files don't become enormous, as they would if they saved all of the voluminous gray-scale information. With the gray-scale files already available on disk, it's more efficient to remember where to get the information, rather than duplicate it. However, this link can break very easily. All you need to do is move the gray-scale image files to another folder or another disk, or rename them (or delete them, heaven forbid).

What happens when the link breaks? QuarkXPress 2.0a beeps and prints the low-resolution display image. You have to know what the beep means to fix the problem. In a Linotronic studio, however, one beep will probably go unheard, and the page will print anyway and be wasted.

Ready.Set.Go! 4.5 gives you more warning. When you first open the publication document, if it can't find the original image file for a placed image, the program displays a warning message that you must OK. It then places an X in the frame for that image. You can use Get Picture to get the image from the appropriate file.

PageMaker 3.01 gives you a similar warning and choices. When you open a publication, if PageMaker doesn't find the image file in the publication's folder, the program displays a dialog box asking for it. Then you can either ignore the original higher-resolution version and print using the lower-resolution version, or locate and use the original version via a normal Place dialog box that is automatically presented.

Resizing with Fine Patterns

Another way to get into trouble with graphics is to resize a bit-mapped image that contains a dither pattern, such as the pattern that appears on a standard Macintosh desktop. If you resize the image by a power of two (such as doubling or quadrupling), the pattern dots will uniformly enlarge, and the image will print fine. Unless carefully calculated, however, other multiples can cause unwanted pattern effects.

Of the three leading page-makeup programs, only PageMaker provides built-in size steps for avoiding pattern problems. This feature takes into account the resolution of both the image and the target printer. You can snap an image into these built-in sizes by holding down the Command key while resizing (holding down Shift as well constrains the resizing to be proportional). If one of the automatic scaling steps produces too large an image, you can always crop it to fit the available space. Although PageMaker does not always get it right (occasionally we get dark bands in a resized screen dump), we would be lost if we didn't have this built-in scaling feature. Is it really too much for us to ask the computer to do the calculating?

The other page-makeup programs provide the ability to resize images to practically any size, but you have to cal-

Is it too much for us to ask the computer to do the calculating?

By Tony Bove and Cheryl Rhodes
calculate the best percentages for the resolution of your target printer. If you don't, you run the risk of printing flawed patterns, which can be frustrating and expensive when printing to a Linotronic.

PageMaker's built-in scaling may be a godsend, but if you are not aware of the factors on which it bases its calculations, you may be resizing the image to fit the resolution of the wrong target printer. If, for example, you resize an image while the LaserWriter or similar 300-dot-per-inch (dpi) printer is chosen in the Print dialog box, you get sizes appropriate for 300-dpi devices, which may not work for other resolutions. You must first use the Chooser to select the final output device before resizing with the automatic scaling feature.

When the link breaks between a placed gray-scale graphic and its original image file, PageMaker 3.01 gives you a lower quality placeholder (right) instead of the high-resolution image (left).

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LetraStudio

Hundreds of typefaces are now available on the Macintosh. Unfortunately, few of these are high-quality display faces suitable for professional graphic design. Letraset USA has addressed this failing with LetraStudio, a type-customization program that enables you to create headlines, logos, signs, and other special typeographic effects that previously had to be done by hand or required expensive camera work. Never again will graphic artists run out of the letter E or pull a sheet of press type from the drawer only to find the letters dry and cracked.

LetraStudio is the first Mac program that enables you to create head-ends of 1989 as Letraset — one of the world’s major suppliers of press type — brings its enormous font library to the electronic desktop.

The editing and drawing tools are similar, though not identical, to those of other Mac programs. A Type Specifications dialog box lets you adjust letter height to within a hundredth of a point and provides controls for horizontal scaling, alignment, kerning, and letter overlap. You can draw basic graphic objects (lines, rectangles, circles), and both type and graphics can be stroked or filled with shades of gray or Pantone colors. You cannot, however, custom-mix colors. LetraStudio prints spot-color separations but not process-color separations. You can get around this by using Adobe Separator to produce four-color process separations of LetraStudio files.

LetraStudio’s real strengths are its special distortion effects. Text can fill a variety of predefined shapes called envelopes, which appear as icons on a pop-out menu. You choose from 14 distortion shapes as well as scaling and skewing options. To use an envelope, you select the type or graphic, choose an envelope, and reshape the object by tugging on the appropriate handle. The text then shifts to fill the chosen envelope; the degree of distortion is up to you.

A separate Line menu lets you distort the baseline of text. You can curve the baseline in six ways, including making it a Bezier curve with three anchor points and direction handles.

In addition to creating line or envelope effects, you can rotate text or type in circles or along irregularly shaped line paths. Individual letters can be selected and manipulated as separate units with the line and envelope effects. Using a keyboard command, you can move a letter above or below the baseline of surrounding letters, or to the left or right.

Both text and graphics can be duplicated and tiled. If you hold down the Option key when choosing Duplicate, a dialog box lets you indicate the number of duplicates and the horizontal and vertical offsets. You can also indicate a percentage of change in the size of the text or graphic object as it is duplicated, as well as the percentage of black.

LetraStudio imports template files in Encapsulated PostScript Format (EPSF), PICT, or paint format. The templates, which appear on the screen in light gray but do not print out, can be used for tracing or for positioning artwork that will be combined with the LetraStudio file later.

Finished font work will print with high resolution and true WYSIWYG when printed on a PostScript laser printer or typesetter; files can also be sent to QuickDraw printers. Or you can save files in EPSF to place them into the rest of Letraset’s product family — Ready, Set, Go!, ImageStudio, and StandOut! — as well as most other page-layout, illustration, paint, and presentation programs. Unfortunately, LetraStudio cannot read EPSF files, which means that if you want to make changes later, you also have to save the file in the program’s native format. PICT images of LetraStudio files can be transferred to other programs via the Clipboard.

LetraStudio

List Price: $495 for program and four fonts; $75 for each additional font.
Published by: Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653; (201) 845-6100.
Version: 1.0
Requires: 1 megabyte and a hard disk; 2 megabytes recommended.
Compatibility: Mac II and MultiFinder friendly.
Application Size: 429K
Copy Protection: None for LetraStudio; LetraFonts limited to four installations.
LetraStudio does have a few minor foibles. Screen refresh is slow, especially if you have only 1 megabyte of RAM or use the program’s high-resolution setting on a gray-scale or color monitor. You can’t use LetraStudio with certain DAs, such as DiskTop (which causes a hard-disk crash). The program also needs more Illustrator-like keyboard shortcuts for accessing different tools from the work area. As with Illustrator, pressing the space bar turns any tool (except the Text tool) into a scrolling hand. But none of the other tools can be accessed in a like manner; you have to return to the Tool palette and click with the mouse.

In addition, LetraStudio is hamstrung by its archaic copy-protection scheme. The program itself is not copy-protected, but all LetraFonts must be installed with a special program that allows only four installations. And be forewarned, disk optimizers like DiskExpress can corrupt the font files, using up one of your precious installations. At $75 a pop, the fonts are a bit pricey — considering that they can be used only with LetraStudio, even in their unedited form. These restrictions, coupled with the fact that no other PostScript fonts can be used with the program, may keep sales from really taking off.

Still, LetraStudio’s ability to treat type like a graphic element makes it a worthy addition to the repertoire of any serious desktop publisher or graphic artist. Even a novice can easily achieve professional-looking results. The package will seem overpriced to those who have never dealt with press type. But to those who have forked out $10 or more per sheet, this package is a welcome bargain.

Diane Burns and S. Venit

Springboard Publisher

If you choose software by price, you’ll either be very attracted by Springboard Publisher’s low cost or wonder how good a page-layout program that costs 60 to 75 percent less than the leading programs can be. The answer: not great, but a lot better than its price indicates.

Springboard Publisher combines word-processing, page-layout, and graphics capabilities in one program that’s extremely easy to learn. Overall, it’s a decent desktop-publishing program as long as your aspirations are limited. It won’t do a lot of the slick stuff that the big ones will, although it’s as hard to use as they are (without the same quality of output).

As in QuarkXPress and Ready, Set, Go!, the program uses frames that can hold either text or graphics but not both. However, either type of frame can be placed over or within any other frame, and any frame can have a border. The number of frames is limited and becomes the ultimate limit on document sizes. You can have up to 30 frames per page and 256 frames per document. Thus, you could theoretically have a 256-page document consisting of solid, single-column text on each page. If your average newsletter page uses between 5 and 10 frames, then the maximum size of your documents will normally be 25 to 50 pages.

Each frame can have up to nine snaking columns, with uneven widths and gutters. There are rulers and customizable grids. You can wrap text around graphics either automatically (in which case the offset distance can’t be altered) or manually by drawing your own polygonal enclosure. Page numbering is automatic, with many styles to choose from. You can also include text with the numbering, either before the number or after it. Alas, this is the program’s closest approximation of headers or footers.

One feature unique to Springboard Publisher is the ability to have different page orientations within a single document. Thus, you can mix portrait and landscape pages, which is useful when you want to print a table or illustration sideways. On the other hand, there are no facing or double-sided pages and no Master Page feature, although you can get around this by creating clones of an empty layout. The program can also copy entire pages — layout, content, or both — to other pages, a nice touch.

When a new page is created, it defaults to a single text (background) frame. You can type directly into the frame, import text created elsewhere — in text, MacWrite, or Word format — or use the program’s built-in typing window. Avoid typing substantial quantities of text directly into a frame; response is sluggish, and typing quickly becomes frustrating.

The typing window is an excellent alternative, one I’d like to see in high-end programs. Since the text isn’t constantly reformatted (as it is in frames), response
is good, although the program may not be able to update the screen as fast as you can type.

Springboard Publisher has some problems handling text. It’s virtually impossible to position text exactly within a frame, even using the rulers. Imported text is best placed into background text frames, because if your text overflows the first frame, additional pages are automatically created to hold the text. If text is placed into nonbackground text frames, you must manually retrieve the excess words. You can link nonbackground text frames for automatic text flow by typing frame numbers into a complex dialog box. I find this method very awkward and totally un-Mac-like.

Text formatting is slow, and unseen text (which is being held until space is created for it) doesn’t always format. For example, if you reduce the point size of imported text to make it fit in a frame, you will have to repeat the formatting each time a new, unformatted line appears at the bottom of the frame. You could format text in the typing window, but tabs are ineptive. The best solution is to prepare your text carefully outside Springboard Publisher, build a blank document for it, and then import it.

Naturally, there are no style sheets. Type sizes are limited to 1-point increments between 9 and 72 points. Springboard Publisher has some leading and kerning abilities, which are called custom spacing and character spacing, respectively. Leading can be increased, but the program does not accept negative leading, and there is no automatic kerning. The program does have search-and-replace and automatic hyphenation. The latter should be used only if you have time and want a good laugh.

One of Springboard Publisher’s strongest features is its built-in paint program, which is a virtual clone of MacPaint. The paint features are activated whenever you select a graphic frame, and all the traditional tools are present, even MacPaint’s Brush Mirrors and Trace Edges options. Graphics can be rotated, inverted, cropped, distorted, and skewed.

The program also has a set of basic drawing tools for lines, circles, rectangles, and such, which can be drawn in both text and graphic frames. Unfortunately, whatever you draw becomes a permanent fixture and can’t be moved, resized, or erased. Text won’t run around these graphics, either.

You can import paint or PICT graphics, but Encapsulated PostScript Format (EPSF) and MacDraw-type graphics are not supported. Imported graphics are not automatically resized to fit the frame into which they are placed. You have to make the frame large enough to show the whole graphic, shrink the art, and then resize the frame.

Graphics exist only as 72-dot-per-inch (dpi) bit maps, and there are no color or gray-scale options. The low resolution isn’t a problem if your final output is to a dot-matrix printer. However, laser-printed output is unacceptably poor.

If your publishing goal is club newsletters and fliers, Springboard Publisher is a good, cheap solution. Although it has several minor bugs and can be unbearably slow, the program meets its stated objective of providing a simple method for making simple documents. It’s better at page layout than stand-alone word processors, and it offers a few features not seen even in high-end programs. However, if you plan to use a laser printer for output or want to explore the power of desktop publishing, Springboard Publisher won’t be enough.

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Perhaps the Century of Speed, or the Era of Ease. But whatever the name, this is the age of MathCAD, the only math package that looks and works the way you think.

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MathCAD's live document interface™ lets you enter equations anywhere on the screen, add text, and graph the results. Then print your analysis as a presentation quality document.

And it has over 120 commonly used functions built right in, for handling all kinds of equations and formulas, as well as exponentials, differentials, cubic splines, FFTs and matrices.

No matter what kind of work you do, MathCAD has a solution for you. In fact, it's used by over 50,000 engineers and scientists, including electrical, industrial, and mechanical engineers, physicists, biologists, and economists.

But don't take our word for it. Just recently MathCAD was reviewed as being "everything you have ever dreamed about in a mathematical toolbox." And when it was compared to the competition, it was "MathCAD by a mile."

And if you work with an IBM® PC or compatible, there's a MathCAD version designed exclusively for you. Or if you use both Macs and PCs, don't worry: MathCAD files are completely compatible between the two.

Look for MathCAD at your local software dealer. Or call MathSoft at 1-800-MATHCAD (in MA, 617-577-1017) for more information or for a free demo disk.

Speed, power and flexibility. Enter the new era of engineering and scientific calculations, with MathCAD.
Designing without a new Z21

Design a two-page spread on the biggest 19" black and white monitor available and it will pinch in your margins. Or round off your edges. Or at best condense your type to the point where you have to squint to read it. Your ideas become restricted by your hardware. E-Machines believes that shouldn’t happen.

Z21 will give you double vision.

The Z21™ monitor’s 21" high resolution (16" X 12" actual display size) screen gives you a full view of two entire 8½" X 11" or A4 pages simultaneously. And, yes, that includes margins and borders. Or you can view two 8½" X 11" pages in actual size.

Now, how can we possibly say we’ll let you see 17" of image with a screen that’s 16" wide? Simple.

Multiple resolutions. One keystroke.

We’ve removed the usual limitations on text and graphics display size by perfecting both the 72 dpi (1152 X 864 pixels for a true actual size view) and 80 dpi (1280 X 960 pixels for a full view) resolutions. And by giving you the ability to move from one resolution to the other with a keystroke.

But that’s just the beginning. You can also get a 2X magnified look at your work with the same keystroke. You’ll be able to switch between any of the resolutions instantly—without restarting your Mac. This gives you more resolution flexibility than any other machine we’ve ever made. Or even heard of.
Still, FONToastic Plus does what it does very nicely. The Style command automatically creates bold, italic, underline, outline, and shadow characters or fonts. The program also offers expanded, condensed, and inverted style options. Like its older siblings (Altsys developed both Fontographer and FreeHand), FONToastic Plus shows tremendous dexterity at type scaling. You can resize a single letter or, with one command, scale an entire font up to 127 points high by 254 points wide. The Metrics window lets you alter individual character widths and intercharacter spacing. These changes are incorporated into the FOND resource and apply to the entire font family.

Version 2.0 of FONToastic Plus lets you edit larger fonts, and it supports the NFNT font-handling system. This means you can convert font families from the FONT to NFNT system or vice versa. Such conversions help avoid font-numbering conflicts and help streamline font menus by eliminating individual style listings. (Be sure to peruse the Read Me file that comes with the program; it warns of potential problems in converting Apple-supplied FONTo to NFNTs, as well as other font-editing dilemmas.)

Unfortunately, version 2.0 is not compatible with MultiFinder, nor does it work with color fonts. The manual provides useful background information on fonts and a good tutorial on creating and installing bit-mapped fonts. This is the same manual that accompanied the original release, however, and some of the information is outdated or just plain wrong. For example, the explanation of FONTo is misleading, since the manual was written before the Mac SE and II were released. A major revision of the manual is sorely overdue.

FONToastic Plus is a handy program for those who want to give their documents a special, fancy, or finished look. It can also be extremely beneficial if you work in a specialized field — such as language translation, music, or medicine — that requires custom symbols or letters like the umlauted e in the byline below.

Noë Goldwasser and Aileen Abernathy

---

Hardware panning makes part of your Mac obsolete.

A huge screen and multiple resolutions aren’t the only ways we’ve made more room for you to work. We’ve also replaced the slow scroll with the fast pan. Hardware panning is something no other large screen Macintosh monitor even approaches.

If you’re working on more than two pages, this unique panning feature lets you fly to any portion of a virtual image you define (using our plug-in added memory module, this can be almost five feet wide and two and one third feet tall).

So when you pan, your image races by. Just move your cursor to the edge of your screen and zip — you’ve just jumped across a five-foot-long spreadsheet. Or whoosh — you’ve gone across eight pages of document text.

Black and white or gray all over.

You’ll be able to upgrade the Z21 to gray scale — with 256 shades — simply by plugging in our memory module (and you won’t have to throw anything away). Or use your expanded memory to define an even larger virtual screen image.

If your ideas are bigger than your Mac screen, look into the new Z21 monitor.

Black and white available for the Mac II and SE families. Gray scale upgrade available for the Mac II family. For more information, write to us at 9305 SW Gemini Drive, Beaverton, OR 97005, or to find a nearby dealer, call E-Machines: 503-646-6699.
Copywriters charged with leaving widows.

Nobody reads copy anyway. MacDraw II.
A team of veteran designers offers some sage advice to help you put your best font forward.

You have a new client who wants a newsletter. Together, you've nailed down the publication's name, basic design, paper stock, printing method, and press run. But what about the typefaces? You know better than to use bit-mapped fonts like Geneva and New York, but any PostScript typeface will do, right? Wrong. Every typeface has its own personality, which can affect the whole look of a publication. The right font tells folks what your publication's about before they read a word. The wrong one could make your legal newsletter look like a circus flier.

The first step in choosing appropriate typefaces is to analyze the target readership. Factors like age, sex, profession, and common interest can help determine what fonts to use and how the newsletter should look. When choosing a typeface, keep in mind that two fonts can have the same point size and still display vast size differences. For example, 12-point Times Roman is smaller than 12-point Melior. Is it really 12-point Times? Point size originally referred to the body of lead that the letter was cast on, not the physical size of the letter itself. Some letters are broader than others, which affects column width, and the leading needed will vary.

A good specimen book showing the different characteristics and applications of typefaces is one of a designer's most important tools. Before specifying a typeface, though, see how it looks on your own equipment. Typefaces may carry the same name on different typesetting systems (phototypesetting, cold type, or computer), but you'll find that they can look very different.

To show how the choice of typeface depends on the audience and printing method, we dreamed up three newsletters, each serving a different purpose. First, a brief look at each newsletter and its intended readers. Then, in a case-by-case analysis, three designers discuss their typeface preferences.

**Attorney's Case:** This monthly eight-pager is distributed to all local lawyers in a mid-sized city, listing meetings and covering new court cases — pretty dry stuff. The pages are 8.5-x-11 inches, strictly black and white. The client will probably use a photocopier to produce the 500 copies needed.

**The Book Nook Book Notice:** This 16-page, 5.5-x-8.5-inch newsletter lists newly released books and includes photos of the book jackets. Readers are customers of The Book Nook. The client is willing to use a second color on the front and back covers. The newsletter will have some small type, so we'll use the Varityper VT600 laser printer for output because it offers 600 dots per inch (dpi). Around 8,000 copies will be printed.

**Wonderful World of Wee Ones Fashions:** Another monthly, 8.5-x-11-inch, eight-page newsletter, this time distributed to customers of a children's clothing store. Much of the content is directed at kids and should be printed in a larger point size. Naturally, the rest of the text encourages parents to buy the sponsor's products. The client is willing to print on glossy paper stock and to use two Pantone Matching System (PMS) colors, so the output will be to a high-resolution typesetter such as the Linotronic 300. The total press run is 10,000 copies.

By Sal Glynn and Carl Haeberle
Attorney's Case

The short print run forces you to watch costs carefully because if the production costs escalate, your designer fees will suffer. With that in mind, we'll use a laser printer to produce the master pages. Besides, the client will probably change the contents a dozen times before you finally ship the masters to the copy center for duplication.

Carl Haeberle (owner, The Mac Studio): I like Palatino for both headlines and body text. It's traditional and easy to read, and in larger headline sizes Palatino has a classic look that will really set the newsletter off. Palatino doesn't print accurately on a 300-dpi laser printer, because the thin ascenders and descenders are artificially thickened. But this also makes the font more readable on copier paper.

Rex Brooks (art director, The Mac Studio): The Melior family is a good choice for text, with ITC Cheltenham Italic, Bold, and Bold Italic for headlines. Melior is a very legible serif typeface, with a distinctive yet conservative character. Cheltenham, designed for newspapers in the late nineteenth century, complements Melior and gives headlines a newspaper-like significance. It prints well under poor conditions.

Sal Glynn (editorial assistant, Ten Speed Press): Let’s keep it simple, with Times Roman for text and Times Bold for headlines. In addition, I would accent the total look with borders and boxes around some text blocks. Times prints well on the laser printer, and it’s used everywhere, so people are accustomed to the look. Since Attorney’s Case is basically information, little should come between the reader and the fast retrieval of information. Times Roman facilitates this.

Headlines: Palatino
Body text: Palatino 10 pt.
While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you

Headlines: Cheltenham
Body text: Melior 10 pt.
While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

Headlines: Times Bold
Body text: Times 10 point
While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

The Book Nook Book Notice

The client likes soft stock, so we could get by with 300-dpi laser-printer output. But the publication is full of tiny type, requiring at least 600 dpi to maintain legibility. Laser text under nine points is hardly usable; however, the Varityper VT500 provides 600-dpi output, which smooths the jaggies in the small type.

Carl: Melior is a good choice for the body text. It’s an easy-to-read serif with no ultrathin components, so 600 dpi will produce reasonable-quality output. For headlines, Franklin Gothic Demi is a good contrast. The two faces work well together — their x-height (height of the lowercase letters) is about the same, and letter widths are compatible. The combination will give the pages good color and balance with a look that’s classy but not overbearing.

Rex: My approach would be ITC New Baskerville for body text and Clarendon Bold for headlines. New Baskerville is a twentieth century rebuild of a typeface designed in 1792. It’s readable, although it’s not the most fluid of faces. But the readers of this publication appreciate good type. Why Clarendon? I just like the look of this square-serif face. Clarendon, like many typefaces, has no italic version. It comes only in light, medium (book or roman), and bold weights.

Sal: My choices would be ITC Bookman for text and ITC Clearface Heavy for headlines. The readers are literate, so they’ll expect good type. Bookman and Clearface are different enough to create some excitement on the page. Bookman has a regular body weight, while Clearface displays a clear distinction between thick and thin strokes.

Headlines: Franklin Gothic Demi
Body text: Melior 10 pt.
While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

Headlines: Clarendon Bold
While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And,

Headlines: Clearface Heavy
While you might not think so at first, designing with type
Wonderful World of Wee Ones Fashions

Three factors lead this publication to Linotronic output: It’s on glossy stock, the long press run means metal plates will be used, and it’s three colors (black plus two PMS spot colors), so good registration is important.

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**Children**

**Headlines:**

*Lucida Sans Bold*

Body text: 

*Lucida Sans 12 pt.*

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you have

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**Adults**

**Headlines:**

*Lucida Roman Bold*

Body text: 

*Lucida Roman 10 pt.*

While you might not think so at first, designing with type can be fun. The more you learn, the better results you will achieve. And, if you have

---

**Sal**

I picked *Italia Book* for the adult portions and *Italia Medium* for the children’s sections. I’d allow more tracking (wider spacing between letters and words) in the kids’ sections to make them more readable. Italia is a fun font with a long history. First cut by Nicholas Jenson in Venice in 1469, it became the basis for William Morris’ Golden type of 1890, then was cut again as Veronese/Monotype Italian Oldstyle at the turn of the century. It’s funky and flashy and takes color well.

---

*Sal Glynn* is an editorial assistant at Ten Speed Press in Berkeley, Calif. He has an extensive background in typography and book design. Carl Haeberle runs The Mac Studio, a graphic-design shop in San Francisco that specializes in design and typesetting.
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If you chose the Macintosh SE/30 for its high performance features, you'll want to be sure that the integrity of your data conforms to the same high standards.

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Found a trick, shortcut, or smarter way to get something done with a program? Share your hints by sending them to Tip Sheet, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. We pay at least $25 for every hint we publish, plus we'll print your name and hometown.

Every month we'll select one tip as the Tip of the Month. The person who sends in that tip will receive $100 for it.

**PAGEMAKER 3.0**

When you first place a Word document into PageMaker 3.0 or 3.01, you place Word's style sheet into that PageMaker document's style sheet, even if you previously weren't using a style. What happens is that PageMaker, which doesn't have Normal as a style, creates one by taking on Word's default Normal style from the placed text. This style is not actually created within PageMaker; PageMaker borrows it from Word. From then on, PageMaker reads whatever Normal text you place from Word, whether it is formatted differently from the first text or not, as the same Normal style. If you have differently formatted stories to place in your document, be sure to delete the Normal entry from the PageMaker style sheet before placing the additional text. Better yet, since PageMaker reinserts Normal after each Word text placement, either add the desired styles in Word before you place text into PageMaker or save your formatting until your text is in PageMaker.

CLARICE KEEGAN
SEATTLE, WASH.

PageMaker 3.0 enables you to flow text around irregular graphics using an invisible outline that text won't cross. This feature also lets text flow into an irregular shape.

Start by drawing or placing a graphic in a shape that you wish to replace with text. Using the rectangle tool, create two rectangles to cover the graphic that lay side by side, touching in the center of the graphic and extending across the width of the column and above and below the graphic. Select the center text-wrap feature for each of these rectangles. The invisible wrap control lines will appear overlapping in the center.

Working first with the left rectangle, click along the right control line enough times to create the number of points necessary to outline the left side of your graphic. Use these points to stretch the control lines around the left side of your graphic.

Repeat the process for the right side of the graphic using the left side of the rectangle. Be sure the top and bottom control lines still overlap at the center. Once the graphic is outlined, delete it.

Choose the two rectangles and specify None under the Line menu. Now flow your text into the column and it will fill the area you created. Set the text to be justified. This technique works best with small font sizes, tight leading, no paragraph breaks, and no tabs.

CLARICE KEEGAN
SEATTLE, WASH.

**The default settings of the Aldus Printer Description (APD) files control the laser-printer screen quality, producing output at 60 lines per inch and placing halftone screens at a 45-degree angle. You can change these default settings using the text editor. With the text editor, open the APD file corresponding to the printer that you are going to use and find these two lines:**

```
@ScreenFreq: "
@ScreenAngle: "
```

Enter your desired screen frequency and the desired screen angle between their respective quotes (see Figure 1) and save as a text-only file. The laser printer will produce the new desired screen definition on your output copy.

For best results, do not use a screen frequency higher than 135 lines per inch and set your halftone screen angle to a multiple of 45 degrees.

TONY HO
SEATTLE, WASH.

**EXCEL 1.5**

When you're using several worksheets, charts, and macros in Excel simultaneously, quitting out of the application and later returning to where you left off can be a painful process — you must open every worksheet, macro, and chart separately. But Excel lets you return to where you left off with the Resume Excel icon, which is created after quitting Excel. This operation is useful only if you haven't tried to use Excel with another work-

Figure 1: In PageMaker you can modify the screen frequency and angle of the APDs, or printer-specific files, to obtain better printing results. Here's one such file opened up in a word processor.
Crate Technology welcomes seven new drives! We offer a great line of external disk drives known as MacCrate ranging from 20MB to our performance driven 160MB.

Our line of internal disk drives known as InnerCrate now ranges from 20MB to 100MB for the Mac SE, and 40MB to our new upgraded high performance 600MB for the Mac II.

TapeCrate, our high speed quality backup system now protects not only 60MB but also 155MB of your valuable information in less than 12 minutes.

MacCrate, InnerCrate and TapeCrate are registered trademarks of Crate Technology, Inc.
APPLE HD SC SETUP

If you are unsuccessful in using Apple HD SC Setup to initialize a non-Apple hard drive, here is how you can do it.

Apple does not manufacture hard-disk drives; drives with Apple labels come from various OEMs. Each SCSI hard-disk drive has its manufacturer and drive-type information in its own ROM. When you launch Apple HD SC Setup, it first finds the drives that are attached to the internal or external SCSI port and requests the manufacturer and drive-type information from the drive. If either the manufacturer or the drive-type information doesn't match an entry in the predefined list of the Apple-supplied drives, the program gives an error message and refuses to initialize. If your drive happens to be one of the following drives, it will successfully initialize even if it is not supplied by Apple:

Manufacturer Drive Type
Seagate ST225N
Seagate ST50N
Seagate ST157N
Quantum Q280
Quantum Q250
Miniscribe M8425

If your drive is not listed above, you can still initialize it using Apple HD SC Setup. Open a copy of the Apple HD SC Setup program using a block editor like MacTools or FEdit, and do an ASCII search for "GATE" (in all caps). You will end up in a block that contains the predefined list for Apple-supplied drives. If your drive manufacturer (the OEM, not the supplier) is listed, change the drive-type info on all occurrences of that drive manufacturer. If your OEM is not listed, change one of the manufacturers to your OEM (seven-character limit) and enter your drive type. (Replace existing characters only — do not add or remove characters.) If you do not know the OEM or the drive type, use the shareware program SCSI Evaluator 1.00 or the SCSI Probe cdex to read the ROM of your drive. All the information you enter must be identical to the ROM contents of the drive. This modified copy should work with your drive if your drive has been previously initialized by some other initialization program.

If you have a "raw" drive that has never been initialized, it does not contain the vital information that Apple HD SC Setup uses during initialization, such as the number of blocks that are available, block length, and so on. In this case, you may not be able to use Apple HD SC Setup to initialize your drive unless you use one of the shareware programs such as SF &l to do low-level formatting prior to using Apple HD SC Setup. [Take extra precautions when performing this task — it is potentially very dangerous. — Ed.]

ALI KAYLAN
ROCHESTER, N.Y.

EASY ACCESS

Here is a simple tip for those who often use cursor keys in Easy Access. If your screen freezes and
Smart investors always buy utilities.

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

Don't let your printer regulate your business.

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

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

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

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

Keep insider information where it belongs.

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

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

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

How to recover from a crash.

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

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

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

Add SuperMac's utilities to your Macintosh portfolio.

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

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

SuperMac is a trademark of SuperMac Technologies, Division of Network Data Inc. Sentinel and SuperSpool are trademarked of SuperMac Software. Apple, Macintosh, ImageWriter and AppleShare are registered trademarks and MultiFinder is a trademark of Apple Computer, Inc. You are invited to conduct your own research, Inc. Bernoulli® is a trademark of Bolinger Corporation. Mailer® is a registered trademark of Inter Quations, TOPS is a registered trademark of Sun Microsystems, Inc. "Cray", "nesys" (C) 1988, copyright 1983, Bernoulli Corporation. SuperMac products are available in major software distribution outlets. SuperMac's family of utilities is compatible with Macintosh II, Macintosh Plus, Macintosh SE and Macintosh T personal computers. Copyright (C) 1988 SuperMac Software.
it appears that your Mac has bombed, always try pressing the period key on the numeric keypad. You may have accidentally hit the keypad 0 key, causing the mouse to stay clicked and creating the illusion of a System error.

THOMAS A. WYNN
CLATSKANIE, ORE.

STUFFIT

StuffIt, which has become the industry-standard utility for archiving and compressing Mac files, has a hidden (and very handy) feature.

After selecting the archive you wish to open (or after clicking in the About box if you opened an archive and not the program itself), hold down the Shift key and StuffIt will automatically select all the files, decompress them, and save them to disk.

PAUL FRIEDMAN
SARASOTA, FLA.

THUNDERSCAN

If you’re getting a lot of unwanted distortion from your ThunderScan, and the program even crashes occasionally, try putting a piece of clear acetate over the item to be scanned.

I was getting focusing numbers in the low 30s and even the high 20s when I found out from Thunderware that anything lower than 40 was abnormal. But every solution they could offer (short of returning the scanner cartridge to the manufacturer for testing) ended in frustration.

Noticing that the only items that scanned acceptably were glossy photos, I tried the acetate. No more crashes! Focusing in the high 50s and great scanned images are now the rule, rather than the exception.

Be sure the acetate lines up with the left-hand edge of your document to be scanned. Also clean the lens on your scanner and adjust the height of your scanner cartridge (according to your printer manual) for optimum focusing.

FRED ANDERSON
MANHATTAN, KAN.

MACDRAW II

One of the oversights in Claris’ MacDraw II is the lack of a standard ruler for measuring in pixels. You can create your own custom ruler that does just this by setting the scale ratio to 1:72 inches, setting Divisions/inch to 1, and un-checking the Show Unit Name check box.

DON SAMPLE
NEPEAN, ONTARIO, CANADA

ANCIENT ART OF WAR

In Ancient Art of War, only 20 squads can be on the war map at one time. To keep your opponent from receiving any more men, you should detach squads (preferably in your forts) until the 20-squad limit is reached.

Any time a squad is wiped out, detach again to keep the 20-squad limit. This way you can gain more men, and your opponent can only lose men.

DANIEL J. LEONARD
MISSISSIPPI, MISS.

TIP OF THE MONTH

FINDER

When I have many documents in a folder, I ordinarily use the By Name option in the View menu. This lets me see more of my documents at one time, though they still have large spaces between them. To reduce the amount of space and make more files visible, I modify the Finder using ResEdit. To do this, run ResEdit and open the Finder on the disk you want to change. Double-click on the LAYO resource. Double-click on LAYO = 128. Click once on the gray part of the scroll bar. Change the number in Line Spacing from 16 to 11. Save the Finder and quit ResEdit. Now your documents will be listed in a tighter format (see Figure 3).

DAVID FIEL
CLEARFIELD, KY.

Figure 3: When viewing files by name, you’ll notice that Apple has provided a generous amount of leading between lines of text. You can change the default leading of 16 with a little ResEdit magic.

TIP OF THE MONTH
HYPER-ACTION™

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- Automatic Archiving Of Any Card: (Lead, Prospect, Client, Etc.)
- Automatic Bibliography And Note Links
- Automatic Conversation
- Time & Posting To Clients: Time Billing Order
- Automatic Formatting & Posting Of Letters
- Automatic Hierarchical Document, Notes, & Picture Classification
- Automatic Letter Generation & Maintenance Of A List Of Letter Recipients By Letter
- Automatic Posting Of All Interactions, Proposals, Sales projections, & Sales
- Automatic Posting Of Personal & Staff To Do
- Complete CLIENT & Prospect History
- Direct Mail Management
- Export Tab Delimited Files
- Find (Multiple Arguments), Find All, Find Conditional (EXTENSIVE BOOLEAN Searches)
- Global Data Insert
- Global Data & Person Searches
- Import Tab or Comma Delimited Files
- Mailmerge
- Maps (Over 100 State, World, City & Highways)
- Mass Mailing Tracking
- Merge Any Two Stacks By Field
- Mini Corporate Tree
- Mini Outliner
- Multiple Alarms: Audible & Physical, AnyWhere & Any Time
- Multiple Field Searches
- Multiple Word Searches
- No Copy Protection
- On-Line Help (EXTENSIVE)
- Post All Calendar Events From Daily To Weekly To Monthly
- Sales Reports
- Sorts On Any Field OR Any Combination AND/OR Number Of Fields Simultaneously
- Sticky Notes Any Time or Place
- To Do & Staff To Do: Posting By Date & Staff Member
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Who's Albert? He's in NewsLinks this month, along with a HyperCard history of the Vietnam War and several speeding XCMDs. *The Bible* (not to be confused with *The Macintosh Bible*) comes to HyperCard in a monumental program, and another product of epic proportions, Xiphias' Time Table of Science and Innovation CD-ROM disc, is reviewed. Ponder along with Michael Swaine on the future of HyperCard in Card Tricks.

If you have HyperCard tips you'd like to share, send them to Hyperspace, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94002.

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**Chapter, Verse, and Card**

From leather scrolls to illuminated manuscripts to the first printed book to the latest Scorsese film — the Bible has always remained a popular message in every medium. Now Beacon Technology of San Jose, Calif., has brought the holiest writings of the Judeo-Christian tradition to HyperCard. This is the HyperBible.

The HyperBible is designed to offer more than just a HyperCard edition of the scriptures. This is intended to be a complete Bible-study package. You get one of two versions — either the King James (great poetry) or the New International (modern scholarship). Each verse is presented on a single card, and you can use HyperCard's search capabilities on the entire text. In the case of the King James version, that amounts to 774,746 words.

In addition to the actual Bible, though, the program includes the Thompson Chain-Reference Bible, which was originally published as a

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**The HyperBible is designed to offer more than just a HyperCard edition of the Scriptures — it's a complete Bible-study package.**

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**Figure 1:** The psalm remains the same, but the medium is one that the 47 scholars who produced the King James' Bible never anticipated. The Thompson Chain Reference listings are shown at the right.

**Figure 2:** Maps like this one of Jerusalem in A.D. 70 are included in the HyperBible's Atlas section. The maps are indexed by the place names they contain, so it's easy to put biblical locations in geographic context.
conventional reference book. It's a detailed index of topic-related scripture references and, in this electronic version, is integrally linked with the King James edition or New International text (see Figure 1).

HyperBible has no shortage of extras. A pronouncing aid contains digitized enunciations of the more difficult-to-pronounce names of the Bible's dramatis personae (do you know how to pronounce Zelophehad?). An atlas displays maps of the Holy Land (see Figure 2) and, as in the original Thompson, archaelogical, geographic, and biographical information is abundant. Other features, such as the Christian Worker's Tools, are more evangelical than scholarly.

These features have their price, of course (sorry, the Gideons have yet to realize the possibilities of hypertext). The HyperBible itself costs $229.95 for the King James version and $279.95 for the New International, but that's just the beginning. Including HyperCard itself, the program needs 15 megabytes of disk space. The program comes on 11 floppy disks, with a customized installation program built around StuffIt. You can't install just part of the program, so you'd better have 15 spare megabytes before you start.

Technical support is provided free to registered users, and annual upgrades are priced at $50. For more word on the Word, contact Beacon Technology, 3550 Stevens Creek Blvd., P.O. Box 9872, San Jose, CA 95157; (408) 296-4884.

— James Bradbury

Who's Albert?

Cars fly and computers talk back in this Disney remake of The Absent-Minded Professor, which premiered in November on The Wonderful World of Disney. This version stars Harry Anderson of "Night Court" fame and his friend Albert. You say you don't remember Albert from the original film? That's because Albert is a cute little cartoon character created by Anderson on a Macintosh. Albert is reminiscent of his Einsteinian namesake, appears on an SE screen in the professor's laboratory, and plays the Dean Martin straight man to Anderson's bumbling Jerry Lewis.

Of course, cartoon characters are not new to television, so why does this make HyperCard news? Albert is no ordinary cartoon character—he's a computer program created in a HyperCard application called HyperAnimator from Bright Star Technology. HyperAnimator lets you coordinate images and sounds to create talking heads (see Figure 4). You simply type the words you want your "actor" to say, and HyperAnimator converts the text into speech, with the actor's mouth movements synchronized to the words.

HyperAnimator received four mice in our February review, and the release of version 1.5 made it even better. This version has nine actors (version 1.0 had eight) with 16 expressions each. And it makes it easier for you to create your own characters using its clip-art collection of noses, eyes, ears, and so on. HyperAnimator 1.5 is also compatible with MultiFinder and the Mac IIx.

— Michele Stokol

Figure 3: Giap is one of the many personalities featured in the Vietnam War stack. Words in all capital letters lead to related information.

War and HyperCard

The Vietnam War is the subject of a new type of history book, an electronic volume written in HyperCard format. This freeware stack — created by history teacher Paul Gabel — contains researched information on the most misunderstood war in American history.

Unlike the usual history textbooks, The Vietnam War: A HyperCard History Book, version 1.2, delivers detailed information in an easy-to-read style. The cards in the stack are all interconnected, letting readers learn about the war in any order they choose. The stack includes an index that contains three types of information — Chronological Events, General Topics, and Personalities as well as a listing of maps and charts. By clicking on any one of the headings, the reader will be able to choose from a variety of different themes (see Figure 3). For instance, you'll learn how Vietnam's problems started as early as 1946.

In addition to the text, the Vietnam War contains multifaceted maps and animated charts. Both give statistical information about different areas of the war and the United States' involvement. For specific information about an area of Vietnam, you click on one of the dots found on the map, and detailed information appears.

The animated charts give the reader statistics, such as how many troops the U.S. sent throughout the war and how many people died in Vietnam as compared with other wars. A click on any word in all capitals in the text transports the reader to the card containing detailed information on the subject.

To receive a freeware stack, just send a blank disk and SASE to Paul Gabel, 377 Collado Drive, Scotts Valley, CA 95066; (408) 438-5791.

— Michele Stokol
Things To Do, People To See, Places To Go.


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William Correll, vice president of marketing at Bright Star, says that the people at Disney Studios like HyperAnimator because they can change the script, and the character automatically says the new text—thus avoiding an expensive reanimation process. Disney keeps asking for more features, and the folks at Bright Star are working feverishly to give them what they want. So look for bigger and better things soon.

HyperAnimator’s biggest limitation has been its reliance on MacinTalk. Though Anderson originally wanted Albert to speak with a MacinTalk voice, Disney didn’t like the results. Consequently, Albert’s lines were overdubbed by a human and then distorted to sound like a more comprehensible version of MacinTalk.

Bright Star is also planning to release an E-mail package called HyperMail that will feature an actor that speaks your messages. It should be out by the time you read this. Is that Knowledge Navigator I see on the horizon?

For more information about HyperAnimator and other Bright Star products, contact Bright Star Technology, Inc., 14450 N.E. 29th, Suite 220, Bellevue, WA 98007; (206) 885-5446.

— Laura Johnson

The Search Is On

HyperCard’s search capabilities (or lack thereof) have been listed as one of its weaknesses since it was first introduced. The Find command is limited to one stack and is tediously slow when searching large stacks.

HyperSearch, by Discovery Systems, is a set of external commands that speed up the search process and enable you to search any number of stacks (see Figures 5 and 6). HyperSearch may be installed in your home stack (from which all stacks can be searched), or it may be applied to one stack at a time. When installed, HyperSearch appears on the menu bar. Its functions include Find, Find Next, and Find Previous.

You can create an index to conduct searches. Just tell HyperSearch which stacks to create an index for and what types of fields (background, types of backgrounds, card fields, etc.) to index. It is this index that HyperSearch uses to find what you are seeking. When the search is finished, HyperSearch tells you how many times the target occurred.

You can use HyperSearch as it comes or create your own hypertext scripts to customize some of the hypertext handlers.

HyperSearch retails for $99.95 from Discovery Systems, 7001 Discovery Blvd., Dublin, OH 43017; (614) 761-2000.

— Laura Johnson
Faster than a
Speeding XCMD

When auditors at Arthur Young & Co. balked at searching through paper files, the Big Eight accounting firm turned to KnowledgeSet for a HyperCard alternative. KnowledgeSet packs all of Arthur Young’s client records onto a CD-ROM optical disc and uses HyperCard to index the database. An Arthur Young director says it now takes seconds to find data that previously took hours to find.

An Arthur Young director says it now takes “just two seconds to find the same data” that previously took four hours. The system works so well that accountants now take their Macs and an AppleCD SC CD-ROM player with them on the audit trail.

KnowledgeSet catalogs a company’s information with HyperIndexer and then searches for it with HyperKRS, a highly enhanced retrieval mechanism for HyperCard. What might take HyperCard’s Find function over two minutes to locate takes only two seconds with HyperKRS. HyperKRS adds not only speed but agility in searching for information, using options like Boolean operators (AND, OR, BUT NOT).

KnowledgeSet’s solution is so packed with power that it’s being used by other companies. Maxwell Data Management put its reference manual for the Boeing 757 — 18,000 pages of text and graphics that weigh in at 140 pounds — onto a CD-ROM disc. Information Handling Services transferred its Personnel database of the Federal Personnel Manual onto CD-ROM and reports that it’s seven times faster than the microfiche version, which is seven times faster than a hard-copy search.

KnowledgeSet’s starter system, including HyperIndexer and ten HyperKRS discs, sells for $3,000. Engineering support is provided by KnowledgeSet. Purchasers can set up their own databases or have custom programs developed for them. Contact KnowledgeSet at 888 Villa St., Mountain View, CA 94041; (415) 968-9888. A demonstration disk is available free of charge.

— Laura Johnson

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Time Table of Science and Innovation

Galaxies and stars rush past. A soft sound tugs at the hem of your awareness, growing rapidly to an overpowering electronic om. As you plunge to Earth only to be yanked in through an office window in Marina Del Rey, a voice that could almost be Rod Serling’s invites you to “witness the glory — and the folly — of man.”

In this way you are drawn into that black hole of technophilia, the Xiphias Time Table of Science and Innovation CD-ROM disc.

The product is the brainchild of Peter Black with editorial work by Susan Black, Peter Black, and Hugh Esten; programming by Bill Fancher; and digitized imagery by Stephen Burr. The product’s name suggests that it is patterned after Bernard Grun’s The Timetables of History (Touchstone Books, Simon & Schuster, New York, 1982), that Black intended it to be something like a hypertext version of what that book undertook. But Black has drawn from a rich set of sources, only one of which is Grun’s book.

The Xiphias Time Table of Science and Innovation is implemented as an integrated set of HyperCard stacks on CD-ROM, presenting events from the history of technology. The main body of the Time Table is over 500 cards, each of which details a historical event. From one of these cards the reader can branch to a variety of related kinds of information or to related cards. If events have some significance in a broad category like politics or medicine, a recognizable icon indicates this, and clicking on the icon takes you deeper into that category. The fast and flexible Search command makes user-directed branching particularly easy.

Several hundred scanned-in pictures let you see the devices described in text, and several pictures also have an associated sound. (“Listen to the sound of a Blanchard gun-stock lathe.”) The most powerful use of visual information may be the simple world map that you can jump to, to see where the event described took place. One trivial but surprisingly effective use is in the bibliography, where Burr has included scanned-in covers of the books cited. The bibliographic entries are striking.

Other stacks and modes for accessing information are nicely integrated with the Time Table cards, notably a time line that places historical events graphically in their temporal perspective, and a periodic table of the elements.

The Xiphias product was painstakingly designed and is really a model of how to integrate multimedia information in a richly linked information base. Navigation through the stacks is remarkably easy. The design encourages the user to range fairly freely through the information, has few dead ends, and usually provides a variety of kinds of links from any given point. The presentation of information is attractive, consistent, and effective, with links to other kinds of information always clear but subordinate to the information currently being presented. The integrated Help system couldn’t be easier to use, and it seems to cover all of the bases.

Although the linking of information is rich, the depth of the individual items is not great. Most entries consist of a sentence or two, and the selection is somewhat eccentric. (I would not have included the home yogurt maker, for example.)

In performance, CD-ROM products have to measure up to professional software standards. The price of discs and the fact that bug fixes require a new disc take CD-ROM stacks out of the tolerable stackware market. I found some minor bugs in the HyperTalk code of the Xiphias product, but there was nothing more serious than a typo in the Periodic Table stack script that has, if anything, only a cosmetic effect.

There are some signs of casualness, though, in finishing off the code. The supplied Home stack contains inappropriate path names in the path cards. Most of the stacks were not compacted (the Periodic Table stack takes up 252K and could easily have been reduced to 44K), and the scripts have commented-out code, plus live code that is meaningless on CD. These things may be there for developer use; in any case, most probably have no appreciable effect on performance. Still, reading from CD-ROM is so slow that developers should take special care to avoid slowing the process down unnecessarily.

But the big question I can’t dodge is, is this hypermedia? Does it deliver on the promises of richly linked hypertext with integrated graphics and sound?

Hypermedia, to justify its existence, has to deliver what can be delivered in an equivalent mass of print and then some. I really don’t think that the Xiphias Time Table of Science and Innovation measures up to

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Aristotle Studies with Plato

Following the death of his father, a court physician in Macedonia, the 17-year-old Aristotle is sent to study with Plato in Athens. He will remain at the Academy of Plato for twenty years, leaving only after Plato’s death in 347 or 346 B.C.

During this formative intellectual period, Aristotle will immerse himself in many of the sciences and arts, taking full advantage of the Academy’s activities that range from medicine and biology to mathematics and astronomy. Among his many

This entry for Aristotle is more extensive than most. From here you can examine other entries for Aristotle or follow chronological or topical links.
that criterion.

I have on my shelf *The Timetables of Science* by Alexander Hellemans and Bryan Bunch (Simon and Schuster, New York, 1988). The book contains no illustrations, just 600 pages of items much like the items on the Xiphias cards. The organization of the book is chronological, in parallel columns for different sciences. There are two indexes. The book has a much simpler structure than the Xiphias Time Table of Science and Innovation, and lacks the pictures and sound. Nevertheless, it has, by my estimate, about 30 times as many text entries as the Xiphias product, and it costs about one-tenth as much.

I think it is its lightweight nature that leads the Xiphias product into overcondensed summaries such as a two-sentence argument that the invention of the printing press led inevitably to the discovery of the Americas. James Burke can pull these things off, but not everyone is James Burke.

The Time Table of Science and Innovation CD-ROM disc is not James Burke, but it is a fascinating product and a useful tool for exploring links in the history of technology. It would be a mistake, though, to view it as a substitute for a real reference book such as the Hellemans and Bunch work. It simply lacks the weight of information.

— Michael Swaine

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**Timetable of Science and Innovation**

List Price: $150
Published by: Xiphias, 13464 Washington Blvd., Marina Del Rey, CA 90292; (213) 821-0074.
Requires: 1 megabyte RAM, Mac Plus or higher; HyperCard version 1.2 supplied.
Compatibility: MultiFinder friendly
Copy Protection: None

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A n editor for another computer magazine asked me to write an article on the future of HyperCard. A conference organizer asked me to conduct a workshop on developing HyperCard stacks. Having time for only one, I turned down the article and accepted the workshop. That was dumb.

I didn't see immediately that it was dumb. About halfway through outlining the workshop, I realized that I couldn't talk to people about developing stacks without answering a fundamental question, at least for myself.

Apart from Focal Point author Danny Goodman, I couldn't think of anyone who was making a living creating HyperCard stacks. The stackware market had developed pretty much as several pundits had predicted that it would; which is to say, it looked a lot like the macro market for Lotus' 1-2-3. So the question was, why develop stacks?

The answer was that HyperCard is not just, or even primarily, a mill for grinding out stackware. People are doing some very significant things with HyperCard, things that have nothing to do with stackware. You should learn how to develop HyperCard stacks, I imagined telling my audience, so that you can be involved in the exciting new uses to which HyperCard stacks are being put and will be put in the near future. Uses like . . .

And there it was, staring me in the face. To teach people how to develop stacks, I had to explain why they would want to develop stacks, and to explain that, I had to tell them what HyperCard was going to be used for in the future. I had to write the article to plan the workshop.

So I did, and this is it. Here are the major uses to which I see HyperCard being put in the next year and beyond.

HyperCard is really an interface you can graft onto just about anything remarkably easily.

By MICHAEL SWAINE

Bullish on the Stack Market

The Universal Interface:
The chairman of the board of the Independent Apple Dealers Association recently told his dealers to expect demands from their customers for HyperCard front ends to mainframe systems. The customers can expect to see many such interfaces. You can expect HyperCard to be used as an interface to just about everything. That, in fact, is mostly what HyperCard is: an interface that can be grafted onto just about anything remarkably easily. It's very appealing to the keepers of such beasts as mainframe databases to be able to provide a simple, customizable, recognizable means of access to their beasts for Mac owners. It's particularly nice if the means of access is free and supported by the manufacturer of the hardware, and if all they have to do is write a few external commands and functions to map the HyperCard user interaction onto their model of a transaction.

The Multimedia Interface: You may have noticed recently that you could hardly walk into a computer store without being bombardecl with Apple's multimedia pitch. Apple is serious about multimedia applications. I think Apple ought to be, for the reasons detailed in the March issue of this magazine.

If HyperCard is a logical front end for mainframe access, it's even more logical as the multimedia interface. Not only does it provide a familiar interface and a straightforward way of controlling devices such as CD-ROM drives, but its hyperext links extend naturally to hypermedia links, allowing the user to blaze trails among diverse kinds of information.

Bill Atkinson's Demo Program: Although HyperCard is not itself an application-development language, it can be used to develop prototypes of application programs. Because HyperCard can simulate most effects that can occur on a Mac screen, a developer can use it to put together a prototype of a program in days. The benefits are having early feedback on design, early identification of conceptual errors, and something tangible to show to potential investors. Programmers know how important prototyping is, and they know that the Mac didn't have a good prototyper until HyperCard came along.

There are now some good prototyping tools that go beyond what HyperCard can do. But developers need a rich variety of tools, and HyperCard's ease of use argues for keeping it in the toolbox along with the prototypers. I expect HyperCard's greatest contribution in application development to be in creating quick prototypes.

The Hyperext Manual: The real proof that it's HyperCard's interface that matters is Symmetry's HyperEngine. HyperEngine is a tool that lets software developers incorporate many of HyperCard's features into their applications. HyperEngine grew out of Symmetry's HyperDA, the desk accessory that allows access to HyperCard stacks without HyperCard (and without a megabyte of memory). HyperEngine allows developers to fold this same functionality into their applications.
“Five Mice”

- MacUser Magazine

Claris is among the companies that have licensed Hyper-Engine so that they can provide on-line documentation in the form of HyperCard stacks. That’s a HyperCard-developed, Hyper-Engine-mediated stack that documents the new features in MacWrite II. The user gets the HyperCard interface without HyperCard.

The Simulator: Computers won’t solve the enormous problems in American education, but computers in the hands of many people will democratize the process of searching for solutions. I believe that HyperCard is a particularly good tool for developing educational software because it makes it easy to show, rather than just to tell.

Besides, it’s free.

HyperCard is a particularly good tool for developing educational software because it makes it easy to show, rather than just to tell.

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"1st Aid Kit" falls into that special category of "must-have" products (MacUser, April '87). It lets you handle every Mac problem from difficulties copying files, printing, and using AppleTalk networks, to recovering lost data from deleted or damaged files and unreadable disks.

Acclaimed by novice and expert alike, the 1st Aid Kit is much more than powerful software. At its core is a clearly written troubleshooting guide that: • lists every imaginable error condition • helps you quickly track down solutions to any problem • takes you step-by-step through each recovery effort • shows you how to avoid problems

"The definitive product for troubleshooting on the Macintosh" (Macworld, April '87). It "stands head and shoulders above any other product like it... I can't recommend 1st Aid Kit strongly enough" (MacUser, April '87).

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The Liberator: Finally, I'd tell the students in my workshop, you can and should write stacks for yourself. While the macro market for Lotus' 1-2-3 may be scollable, 1-2-3 macros are not; they have saved many hours of work for many people. HyperCard is a more powerful tool than 1-2-3 macros. By providing you with the ability to develop simple tools for your own needs, HyperCard has taken a lock off the Macintosh. But keep in mind that the stackware market is not really what HyperCard is all about. HyperCard's chief virtue is in opening up the machine, not markets.
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Please send to Demo Disk, Versacad Corporation, 2124 Main Street, Huntington Beach, CA 92646.

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One of the first toys yesterday’s children were typically introduced to was a set of building blocks; they played happily for hours on end, stacking and restacking them.

Many of today’s children are still playing with blocks; but others have graduated to the Macintosh, and the stacks they’re playing with are HyperCard stacks.

This month, Flash Cards features stacks for preschoolers and beyond — the up-and-coming generation of Mac users. They provide a sampling of how the Mac and HyperCard have combined animation, digitized sound, and music to create an exciting, interactive entertainment and learning environment for your child.

You can find the shareware and freeware stacks on bulletin boards. Commercial stacks are available at your local software emporium.

If you create a stack that you think others will be interested in, send it to Flash Cards, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. We can’t promise to show your stack and we can’t return your disk, but we might make you famous.

Kids Cents

Is your child ready to make the leap from the grocery cart to the consumer world? Prepare your child for the big day with Gerry Giraffasaurus Goes Shopping, a game designed to help children learn to count money. Gerry goes to various stores, buying things along the way — but he must count the amount correctly or he can’t purchase the items. Gerry Giraffasaurus Goes Shopping is by Marc Harrison, 14706 “O” Circle, Omaha, NE 68137; (408) 895-2092; $19.95.

Animal House

Learn an interesting fact about each animal presented on At the Zoo, a stack geared to children from 3 to 7. At the Zoo was written by teachers David Kreisberg and Marlene Sweger both to reinforce reading skills and to inform nonreaders. It’s available on BBS or by writing David at 8315 Canning Terrace, Greenbelt, MD 20770; $10.
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- MacUser magazine, November 1988

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Send $129.95 for the complete package, or for a brochure and more information write to:

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Teach Your Tot

This stack is for the crib set. Help your child learn to read using FlashCards for Kids, which includes the ABCs, words, and short sentences. Make your own lessons with the customizing option. FlashCards for Kids is by John Sudderth and available from Heizer Software, 1941 Oak Park Blvd., Suite 30, Pleasant Hill, CA 94523; (800) 888-7667; $12.

Have Camel Will Travel

Your Friendly Camel takes your child on a guided tour to visit desert hot spots and then cools things off with a trip to the north pole on these HyperCard adventure stacks by Amanda Goodenough. Your Faithful Camel and Your Faithful Camel Goes to the North Pole are available for $19.95 from The Voyager Company, 2139 Manning Ave., Los Angeles, CA 90025; (213) 474-0032; no reading skills required.
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Infinite Data Storage with a Near Zero Access Time

PLI did. We call it the Infinity 40 Turbo. It offers you all the benefits of hard and floppy disks with 44MB removable cartridges. You get unlimited, high-speed data storage that is portable, reliable and affordable.

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PLI-MUSEAD-01 Please circle 46 on reader service card.
Here's Gripping News For Mouse Users
Introducing The Gravis MouseStick!

A Better Handle on Design

The Plan: Create the input device that is the ultimate in controller precision and versatility.

The Strategy: Combine design ergonomics with state-of-the-art controller technology.

The Result: The Gravis Mouse Stick™. The breakthrough joystick controller technology ergonomically based on the hand’s ability to perform precise movements with speed and accuracy.

A Better Handle on Technology

Design makes the MouseStick™ responsive.

Technology makes the MouseStick™ today's most versatile input device. For desktop use. For large-screen monitor CAD and DTP applications. And, of course, for computer games.

Plug it in and get ready! Everything opens up with an amazing 1200 point resolution that can be set to any screen size.

And the big picture resolves into fractional sensitivity modes for precise pixel by pixel control.

The secret? The MouseStick’s™ true optomechanical digital output signal. Here’s a comparison: available analog joysticks perform like an old hi-fi. The MouseStick’s™ digital optomechanics perform like a compact disk player.

And there’s more — the Gravis MouseStick™ Processing Unit (GMPU). This little brain really frees you to select from hundreds of modes such as direct tracking with or without autocentering and fully variable pulse output. Three programmable microswitch buttons let you emulate keyboard commands, and the GMPU’s 16-character display and menu system updates you on mode and function.

Thanks to the GMPU’s 16K of ROM, programming options are virtually limitless and it can be user upgraded to include new features. The MouseStick™ is compatible with all Macintosh®, Apple Ile, Ilc and IIGS computers, has all the unique features of the Gravis Joystick and comes with a one year no-nonsense warranty!

So Test-Drive the MouseStick™ Today!

Get a grip on the new MouseStick™ and you’ll quickly discover it's light years ahead of the mouse, trackball or traditional joystick.

The MouseStick™ doesn’t clutter your desk or require constant cleaning. And unlike a trackball, you don’t need the dexterity of a cardshark to drag an item.

The Gravis MouseStick™ is one of the most technologically advanced and durable digital input devices available.

But don’t worry. You can handle it.
**Poetry In Motion**

Words come to life in this collection of seven poems by Sharon Newby, age 14. Some words reveal animated secrets, others act as buttons to transport you magically to another scene. There's a clock that teaches kids how to tell time, a poem that stresses the value of signs, and a place for your child to create a rhyme. *My First Book of Poetry* is available for $29.95 along with a second selection, *The Dream Called Storm* (see Flash Cards, October '88). Call or write B & B Soundworks, P.O. Box 7828, San Jose, CA 95150; (408) 241-7986.

**A, B, See and Spell**

The hammer hammers, the zipper zips, and the penguin dances in the Alphabet Pictures Learning Stack, which incorporates animation, sound, and music to teach your child the ABCs. It also features a word/picture recognition and association game and word spelling with a sound and a picture for each word and letter. Alphabet Pictures was created by Clay Nixon for his two-year-old son. It is available for $25 by writing to him at 3911 Elmwood Ave., Louisville, KY 40207 (specify whether you have a Plus, SE, or Mac II).

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  Maintain peak drive performance. Defragment your drive in under five minutes, or optimize it for extra speed.

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PLI-MUSEAD-02

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If you've ever looked inside a Macintosh™, you'll recognize part of our solution... For optimum performance, compatibility and reliability value, we selected MiniScribe. The LEGEND™ SCSI sub-systems shown below utilize performance proven 3W and SW drives from MiniScribe...the most reliable line across the board, of any OEM manufacturer we've tested. That's why MiniScribe is our drive preference and why you can count on LEGEND™ quality.

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LEGEND™ announces a new line of SCSI Hard Drive Solutions without sacrifice. Whether you select our budget priced MCD 2 Megabyte system, our 3W line of the line MCD® 325 Megabyte system, or any others in between, with LEGEND™ you receive the best possible quality and reliability. Easily installed, ready to run sub-systems, at prices you'd expect to pay for a kit.

**THE MAKING OF A LEGEND™**
If you've ever looked inside a Macintosh™, you'll recognize part of our solution. For optimum performance, compatibility and reliability value, we selected MiniScribe. The LEGEND™ SCSI sub-systems shown below utilize performance proven 3W and SW drives from MiniScribe...the most reliable line across the board, of any OEM manufacturer we've tested. That's why MiniScribe is our drive preference and why you can count on LEGEND™ quality.

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Complete product specifications and warranty information available upon request.

*Call today to get your hands on the best value line of LEGEND™ disk drive sub-systems for Macintosh™!*
V. I. B.

Let your very important baby be one of the first on the block to have his/her vital statistics recorded on this electronic baby book. Keep track of your little one's happenings from birth to two years, including health records, family tree, and first time on the Mac. This HyperCard Baby Book was created by Roz Schwartz.

Important Information
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Name: ____________________________

Born on: __________________________

Time: ____________________________

At: ______________________________

Weight: __________________________

Length: __________________________

Eye Color: ________________________

Hair Color: ________________________

Doctor(s): _________________________

Index

It's a Party!

It's a birthday party, and Adam, Anna, and Tom are getting presents ready for their favorite neighbor. This stack uses sound and graphics to create fun and educational activities for children. It includes stories, games, and a spelling section with three different levels. Happy Birthday is available from Acteo Software, 741 E. Gorham St., Madison, WI 53703; (319) 382-3998; $39.95.

Wake Up, Tom. Get Ready For a Party.

Pick a House. Kids are Making Presents.

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Please circle 140 on reader service card.
If your business is using AppleTalk networks, then you're ready for the next big advance in office communications.

Introducing Timbuktu, the new application for your network that lets you access and share resources. It's just what you'd expect from the people who brought you the PhoneNET System.

Granted, the name is a little unconventional. But the time and money Timbuktu saves will appeal to even the most conservative minds.

Install Timbuktu on each Macintosh, and everyone on the network can access other Macintoshes, share screens, and control the operation of each other's computers. In fact, you can access your own computer from another computer on the network. (Our companion product, Timbuktu/Remote, works the same way over modems.)

So, if you're the one who's always fixing things on the network, helping solve computer puzzles, and other office heroics, then leave your running shoes at home.

Now, you can identify problems on any Macintosh, reconfigure or update software, teach people new applications, or manage servers and other shared resources. Right from your own Macintosh. Or any other Macintosh, for that matter.

For those pressured with meeting the demand for more computing power, while justifying the cost to management, Timbuktu offers a profitable solution. And relief.

Timbuktu lets everyone access any workstation and its databases, FAX modems, print spoolers, servers, and mainframe connections. If you're concerned about security, the password protection feature will limit access to any device.

You can also use Macintosh IIS as servers without buying keyboards, monitors, or video cards.

Timbuktu. What we're talking about is people working together, sharing resources, and helping each other get the job done. Only now you can do it over the network, with united stations. To find out more about Timbuktu and the rest of the PhoneNET System, call (415) 849-2331 for the Farallon dealer nearest you.
This month the big news is the Macworld Expo. You’re probably thinking the Washington show, but we’re talking San Francisco. Those three-month lead times get you every time.

Trouble Shots walks you through Chapter 2 of wire woes. A/UXiliary Information takes a look at Emacs.

If you’re looking to make connections in this issue, flip through the rest of the magazine. Our MacUser Labs report tells you how to set up a file server on a small network. The testing was done in our new NetWorkShop, which you’ll be hearing more about in future issues. We also offer a detailed look at dial-in connections to AppleTalk networks, and some background on Apple’s AppleTalk Filing Protocol (AFP).

By the way, we’re always looking for new authors, especially if you have experience with, and access to, Macintosh-to-mainframe connectivity. (We will also graciously accept donations of spare mainframes.)

Oracle for Macintosh

This long-awaited product finally shipped and was even being sold on the floor of the Macworld Expo (for $99 a shot, no less). Oracle is the most widely used SQL relational database around. It runs on some 80 different machines and operating systems, over practically any kind of network. Small wonder Apple wanted to see Oracle provide a Macintosh port of entry.

What you get for $199 (the price for the stand-alone product, now that the show’s over) is a single-user “local” version of Oracle. I may seem to be contradicting myself, after having just praised its ubiquity. But this stand-alone version is a complete development environment that enables you to create Oracle-compatible applications. When you port these applications to other machines running Oracle, so the vendor claims, they will simply work — as networked, multiuser applications. And, since Oracle SQL follows the ANSI standard, Oracle for Macintosh applications will also work, without modification, with IBM’s DB2 and SQL/DS databases. (To make the network connection, you need the $999 version of Oracle for Macintosh.) Oracle for Macintosh comes with a set of HyperTalk XCMDs that make it easy to write HyperCard front ends to SQL databases (see Figure 1). Oracle has also announced compatibility with ACIUS’ 4th Dimension and is working with other Mac database vendors to allow their products to access Oracle databases. It will work with CL/I too, when it finally ships.

For now the Mac (under the Macintosh operating system) can act only as a workstation in an Oracle distributed database system. In other words, you can store some of your
data in a local Oracle database on the Mac workstation while accessing other data from other, non-Mac, machines on the network — but the other machines can’t access the data on your local Mac database. This will become possible only when Apple ships a true multitasking operating system for the Mac.

**Timbuktu Remote**

Timbuktu brought a new slant to workgroup computing when it was released last year. Macintosh computers with Timbuktu installed can observe and control each other’s screens over an AppleTalk network, which has many applications. It allows a group of people to work on a single document simultaneously, so that when any one participant revises the document, all other participants can instantly view the changes. Network managers can use Timbuktu to control a “headless” AppleShare file server — a Mac II without a keyboard, video card, or monitor — from their own desk. We use it in a similar way in the MacUserNetWorkShop, where we don’t have room for monitors for all our Mac IIs. We just stack them up and Timbuktu them, using a single monitor.

If you’ve seen Timbuktu work, you’ve probably wished you could use it remotely over phone lines. Other solutions (Liaison and NetModems, for example) let you dial in from home and become a node on the AppleTalk network at work. You have access to the network resources and to the files on your home computer but, unless you’re running TOPS, you aren’t able to get at the files on your work computer.

Timbuktu Remote removes this barrier. When installed on both ends of a dial-up connection, it lets you control another Macintosh directly over phone lines (see Figure 2). It handles both the dial-up connection and the remote screen control. No special hardware is required — just regular old modems (although 2,400 baud gives pretty sluggish performance; Farallon recommends 9,600).

This would be enough to make a great product, but Timbuktu Remote offers more. It lets you transfer files between connected computers. Stuck at home but need a file from work? No problem with Timbuktu Remote. Just call up and send it to yourself. Previously, to pull off a trick like this, you would have needed two copies of TOPS, one on each end, plus dial-up hardware and/or software. And you wouldn’t have had the remote screen-control ability that Timbuktu Remote offers.

Worried about security? First you can set a password that other users must know in order to dial into your machine. Unfortunately, anyone can sneak onto your machine when you’re not looking and change your password without knowing the old password, thereby granting themselves unauthorized access to your machine. You can also use security settings to restrict the type of access to your machine, such as the right to observe but not to control your screen, or to read files from your disk but not to write files to or delete files from it. (Unfortunately, again, you don’t need to know the password to access and modify these security settings.) Finally, there’s a Chat feature for those times when you want to do a quick file transfer from someone else’s machine but you want to let him know first.

All in all, a very handy package for $299 a node.

**Blue Skies over San Francisco**

Farallon also had some items on the promised list. Welcome news, but no big surprise: A future version of Timbuktu will include the file-transfer capabilities of Timbuktu Remote. It should be available in the first half of 1989 at $299 per node. A free upgrade (with proof of purchase) is available to those who bought Timbuktu after January 15, 1989, and an upgrade for registered owners who bought it earlier is $40.

More exciting but less tangible, Farallon also announced that it would release, as part of its PhoneNET system, an Ethernet StarController by the end of the year. It will allow PhoneNET users in buildings wired with twisted-pair phone wire to choose easily between connecting Macs at LocalTalk and at Ethernet speeds.

Here’s how it will work. Each Mac will have a PhoneNET connector attached to it, but, instead of all the boxes being the LocalTalk PhoneNET connectors we all know and love, some of them will be Ethernet PhoneNET connectors (you’d also need an Ethernet card in your Mac or an external SCSI/Ethernet box). You’ll use the same phone wire you use now to go from the wall box in your office back to the phone closet where the StarController is. But when you get there, if you’re Ethernet-connected, you’ll connect to an Ethernet StarController instead of the LocalTalk StarController Farallon provides today. This will make it very easy to move a Mac from LocalTalk to Ethernet. It will require only a new card in the Mac, a different PhoneNET connector, and a wire switch in the phone closet.

Similar functionality is already available with products such as Synoptics’ twisted-pair Ethernet controller, but Farallon will offer an integrated single-vendor solution. It remains to be seen whether Farallon will also offer significant price competition. The company hasn’t even announced when it will announce a price.

Kinetics was showing off its LanRanger software, the first graphically oriented network-management tool available on the Macintosh (see Figure 3). Now shipping free with every FastPath, it allows a network manager to display graphically the internet and its bridges.
With MacMainFrame, it’s so easy to access an IBM mainframe, a mouse could do it.

If you’re like most Macintosh® users, one of the reasons you got hooked on the Macintosh in the first place is that it’s so easy to use.

Which is why you’ll be happy to know that now you can use any Macintosh, from the 512Ke to the Macintosh II, to access any IBM® mainframe with scarcely more than the click of a mouse.

MacMainFrame™ is a Macintosh-to-IBM mainframe link that puts your Macintosh and your mainframe on speaking terms.

MacMainFrame gives you complete Macintosh-to-mainframe functionality including file transfer.

You can access the host remotely from your satellite or home office. Or from client sites.

And because MacMainFrame builds on the flexibility inherent in your Macintosh, you can even create your own personal operating environment. With convenient features that include everything from keyboard remapping to user-definable screen colors.

In all candor, when it comes to connecting the Macintosh with IBM, no other Macintosh-to-mainframe link is as true to the Macintosh ideal as MacMainFrame.

For the authorized MacMainFrame dealer or distributor nearest you, call 1-800-289-2526, extension 27.

Or write to Avatar Corporation, 65 South Street, Hopkinton, MA 01748.
and then, by clicking on a network, to display its AppleTalk devices, including Macs, PCs, UNIX machines, file and mail servers, and LaserWriters. A further click on a device brings up a window showing the various AppleTalk processes running within that device. While the version shown at Macworld displayed only FastPaths and the networks attached to them, the initial shipping version will enable users to display other vendors’ bridges too. Lan Ranger will automatically find all FastPaths on the internet; the network manager will have to enter manually the device types and network numbers for other bridges.

With the Mac’s built-in network capability and graphical interface, graphic network-management tools seem like a natural. Hats off to Kinetics for being the first to implement one.

Avatar and Shiva announced that they would compete the former’s MacMainFrame DX with the latter’s NetSerial. MacMainFrame DX is an external 3270-emulation device that connects to the serial port of a Mac on one end and a 3274/1374 controller on the other, allowing Mac users IBM mainframe terminal access. Normally, a serial device such as a plotter or modem is connected to a single Mac and therefore can be used only by a single user. Shiva’s NetSerial allows such devices to be shared over a LocalTalk network by anyone on the net. By combining MacMainFrame DX, which runs $1,195 a pop, with the $395 NetSerial, tremendous savings can be realized because several users can share a single mainframe connection, rather than each user needing one. (Of course, only one user can access the MacMainFrame DX at a time.)

Shiva also announced two new products. TelBridge ($499) is a souped-up half bridge. When used with standard modems (it supports speeds to 57.6 kilobaud), it can be used either by an individual Mac user to dial into an AppleTalk network or to connect two distant networks and allow any user on either net to share the resources of the entire internet. DOS Dial-In ($597), Shiva’s other newcomer, is the first product to allow PC users to dial into an AppleTalk network. Both products should be shipping by the time you read this.

In other 3270-related news, DCA announced a new MacFirm card, and Avatar announced a new MacMainFrame card, both for the Mac SE/30. Stay tuned for pricing and availability. Tri-Data unveiled plans for a new high-performance LocalTalk-to-mainframe gateway product, Netway 2000. Based on 10 MIPS SPARC technology, Netway 2000 will be capable of supporting 64 simultaneous SNA 3270 sessions, two LocalTalk connections, an expansion bus for Ethernet and Token Ring boards, and 56-kilobit-per-second connections to IBM SNA hosts. Netway 1000, currently shipping, supports 16 sessions.

Debuting in the mail department was cc:Mail for Macintosh. cc:Mail claims that its mail product is the leader for PC-based LANs. Expected to ship in April at $69.95 per node, with site licensing available, this one could give the big three — Microsoft Mail, QuickMail, and InBox — a run for the money, despite the fact that you have to run the server software on a DOS machine.

And finally, Insignia Solutions announced version 1.3 of SoftPC, which will support Apple’s new FDHD Drive as a PC disk drive. Users of Macs equipped with this drive will no longer need an external Apple PC 5.25 or DaynaDrive to read and write to DOS disks (as long as those disks are of the 3.5-inch variety). Version 1.3 also offers bidirectional cut-and-paste between Mac and DOS applications. And a 2-megabyte machine can give you the same performance that used to require 4 megabytes. The price is $595 (the same as before); a $49.95 upgrade is available for registered owners of any previous version.
The Netway® 1000/PC. It's a vision that's become reality. The first SNA gateway offering total access to the 3270 world for every workstation in your corporate workgroup.

The best of both worlds. Bring together the sophistication and flexibility of the LocalTalk™ LAN with the power of an IBM® host. With the Netway 1000/PC, every IBM PC (or compatible), along with all the Macintoshes in your LocalTalk workgroup, can get full 3270 workstation emulation with a wide range of features such as color and API support. All this in a multivendor LAN environment. And Netway's industry-standard file-transfer support means your Macs, PCs and mainframe can exchange text, Mac or IBM PC application files with ease.

Multisession capability. The Netway 1000/PC is the only SNA gateway that permits users to be logged on to as many as six host sessions on the PC and up to eight host sessions on the Macintosh. On the PC you can toggle in and out of sessions via a hot-key sequence. With MultiFinder™ on the Macintosh, you can window host sessions and Macintosh applications concurrently.

And because it functions as a 3274 gateway, the Netway 1000/PC can easily handle 16 host sessions from different workstations in the LocalTalk workgroup.

High end solutions, low end costs. With all its high end features, you'd expect the Netway 1000/PC to carry a price tag to match. But you'll be pleasantly surprised. For a workgroup of 16 Macs and PCs, the Netway 1000/PC costs less than $250 per active 3270 workstation session.

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The Exorcist, Part II

Last month we talked about reflections, which are like echoes in the signal—what causes them in the network and how we can tell that we have reflection problems. We said that there were two kinds of reflections: large reflections that come from an improperly terminated network and small ones that result from local changes in wire impedance.

If you're using CheckNET or Inter-Poll, you can usually tell the difference between a termination problem and a small-reflection problem. If you have a large-reflection problem from improper termination, the ghosting (devices that disappear and reappear in the displayed list of network devices) will be chaotic, with no apparent pattern in the devices that ghost. If you have the small-reflection problem, only a few devices in a particular physical location of the network will ghost in the display. The reflection is generally located in the vicinity of the ghosting devices. You should refer to your network map to narrow down the location of the reflection.

How we find a reflection depends on two things: 1) whether we are looking for the large or small type and 2) what network topology we are using. Let's take the topologies one at a time and outline the search routine for both large and small reflections. We're also going to review the topology wiring rules at the same time, just in case anyone is a little rusty.

The simplest topology is the daisy chain. This is the topology you use for a small network with a couple of Macs and a LaserWriter all in the same room. You can create this kind of topology with Apple's LocalTalk cabling or with Fallon's PhoneNET System. The wiring limits are 1,000 feet and 32 connectors for LocalTalk cabling, or 2,000 feet and 18 connectors for PhoneNET. You should, however, never even be close to these limits in reality. If you are, you're using the wrong topology. This is for tiny networks only. If your network is larger than a few nodes in the same room, you should think about a backbone or star topology.

If you think you have a termination problem in a daisy chain, you should check the termination by looking at the connectors at the end of the chain. With LocalTalk, the connector at each end should have only one wire plugged into it, while the other DIN-3 jack should be open with nothing plugged into it. With PhoneNET, the end connectors should have the network wire plugged into one of the two RJ-11 jacks and a mounted terminating resistor in the other. In either cabling system, all the connectors in the

In a daisy chain, LocalTalk devices are connected serially, either with Apple's LocalTalk connectors and cabling (not shown) or with PhoneNet-type connectors and standard modular four-wire telephone cable. The latter require that you plug a terminating resistor into one of the jacks on each end connector. In a backbone topology, four-wire "trunk" is run throughout a building with wall jacks attached to the trunk. A terminating resistor is attached between the black and yellow terminals in the wall jack at each end of the trunk. Apple's LocalTalk cabling cannot be used with this topology.

By Kurt VanderSluis

230 MACUSER MAY 1989
INTRODUCING NODEM:
THE ANYTIME, ANYWHERE, ANY MAC TO ETHERNET CONNECTION.

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middle should have a wire in each jack.

The small reflection in Apple's LocalTalk cabling can come from two things: a kink in the cabling or a loose connector. A kink in the wire may result from someone's rolling a desk chair over the LocalTalk cable. You can see that the wire is physically kinked if this is the case. Much more common is that, somewhere along the daisy chain, the network wires have come slightly loose from the connector and the network wire is not plugged completely into the connector. This is somewhat tricky to find because you have to walk around to all the connectors and check them one by one. (Kensington makes a clip that prevents the wires from falling out.) If you have PhoneNET and it is properly terminated, you shouldn't have small reflections. In unusual cases, they can come from bad crimps of the RJ-11 connectors on the flat wire or bent prongs inside the PhoneNET connector.

If you have a mixed daisy chain with both PhoneNET and LocalTalk cabling, be sure that you have only one adapter cable in the chain, with all LocalTalk on one side and all PhoneNET on the other. There will always be a reflection at the adapter cable, because it joins shielded and unshielded wire together. This is undesirable, but you can minimize the ill effect by doing it only once.

If you have a backbone topology (see Figure 1) using Farallon's PhoneNET System, the wiring rules are a little more complicated. The end-to-end distance of the trunk of the backbone has to be less than 4,500 feet with 22 AWG wire (3,000 feet with 24 AWG wire and 2,000 feet with 26 AWG wire). You then have to reduce this number because of the stubs coming off the trunk. (A stub is a daisy chain that has one end connected to the backbone and is less than 50 feet long.) Adjust the end-to-end distance of the trunk by subtracting four times the total stub length on the backbone. Measure a stub by the wire length from the backbone out to the last device on the stub. As long as the stub is less than 50 feet, it should not have a terminator in the connector of the last device. Also, the trunk of the backbone should be made out of round twisted wire (telephone wall cable), and the stubs should be made out of flat untwisted wire (modular extension cable). The stubs are connected to the backbone at telephone wall boxes along the trunk.

On a backbone, there are two ways to terminate the ends of the trunk. The preferable way is to place a terminating resistor in the wall box at each end of the trunk. If you have terminated your backbone using this method, you can use an ohmmeter to check the connection. First remove all the connectors along the backbone and measure the resistance between the two network wires. You can do this by measuring the resistance between the two terminal screws (probably yellow and black) that are connected to the network wires at any of the telephone wall boxes. In a backbone, you should have a 120-ohm resistor at each end of the trunk, and you should measure 60 ohms across the terminal screws. If you measure 120 ohms, you probably are missing a terminator at one end. If you measure 0 ohms, there is probably a short in the wire. If you measure an infinite resistance, you probably don't have any termination at all. And if you measure 1 or 2 ohms, you probably haven't removed all the connectors from the backbone. Remember that the resistors and the meter may be a bit off from true, so allow a little tolerance in the reading. If you measure anywhere between 58.5 and 61.5 ohms, count it as a normal measurement.

If, in your network design, you have elected to terminate your backbone by placing the mounted terminating resistor in the connector, you must use physical inspection to check the termination. Look at the stubs connected to the two end wall boxes. There should be a terminating resistor in the last device on the stub of each of them. This is a dangerous way to terminate a backbone, because it relies on the user's knowledge of the termination rules. You should put the terminator in the wall box and not in the connector.

If you have followed all these rules for making a backbone, you shouldn't have any problems with small reflections. The only remaining possibilities are inferior connectors or one of the anomalies I've mentioned.
# INTERNAL KITS FOR SE & II

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# INTERNAL KITS FOR MAC II ONLY

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<tr>
<td>340Mb MiniScribe</td>
<td>16ms</td>
<td>$1895</td>
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These complete internal drive kits include the drive, UniMac™ formatting & partitioning software, hardware mounting kit, all necessary cabling, and How-To manual.

# EXTERNAL DRIVES FOR MACINTOSH PLUS, SE & II

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<td>$1275</td>
</tr>
<tr>
<td>340Mb MiniScribe</td>
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Putting Up Emacs

Let's face it: The standard UNIX text editors can be described most politely as brain damaged. The original UNIX editor, ed, was designed for use with prehistoric hard-copy, Teletype terminals. The next generation, vi, supports screen editing but still retains much of the primitive oneline-at-a-time personality of ed. The best thing about these editors is their ubiquity — if you log in to any UNIX machine, you are pretty much guaranteed that ed and vi will be there.

Fortunately. A/UX ships with GNU Emacs, perhaps the world's best editor. Written by Richard Stallman of the Free Software Foundation, GNU Emacs is a descendant of Stallman's original Emacs. developed at MIT's Artificial Intelligence Lab. Emacs is so powerful that it would take a longer article than this just to list its features. Suffice it to say that if you can think of it, Emacs can probably do it. Emacs is a full-screen editor that supports the editing of multiple files concurrently, and it can be customized in just about any way imaginable. If UNIX is driving you crazy, Emacs even provides an on-line psychiatrist to wash your weary brain.

The Tutor Is the Computer

Emacs has an on-line tutorial that quickly teaches you the basics, as well as complete on-line documentation of all commands. The Free Software Foundation publishes a printed version of the user manual, GNU Emacs Manual, by Richard Stallman, available wherever better UNIX books are sold.

Unfortunately, Apple distributes only the source code for Emacs, so you have to build the executable version yourself. Apple probably decided to do it this way because building Emacs uses about 3 megabytes of disk space, and A/UX ships with precious little free space.

The Source of All Goodness

The Emacs files are sitting in /usr/src/emacs. When you turn to this directory, you'll discover files named INSTALL, README, and PROBLEMS. A brief glance at their contents shows they were written "for programmers only." But there is another file, build-install, which is a shell script that (you guessed it) builds and installs Emacs.

Before running this script, however, you will want to fix a couple of bugs in the source code. These bugs were present in the 1.0 A/UX release, and we did not know at press time whether they were fixed in the 1.1 release. (Although you need to know a little bit about C and UNIX programming in order to understand the bugs, no such knowledge is required to fix them!)

The first bug is that an important line of code is never compiled because it is misplaced inside a # ifdef statement. # ifdef VMS is intended for DEC's VMS operating system and is not compiled under A/UX. The misplaced line is a call to set42sig(), which tells A/UX to use Berkeley UNIX signals instead of the less reliable AT&T System V signals. The second bug is in A/UX itself. A/UX 1.0 reportedly generates occasional spurious SIGIO signals. Such a signal will interrupt Emacs — or vi, for that matter — if it occurs while Emacs is running. The fix is simple: just add a few lines of code that tell Emacs to ignore SIGIO.

Fixing the Code

Here is the solution to both problems. First, log in as root. Edit the file /usr/src/emacs/src/emacs.c. Lines 173-175 read:

```c
#ifdef OREO
set42sig();
#endif
```

These lines sit inside the #ifdef VMS statement that began on line 166. Delete these three lines. You will then add a few new lines of code, just before the #ifdef VMS statement. Here is the new code, with the old line #ifdef VMS shown in place in italics for context:

```c
/* use BSD signals, trap SIGIO */
#ifdef OREO
int eat_sigio();
set42sig();
signal(SIGIO, eat_sigio);
#endif
/* end of added code */
#endif
```

Finally, go to the very end of the file and add these lines:

```c
/* used to ignore SIGIO when generated by A/UX erroneously */
eat_sigio() {};
```

That's all there is to it. Next make sure you have at least a few free megabytes of disk space. The UNIX command df will report how many free blocks you have. Building Emacs uses about 6,100 blocks. Finally, change to the /usr/src/emacs directory and type build-install. It took a little over an hour to build Emacs on a 5-megabyte Mac II. When everything is finished, you will find Emacs installed in the directory called /usr/local/bin, with supporting files in /usr/local/emacs. Enjoy! If you like Emacs, you can make a tax-deductible donation to the Free Software Foundation, 675 Massachusetts Ave., Cambridge, MA 02139.

By James Finn and Hugh Daniel
A New Kind of Connectivity and more . . .

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Got a Mac problem? Something you'd like explained? Something you can't find the answer for anywhere else? Apple's Chris Espinosa will answer your questions every month in this space. When the questions are too tough or too esoteric for him, he'll get the answers from other members of the Mac team. So ask what you need to know and get your answers straight from the source!

Send your questions to Chris, c/o MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404. Chris will read all your questions, but, unfortunately, he may not be able to answer individual queries.

CLUMSY ME

Both Robert M. Sage of Montreal and Michael H. Kravitz of Mt. Laurel, N.J., write to chide me about my response to Trevor Robinson in the December number. He'd wondered why he was having trouble using FileMaker 4 on his upgraded Macintosh 5I2K, and my reply omitted one simple, but crucial, fact: It won't work. FileMaker 4 specifically checks for the presence of a SCSI port, as well as for the 128K ROMs and extra memory, and won't work unless it finds them. Add-on SCSI ports such as MacAdapt from SiCLONE Corporation (1169 Borregas Ave., Sunnyvale, CA 94089; (800) 862-2636, or in California, (408) 734-2436); the SCSI Upgrade from MacProducts (8303 Mopac Expressway, Suite 218, Austin TX 78759; (512) 343-9441); the JasPort from Jasmine Technologies Inc. (1740 Army St., San Francisco, CA 94124; (415) 282-1111); or the Model 524 series from Dove Computer (1200 North 23rd St., Wilmington, NC 28405; (800) 622-7627) should solve the problem.

My apologies to Mr. Robinson and all readers who were confused; my thanks to Messrs. Kravitz and Sage (though, Michael, if you're going to get huffy, please at least learn to spell SCSI correctly ...).}

FONTS, FINALLY

Many readers have written to me asking for a source for more ImageWriter LQ, LaserWriter SC, and AppleFax modem fonts. I received word this week of some more fonts — excuse me, font — for these QuickDraw printers.

Casady & Greene, Inc., formed by the August merger of CasadyWare and Greene, Inc., is shipping an ITC Garamond font in sizes of 10, 12, 14, 18, 24, 30, and 36 points for the LQ, SC, and AppleFax modem. Garamond is the font that Apple uses most of its ads, brochures, and manuals, so it should be clear and familiar. Try Casady & Greene, P.O. Box 223779, Carmel, CA 93922; (408) 624-8716, MCI Mail CASADY.

Two packages are designed just for that purpose: 1stScan, from 1stDesk Systems, Inc. (7 Industrial Park Road, Medway, MA 02053; (508) 533-2203), and Executive Office, from Datapak Software, Inc. (14011 Ventura Blvd., Suite 507, Sherman Oaks, CA 91423-3587; (818) 905-6419).

With 1stScan, you scan in your form, and 1stScan looks for hollow squares or underlines in it and automatically creates data-entry fields there. Then you define data types (date, time, sequence, computed, integer, or currency). You can then use the form either with 1stScan or 1stBase, the simple database program from 1stDesk. Forms can be printed as blank or with data from any 1stDesk data file merged into the fields. It runs under MultiFinder and costs $295.

Executive Office is more than just a forms scanner; it's an entire office-management system with desktop design tools, file management, word processing, mail-merge and a spreadsheet. You can import your scanned form into the forms-design tool and define the fields yourself; a field's value can be filled in or computed using values from any other form in the system. Then you can use all of the other capabilities — spreadsheet, mail merge, search, and sort — on the information. Executive Office costs $195.

THE WRONG WAY TO SAVE RAM

I have a Macintosh Plus (using Finder 6.0 and System 4.2) with only 1 megabyte of RAM. I like to use MultiFinder, but the System is so big! I had this great idea: Remove every font that the system would allow and trash all of the desk accessories. I thought this would free up big-time space. It didn't. Why? Selecting About the Finder from the Apple menu,
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I see, when using more than one application, that the System memory grows too. Why?
THOMAS P. TOW KACH
JACKSONVILLE, FLA.

The size of the System file on disk has very little to do with the amount of RAM that the system uses. Fonts and desk accessories are perhaps the biggest reason for the discrepancy; that's because they're stored as resources in the System file, they can be brought in from disk only as needed. And whenever possible, they're brought into the application's memory space or a separate memory space dedicated to desk accessories. Only when there's no room anywhere else are they loaded into the System's partition.

The System partition includes a lot of things: memory used by the SC5 driver and the RAM cache, a certain amount of memory that the ROM needs, and, on the plus and SE, the 22K taken up by the display screen. But most of it is what's called the system heap, the working memory for the System software. On older Macs this was set at a constant 48K, and it grew as we added capabilities to the System (such as AppleTalk). With System 5.0 and later, the size of the system heap (and therefore the System partition) is set when you start up the machine, and is determined by the needs of the startup documents in your System folder.

If you want to reduce the amount of memory reserved for the System, first make sure the RAM Cache is turned off in the Control Panel. Open your System folder and view it By Kind. Look for files of the type "Startup document" and "Control Panel document" — things like CheapBeep, Façade, and Easy Access. Move the ones you don't need out of the System folder and restart, and you'll reduce the amount of memory reserved for the System.

MultiFinder constantly adjusts the system heap size to make sure there's always enough to handle a font or desk accessory request. That's why its size changes slightly as you open more applications under MultiFinder.

SAVE THE TREES — KILL THE TEST PAGES

I am about to tear out what strands of hair I have left on my head, thanks to the LaserWriter II NT. It is intent on spitting out a test page every single time I turn it on. This is obviously an ingenious little bit of programming on behalf of Apple; it's probably to remind us exorbitant spenders what an excellent printer it is.

I've reached my wit's end with these test pages. I must have already spent a ream of paper on these useless things. I agree it is an excellent printer, but if the first page turns out to be bad (which rarely happens), I can always print out another one. Who needs this aggravation? There is absolutely no need for that test page except for a salesman to use while impressing a LaserWriter gawker with a hole burning in his pocket.

I would be ever so grateful if you were to indulge my programming dyslexia and show me how to tell my LaserWriter II NT where it can put those test pages, and to stop burping at me every time I turn the thing on. You will be doing me and my scalp a great favor.
ALEX RODRIGUEZ
HIALEAH, FLA.

The test print does more than chew up paper and impress yokels. If for some reason you can't print a document, the successful printing of a test page indicates that the problem is in the network or the Mac, not in the printer itself — which might save you a lot of money on a service call. But since you want to get rid of it, here are three suggestions:

Don't turn the printer off. It consumes little power and is fairly quiet when idling, and leaving it on all the time doesn't diminish the printer's useful life. In order to have plowed through a ream of test pages, you must be turning it off and on a couple of times a day.

CE Software sells a grabbag of utilities called Widgets, which is included in CE's MockPackage and DiskTop products. There's a utility program in Widgets that turns off the printing of the test page. I think that's what you want. CE Software, P.O. Box 65580, West Des Moines, IA 50265; (515) 224-1995.

If you have a terminal emulator program for your Mac, or a serial terminal, or a PostScript downloade r program, you can send this PostScript program to the printer:

```
serverdict begin 0
exitserver
statusdict begin
dostartpage false
end
```

To enable the test page again, send:

```
serverdict begin 0
exitserver
statusdict begin
dostartpage true
end
```

Your LaserWriter manual includes instructions on how to send PostScript commands to the LaserWriter from a directly connected Macintosh.

PROGRAMMING HELP

I would like some help on problems I have encountered while trying to write a Macintosh application.

1) How do you play snd resources?
2) Why doesn't my program acknowledge a click on the MultiFinder icon in the menu bar? (The demo program I copied the event handler from works fine.)
3) How can I find out if a program was launched with a document, and if so, which document?
4) Why does the Alarm Clock DA jumble my variables? When I open the Alarm Clock when my application is running, it stops working, although I can use the menus and quit (on an SE, it got a bomb, 1D = 02). Other desk accessories work fine.

I'm using Lightspeed Pascal version 1.0 on a Mac Plus using some System older than 4.1 (I can't find any version number on it).
EGGERT THORLACIUS
REYKJAVIK, ICELAND
A. First, I'd recommend picking up some new System software from any Apple dealer, buying the latest volumes of *Inside Macintosh*, and upgrading your copy of Lightspeed Pascal (now called THINK's Lightspeed Pascal) to version 2.0. In answer to question 1, snd resources are for use only with the Sound Manager that appears in System version 5.0 and later, so it's unlikely that you'll get any sound even if you write code for it. Instructions for using the Sound Manager (which essentially replaces the Sound Driver used in previous versions of the System) can be found in *Inside Macintosh, Volume V*, which covers the Mac SE and Mac II.

For question number 3, check out the chapter called "The Segment Loader" in *Inside Macintosh, Volume II*. When the Finder launches an application with documents selected, it leaves a list of the names of those documents in a memory block in the System heap. A low-memory global called AppParmHandle contains a handle that points to that list, so you can recover the names. It also tells you whether the user chose Open or Print so you can do the right thing.

Questions 2 and 4 get into the realm of source code debugging, which is probably causing number 4 is a dangling pointer: You're dereferencing a handle to the block that holds your variable (with a statement like *RectPtr := RectHand*) then later on using the pointer to refer to the variable. But in the meantime, some other process (like, say, a disk accessory) may have asked for a bit of memory from the Memory Manager.

The Memory Manager, eager to grant the request, might shuffle some of your memory blocks around in order to make room for the newcomer. This means that the pointer you had (RectPtr in the example above) might now be pointing to where your block used to be, but which now contains something completely different; when you use it, your application breaks.

And problem number 2? I don't know; it's probably a bug, too.

**SILENT MAC**

**Q.** I own a Mac Plus and recently acquired System version 6.0.2. Because I can afford only floppy drives and never need MultiFinder, I have elected to continue using System 4.1 to save disk space.

In the 6.0.2 upgrade, however, I noticed that a new cdev is included to allow the user to change the traditional beep sound to the sound of the user's choice (Monkey, Boing, etc.). I copied the new Sound cdev to my System 4.1 disk, and using ResEdit, I also copied the necessary snd resources, but I am unable to get more than the volume control to appear in the Control Panel window. Do I also need to copy another resource, or is what I am trying to accomplish not possible with System 4.1?

**A.** First of all, it's rather brave to try to move a feature, piece by piece, into an older version of the software. Each new version of the System software includes an installer script that updates previous versions in all ways possible; it's best to stick with those installers, because throwing new resources into the System folder is tricky business.

As mentioned above, what's missing from your doctored System file is the Sound Manager. Older versions of the Macintosh System used a sound driver to make simple noises on the sound circuitry common to all Macs. But the Mac II has more sophisticated sound, Apple has a MIDI interface, and many more applications want to create sounds, so the simple sound driver no longer covers all the bases.

The Sound Manager handles all kinds of sounds on all Macintosh systems. The Sound Manager is in the ROM of the newer machines and in the System file for the Mac Plus. The Sound cdev can tell whether it's using the old Sound Driver or new Sound Manager; it can control the volume on both, but it can do custom system beep sounds only if the Sound Manager is present.

To get the Sound Manager into your System file, try using the Minimum Plus System installation script that came on your System version 6.0.2 disks. That should give you the Sound Manager and other 6.0.2 features and still leave you some disk space.

**VT 100 EMULATION**

**Q.** I am a big user of Microsoft Works and I think a lot of the package. I am having some problems I could use some help with.

Works contains a VT 100 terminal emulator, but I cannot get it to work with EDT on our VAX computer. If a VT 100 emulation is any good, it should work with EDT. In particular, it should update the screen properly when you advance the cursor a few lines. Instead, Works overwrites the last two lines of the screen repeatedly and leaves the rest of the screen untouched. I have absolutely no trouble with EDT when I use the terminals connected to the VAX. Is there some way to make this work properly?

I would also like to be able to download a file from the VAX into the word processor and have word-wrap work properly. Instead the file has hard carriage returns at the end of each line, and word-wrap is useless. Is there a way out of this? I want to be able to download files and work on them at home with Works and then upload them and work on them in the office with EDT. They are just text files, and I should be able to do that!

**A.** Doing complete terminal emulation is tough, and some packages just don't do it quite right. First, make sure that your VAX is set to communicate with your Mac as a true VT 100 and not some other model; try the sim-
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plest possible VAX terminal settings (like plain old TTY) and see if that works (though it'll be slower, if EDT can work with TTY devices at all).

Second, DEC supplies a test program to check VT 100 emulations for completeness. You may have this on your system; check with your DEC representative if you don’t.

If Works fails the emulation test, you might consider one of these other terminal emulators: Smartcom II 3.0 from Hayes Microcomputer Products, Inc.; Red Ryder 10.3 from FreeSoft; MicroPhone II from Software Ventures Corp.; and VersaTerm Pro from Peripherals Computers & Supplies, Inc. All of these have an advantage over Works: they can download files in the background under MultiFinder. Red Ryder in particular is inexpensive ($80), and its VT 100 emulation is excellent.

Your problem with text is not uncommon. Most mainframe-based programs insert hard carriage returns at the end of every line of word-wrapped text; after you download a file, you have to remove the unwanted Return characters before you can edit the file normally on a Macintosh word processor. In some cases, you’ll also have to reinsert them before you upload!

A handy desk accessory is McSink (or its full-featured cousin Vantage), from Preferred Software, Inc. (5100 Poplar Ave., Suite 706 Memphis, TN 38137; (800) 446-6393). McSink is a text editing and processing desk accessory that does everything you want to do with plain text: Convert it from word-wrapped to broken lines and vice versa; count words, lines, and paragraphs; indent, sort, columnize, number, and convert case of lines of text. You can even program McSink with its own macro language.

McSink is very useful if you’re dealing with text downloaded from a text-oriented computer.
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UPDATES

Times are changing, and so are many versions of your favorite programs. Therefore, the following chart is an attempt to keep the interest and knowledge of Mac users up-to-date with the upgrades and new versions (as of press time) of many popular programs. To see if you have the most current versions, check the About box at the top of the Apple menu when you run a program.

Those with the 512K, 512KE, or Mac IIx are running System 7.1 and Finder 7.3. Everyone else should be running System 6.0.2.

Bright Star Technology has updated HyperAnimator to version 1.5. HyperAnimator was used to make the Professor Albert character in Disney's remake of The Abs-Minded Professor.

All programs listed here are Hierarchical File System (HFS) compatible. From this chart, you can extract the following information: CP or NCP, copy-protected or not; and programs we have found to be Mac II compatible (not yet a comprehensive list); and S for shareware (try before you buy).

Changes and new listings are in bold. Programs that appear to be compatible with the Mac II may not actually perform 100 percent of the functions they do on other Macs, and they may not necessarily take full advantage of the Mac II.
MINIFINDERS

Have you ever wished for a personal assistant to help you choose software? These Minifinders may not breathe and move, but they do tell you which products are hot and better, what these products do. Each of these items has been carefully reviewed and selected by the MacUser editorial staff. Each has been rated in increments of half mice, from 1 to 5. Ratings are relative within categories, and they can change as categories expand and new products advance the state of the art. You won't see many low ratings or bombs, since we're telling you about the cream of the crop, but we will warn you about the really bad products so that you don't spend your money on them. Red names indicate this month's additions. The letters at the end of the entries indicate whether a product is copy-protected (CP) or not (NCP). If a product has been reviewed or Quick Clicked in MacUser, the date of the review is shown. Eddy (Editor's Choice) Award winners are noted with a * and the year in which they won recognition for an excellent product. Next time you have to find products you can count on, count on MacUser.

**Business Accounting**

- **Accountant, Inc.** 
  Integrates accounts payable, accounts receivable, general ledger, and inventory modules. Prints checks, purchase orders, invoices, customized reports. Program print spoolers. Requires 512K or more, printer, and external drive. $335. Future Design, 13881 Williamette Drive, Westminister, CA 92683. NCP (Dec '85) * '85 Eddy

- **Dollars & Sense** 
  A bookkeeping program. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. GPC (Mar '87)

- **Insight** 
  A high-powered accounting program for the small-to-medium-sized business. Modules include Accounts Receivable, Payables, and General Ledger. Others are in the works. Requires 512K and hard disk. $595. Layered, 529 Main St., Boston, MA 02129. NCP (Dec '86) * '86 Eddy

- **Rages to Riches** 
  An integrated accounting modules (General Ledger and Accounts Receivable) uses Mac interface to the bill. Information entered in one window automatically transfers. Detailed, flexible report options. Easy to use, but it can be confusing with several windows on-screen. Requires 512K or more and printer. $199.95 per module. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95123. NCP (Aug '86)

- **Rages to Riches Professional Billing** 
  Tracks and bills professional services. Batches activities for individual timekeepers. Use as stand-alone, or integrate with R to R modules. Requires $12K or more, printer. $359.95. Chang Labs, 5300 Stevens Creek Blvd., San Jose, CA 95123. NCP (Feb '87)

- **Simply Accounting** 
  Has six ledgers and eight journals to handle the needs of most small-to-medium-sized businesses. Better Mac interface than most. Payroll tax labels can't be modified, which forces you to subscribe to Bedford's yearly update service. Version 1.03. Requires 1 megabyte. $349. Bedford Software, 1531 N.E. 99th St., Redmond, WA 98052. NCP (Sept '88)

- **Strictly Business** 
  General Ledger features clear, well-outlined setup procedures and operations. Very flexible, up to 99 profit centers with up to 100 departments each. and customized reports. Program print spoolers. Requires 512K or more, printer, and external drive. $335. Future Design, 13881 Williamette Drive, Westminister, CA 92683. NCP (Dec '85) * '85 Eddy

**Personal Finance**

- **Dollars & Sense** 
  A bookkeeping program. Easy to use, with a good manual and excellent on-screen help. Will handle up to 120 separate accounts or money categories. Uses standard double-entry accounting techniques. Will work on 128K. $149.95. Monogram, 8295 S. La Cienega Blvd., Inglewood, CA 90301. GPC (Mar '87) * '86 Eddy

- **MacMoney** 
  A financial manager that uses information gleaned from your checks and deposit slips. Produces a variety of reports and graphs. Version 3.1 reviewed. Requires $12K and printer. $199.95. Survivor Software, 11222 La Cienega Blvd., Inglewood, CA 90304. NCP (July '88) * '86 Eddy

- **Managing Your Money** 
  A feature-laden personal-accounting system with added financial and time-management functions. Uses double-entry accounting. Too-cute documentation. Version 2.0. $219.95. MEGA Ventures, 355 Riverside Ave., Westport, CT 06880. Requires 1 megabyte, 128K or later ROMs. NCP (Apr '89)

- **Quicken** 
  Helps you write checks, keeps a ledger showing you where your money goes. Tax information is generated automatically. Version 1.0. Requires $12K and printer. $49.95. Intuit, 540 University Ave., Palo Alto, CA 94301. NCP (Nov '85) * '86 Eddy

**HyperCard**

- **Wall Street Investor** 

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The document contains information about various databases and software tools, including:

- **dBASE Mac**: A relational DBMS that includes a structured programming language to develop stand-alone applications. Features include extensive sorting, summary operation, and record management.
- **FileMaker**: A multiuser version of the all-time best file manager for the Macintosh, with new features including more flexible layouts, hierarchical menus, and color on the Mac II. Requires 2 megabytes of hardware.
- **FoxBASE-Mac**: A relational database that can read unmodified dBASE III PLUS applications created in the MS-DOS world. It includes advanced features like sorting, summarization, and record management.
- **MBA Series**: A set of 11 multiuser business applications that run under ACIUS' 4th Dimension. It also features an automated programming environment for developing additional applications.
- **Omni 3**: A powerful database featuring concurrent multiple-window management and the ability to handle large files. It is fully relational and includes user-defined menus, commands, and dialog boxes.
- **OverVue**: A powerful relational database with extensive sorting, summarization, and reporting capability. It includes macros and charting features.
- **Pro-Cite**: A complete database-management system for bibliographies. It allows for limited flexibility in the formatting of bibliographies.
- **Record Holder Plus**: A database that includes a search-and-replace macro and supports up to 64-bit addresses.
- **Reflex Plus**: A relational database with "smart" entry and report design, allowing for the creation of complex database applications.
- **Writer's Workshop**: Maintains order records for writers. It can track manuscripts, income, and publications.

### Number Crunching

**Data Desk Professional**: Lets you visually look at statistics with more ease than any comparable Macintosh program. It supports variables so you can analyze data to see what patterns develop. Version 2.0 requires 1 megabyte and two 800K disk drives or hard disk. Requires $345. Odesta, 4084 Commercial Ave., Northbrook, IL 60062. NCP (Nov '88)

**Excel**: Was the first power spreadsheet on the Mac. Has 256-column-by-6,384-row capability. Features include a powerful macro function (with a recorder to make creation simple) and elaborate charting facilities. Requires 128K or more and external disk drives. Requires $250. Microsoft, 1611 N.E. 36th Way, Redmond, WA 98073-9717. NCP (Prem) + $85 Eddy

**MacCalc**: A fast, competent, full-featured spreadsheet with impressive built-in functions, font control, ability to show column and row headings, and the ability to type SYLK or WKS files. The worksheet is 125 columns by 999 rows. A very flexible, full-featured spreadsheet. Requires Mac II or SE equipped with 68000 and 68881 math coprocessor, two 800K disk drives or hard disk. Requires $159. Abacus Concepts, 1960 Bonita Ave., Berkeley, CA 94704. NCP (Oct '88)


**Mathematica**: A powerful tool for doing all kinds of math. Offers arbitrary-precision numeric calculations, symbolic computation, PostScript graphics, and programmingability. Version 1.03. Requires 1 megabyte or more and a hard-disk drive. Requires Mac II or SE equipped with 68000 and 68881 math coprocessor. Requires 128K or more. Wolfram Research, P.O. Box 6059, Champaign, IL 61821. NCP (Nov '88) + $85 Eddy

**MathView Professional**: An equation solver that combines two- and three-dimensional plotting with routines for matrices, differential equations and integrals, complex numbers, and the like. Requires interface leaves a lot to be desired. Requires 1 megabyte and two 800K disk drives. Requires Mac II and MultiFinder friendly. Requires $249.50. BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302. NCP (Sept '88)

**Microsoft Works**: A set of worksets for Excel and Works that calculates common personal and small business financial problems, includes cash flow, real estate estimate, and return calculators. Requires Mac Plus or higher, two 800K drives. Requires $395. Microsoft, 1611 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717. NCP (May '89)

**Microtemp Financial Calculators**: A set of worksheets for Excel and Works that calculates common personal and small business financial problems, includes cash flow, real estate estimate, and return calculators. Requires Mac Plus or higher, two 800K drives. Requires $395. Microtemp, P.O. Box 1208, Santa Rosa, CA 95402. NCP (Aug '88)

**Mindsight**: A professional level, decision-support, and business planning package. Can work with IPS on mainframes and is able to transmit models in both directions. Powerful and easy to use. Requires 128K or more. $249. Execucom Systems, P.O. Box 9758, Austin, TX 78766. (Dec '88)

**Parameter Manager Plus**: A data manager, incorporating integrated scheduling, statistics, and graphics systems. Requires additional 4th Dimension applications. Requires 1 megabyte and two BOOK disk drives or hard disk. Requires $295. Microsoft, 1611 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717. NCP (May '89)

**StatView 512+**: A very intuitive statistical-analysis program with tools to help you understand any set of data. Holds data in a spreadsheet-like form. Full-featured, fast, and accurate. Extreme wide range of analysis possible. Requires 128K or more and 800K disk drive to operate. Requires 512K or more. $395. Orange Micro, 1400 N. Lakeview, Anchorage, AK 99507. NCP (Aug '88)

**StatView 512+**: A powerful statistical package that combines mathematical functions and graphic representation. The interface, which consists of an icon bar, can be used to create, save, and print results. Version 2.0. $395. Access Technology, 5025 Heritage Harbor, Monterey, CA 93940. NCP (Dec '88)

**Trapeze**: A powerful presentation worksheet that combines mathematical functions and graphic representation. Offers an array of features that can be used to create, save, and print results. Version 2.0. $395. Access Technology, 5025 Heritage Harbor, Monterey, CA 93940. NCP (Dec '88)

**101 Macros for Excel**: Offers all the power of macros without having to learn how to write them. Some macros include: a macro to freeze rows and columns, and a scroll-and-replace macro. Requires Excel. Requires $59.95. Macopac International, 19823 Stevens Creek Blvd., Cupertino, CA 95014. NCP (July '88)
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<tr>
<th>Product</th>
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<td>MS4-MAC8, 4 port 8 pin DIN-8 connectors</td>
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<td>MS4-MAC9, 4 port 9 pin connectors</td>
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<td>SCSI Switch 2 port</td>
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<td>$59.00</td>
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<td>Cables</td>
<td>$16.00</td>
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MINIFINDERS

Graphics & Design

ArtWare: Borders is a program that enables you to customize your own clip-art disk. The border collection is the best package in terms of quality of art. Other packages require a program that recreates Encapsulated PostScript Format (EPSF) files. $129. ArtWare Systems, 3741 Benson Drive, Raleigh, NC 27609. NCP (Aug '88)

Casas 2.0 is a rich drawing/painting program, featuring full Bezier curves, cutting and joining of polygons, skewing, perspective and distortion, auto-dimensioning, area and perimeter calculation, auto-tracing of bit maps, and full color support. Creates and edits high-resolution bit maps to 7,540 dpi. Slightly less powerful DA version. Requires 1 megabyte, two 800K floppies, System 6.0. D. Las Vegas, NV 99114. NCP (Aug '88)

DeskPlant/Construction is an assembly program for creating desk strips. It includes a database of parts for various characters and backgrounds for panels. Good text editing in backgrounds. Can import and export in MacPaint format. $99.95. Foundation Publishing, 5100 Eden Ave., Suite 307, Edina, MN 55436. NCP (Dec '87)

Cricket Graph is a high-level CAD application. Does things usually found only on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter drivers. A real joy to get used to. $175. Qualitas Trading, 6907 Don Road, Berkeley, CA 94705. NCP (May '87)

Cricket Draw is an object-oriented drawing program that will produce stunning, high-quality output. Designed to print on PostScript-compatible devices such as the LaserWriter. $295. Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355. NCP (May '87)

Cricket Graph easily generates 12 graphic types. Multiple windows can be displayed. Graph prints in up to eight colors with up to 16 patterns. Self-generating macro for drawing. Switches, HFS, LaserWriter, and plotters compatible. $195. Cricket Software, 40 Valley Stream Parkway, Malvern, PA 19355. NCP (June '86) Eddy

Cricket Presents is a presentation tool with strong emphasis on graphics. Good master/template. Lacks import capability for text. Version 1.0. Requires System 4.2 or later. $999. Cricket Software, 40 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355. NCP (Nov '87)

Crystal Paint creates an electronic kaleidoscope. It is MacPaint's Brush Mirrors gone wild in a small, simple, yet wonderful application. Does not work in color on Mac II. $249.50. Great Software, 5353 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Feb '88)

Curator catalogs your art and graphics so it's easy to see what's what and where it is. Can import and export in MacPaint format. $99.95. Foundation Publishing, 5100 Eden Ave., Suite 307, Edina, MN 55436. NCP (Dec '87)

DeskPaint is a full-blown paint program as a DA. Allows you to spruce up a graphic while in another application. Imports and exports MacPaint and TIFF images. Great for DTP, but not enough features to rival the leaders in paint programs. Zedi, 4500 E. Speedway, Tucson, AZ 85712-3305. NCP (Mar '88)

EZ Draft is a high-level CAD application. Does things usually found only on minicomputer programs. Uses "pop-up" menus to supplement a full set of pull-down menus. Comes with an additional set of printer/plotter monitors/drivers. A real powerhouse. $1,995. $500 for IEGS module to link to other CAD programs. Bridgeport Machines, 500 Lindley St., Bridgeport, CT 06606. CP (May '88)

FastFormula Construction Kit is both a fast and efficient business forms creator (a drawing program) and a specialized application (and DA) to fill out the data fields in your forms. $149 (U.S.). Shree Enterprises, Advanced Technology Center #105, 9600-20 Ave. Edmonton, Alberta T6E 1M1, Canada. NCP (Nov '87)

Fluent Fonts is a two disk collection of fonts. Includes 49 different items. All install easily in user systems. Most are well executed and some are extraordinarily nice. This is a real bargain for font lovers. $49.95. Casady-Ware, P.O. Box 22379, Carmel, CA 90322. NCP

FONTS/Artlets lets you customize and create bit-mapped fonts. Characters are easily added or modified. Version 2.01 edits larger fonts and supports NWFs. Requires $129. $99.05. Alleys Corp., 720 Hudson Ave., Suite 1090, Palo, TX 75074. NCP (May '89)

Fontographer is a complex but excellent laser-font creator. The fonts created have a 300-bit-per-inch resolution. The fonts are actually downloadable PostScript files. $395. Alleys, P.O. Box 865410, Palo, TX 75074. CP

FontSizer creates high-quality screen fonts of any downloadable PostScript typeface in sizes up to 127 points. Excellent utility for producing large font sizes with true WYSWYG. Requires 1 megabyte. PostScript printer, and fonts. Version 1.7. $39.95. U.S. MicroLabs, 1611 Headway Circle, Building No. 3, Austin, TX 78754. NCP (Apr '89)

FreeHand greatly simplifies the drawing of curves, the use of layers and text handling when manipulating PostScript graphics. And it works in color on the Mac II. Requires 1 megabyte and two disk drives. $495. Addis, 411 First Avenue S., Seattle, WA 98104. NCP (Aug '88)

GraphicWorks 1.1 is a powerful drawing and painting program that creates high-resolution maps. Easels contain graphics, balloons hold text and both reside on panels. Graphic primitives are now a separate tool. $149.95. Mindscape. P.O. Box 1167, Northport, NY 11768. NCP (Oct '87)

GraphicPaint II is a powerful color drawing program but has some rough edges. Commerce drawing environment yet very good at combining and retouching existing drawing. Version 1.0 reviewed. Mac II with 2 megabytes and 8-bit video card required. $495. Absa Software, Inc., 41 Great Valley Parkway, Malvern PA 19355. NCP (Apr '89)

Illustrator 88 is a professional-level graphics program from the people who defined the PostScript language. Uses templates for precise drawing and detailed artwork. Requires 1 megabyte. $495. Adobe Systems, 1585 Eastown Road, Mountain View, CA 94039. NCP (Oct '88) Eddy

Image Club is an overwhelming collection of EPS clip art available on disk and CD-ROM. Comes with a well-designed catalog of images. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $99. Image Club Graphics. 1902 11th St. SE, Calgary, Alberta, Canada T2G 3C6. NCP (Aug '88)

Image Studio puts a photo-retouching tab on the desktop. Editable brushes let you modify digitized images in 65 gray levels. Version 1.0 reviewed. Requires 1 megabyte or more and two 800K disk drives. Mac II and MultiFinder friendly. $495. LaserJet USA, 40 Eisenhower Drive, Paramus, NJ 07653. NCP (June '88)

Images with Impact brings clip art out of the turn-of-the-century woodcut style and into a modern graphic sensibility. "Graphics and Symbols 1" is the first in a series. Requires a program that reads Encapsulated PostScript Format (EPSF) files. $99.95. 3G Graphics, 11410 N.E. 124th St., Kirkland, WA 98034. NCP (Aug '88)

Japanese Clip Art is a two-disk set of extraordinary Japanese clip art. Consists of Maspaint documents and separate fonts. Volume I, Heaven, covers mythological subjects; Volume II, Earth, has secular subject matter. $29.95 each. Quid Pro Quo, 6907 Fordorch Road, Berkeley, CA 94705. NCP (Apr '87)

Latsercraft is a PostScript programming tool that establishes interactive contact with laser printers. Preview window and on-line help make it a powerful tool. Requires 1 megabyte or more and a PostScript Printer. $249. Emerald City Software, P.O. Box 2163, Menlo Park, CA 94026. CP until registered (May '88)

LetraStudie is a type customization program for creating headlines, logos, signs, and other display type. Predefined envelopes let you create unique distortion effects. Works only with LetraStudie fonts, but fonts are accepted by any Macintosh program. Version 1.0. Requires 1 megabyte and hard disk. $455, plus $75 per font. LetraStudie USA, 40 Eisenhoover Drive, Paramus, NJ 07653. Fonts are copyright protected. (May '89) Eddy

MacCalligraphy simulates brush painting. User-designed Seals and Touches enable you to design your own signature tool and the style of brush you use. Takes some getting used to. $75. Quid Pro Quo, 6907 Fordorch Road, Berkeley, CA 94705. NCP (Feb '87)

MacDraft is an object-oriented graphics program. It supports advanced features such as variable scaling, single-degree rotation, complex arcs, auto-dimensioning, and variable zoom/reduction. $299. Creative Data Design, 2280 Bates Ave., Redwood City, CA 94065. NCP (Feb '86)

MacDraw II updates the venerable object-oriented draw program. Adds dithered and color patterns in its own documents, but doesn't support color in the PICT II format. Version 1.0. Requires 1 megabyte and two disk drives. $395. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (Nov '88)

MacGraphics is an overwhelming collection of bit-mapped clip art—13 thematic disks containing 10 megabytes of art. Unfortunately, most pictures are full-page and reproduction quality suffers when they are reduced. Version 3.0 reviewed. $225. Gold Mind Publishing, 12155 Magnolia Ave., Suite 3-B, Riverside, CA 92503. NCP (Aug '88)

MacPaint II hasn't lost its shine after all these years. Version 2.0 supports multiple windows, design templates, and a magic eraser for corrections. It lacks free rotation or distortion talents. Requires 1 megabyte and second disk drive. $175. Claris, 440 Clyde Ave., Mountain View, CA 94043. NCP (July '88) Eddy

May 1989 MAC User 249
MINIFINDERS

Mac3D is a feature-laden 3-D program with a MacDraw-like interface. It is a powerful, easy-to-use graphics program with all the best features of Studio/A and MacDraw— and then some. LaserBits provides 300-dpi magnification, and there are 40 editable brush shapes. Requires 512K or more. $149.95. Silicon Beach Software, 5950 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Feb '87) ★ ★ ★

Super 3D is a high-power 3-D modeling program with an excellent integrated interface. Requires 512K or more. $295. Silicon Beach Software, 5950 Black Mountain Road, P.O. Box 261430, San Diego, CA 92126. NCP (Jan '88)

Swivel 3D quickly forms shaded solids in full color. Casts true shadows onto other objects and can project color graphics onto solids. Objects can be linked as joints and sliding mechanisms that can be operated without accidental dismantling. It can turn animated objects by or your view through a scene, saving frames for playback. Requires Super object-manipulation interface. Version 1.0. Requires 1 megabyte, Mac Plus, two 80K floppies. $395. Paracomp, 123 Townsend St., Hallein, San Francisco, CA 94107. NCP (Mar '89)

TrueForm takes a scanned image of a paper form and turns it into an electronic equivalent, complete with fields for entering data. It can automatically sum numeric fields. Requires external 80K drive. $149.95. UltraWorks Accelerator, Spectrum Digital Systems, 2702 International Lane, Madison, WI 53704-3122. NCP (May '89)

VersaCAD is a powerful CAD program that doesn't show any of its MS-DOS roots. Excellent element manipulation, full plotter support. Library user interface is crude. Requires 1 megabyte or more. $1,949. VectorCad, 2124 Main St., Huntington Beach, CA 92648. NCP (July '88) ★ ★ ★

VideoWorks II is an easy-to-use animation tool — the best available on the Mac. Has an Overview mode that acts as a slide show program for presentations. Works in 2-D or 3-D. Version 1.1 reviewed. Requires 1 megabyte or more and an 80K drive. $1,985. MicroMold, 1026 W. Wolfram, Chicago, IL 60657. NCP (Apr '89) ★ ★ ★

VideoWorks II Accelerator compiles VideoWorks II movies to make them run more smoothly. Compares for the QuickDraw screen display. Version 1.0. Requires 1 megabyte, Mac II, two floppy drives or hard disk, and a 68K processor. $1,895. VersaCAD, 1026 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

World-Class Fonts comes in two volumes of three disks each. Includes all the Mac TeX fonts and a lot more, including two useful utilities. This is now the best collection of imageWriter fonts available. Each volume: $39.95; both volumes: $59.95. Duchar-Click Software, 18201 Gresham St., Northridge, CA 91325. NCP (Dec '88)

Desktop Publishing

DTP Advisor combines a HyperCard-based tutorial on publishing with a project-management system. Beautifully designed but better off as a book. Requires 1 megabyte and HyperCard 1.2. Version 1.0. $79.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Apr '89)

Interleaf Publisher is a speedily repurposed layout system for producing large, complicated documents. Version 3.5 has an improved user interface, but it still suffers from poor format management. Requires Mac II with 5 megabytes of RAM and hard disk. $2,495. Interleaf, 10 Canal Park, Cambridge, MA 02141. NCP (Aug '89)

MacTeX is the TeX environment of choice for hard-core TeX users on the Macintosh. Very intimidating for others. Painfully slow and visually unattractive. Version 2.0. Requires 1 megabyte or more and $75.00. FTL Systems, 234 Elmington Ave., Toronto, Ontario M4P 1K5, Canada. NCP (Apr '89)

PageMaker retains its pasteur approach to page layout. New features include automatic text flow, style sheets, and spot color support. The standard keeps getting better. Version 3.0. Requires 1 megabyte or more and a hard disk. $595. Aldus, 411 First Ave., Seattle, WA 98104. NCP (Aug '85) ★ ★ ★

Portfolio: Designs for Newsletters provides 21 templates for newsletters with preset columns, headings, graphics, and captions. Documentation provides excellent tutorial in page design. Requires 912K or higher. PageMaker: $99. Aldus, 411 First Ave., Seattle, WA 98104. NCP (May '89)

250 MAC USER MAY 1989
Is there anything missing in the new ACCEL-500 24-pin dot matrix printer?
Not performance. ACCEL-500 can zoom through drafts at 480 cps. Print charts and graphs in dazzling color. And combine letter quality with high resolution color graphics.
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Publishing Packs

- QuarkXPress
  - Combines page layout, word processing, and graphics capabilities in one easy-to-use program. Requires 1 megabyte and hard disk. $295. QuarkXPress, 300 S. Jackson, Suite 100, Denver, CO 80209. NCP (Feb '89)

QuarkStyle

- A collection of 72 designer-created templates for "instant" desktop publishing. The templates, which cover the gamut from business cards to newsletters, let you concentrate on page's contents rather than its appearance. Version 1.0. Requires 1 megabyte and hard disk. $295. QuarkXPress, 300 S. Jackson, Suite 100, Denver, CO 80209. CP until registered. (Jan '89)

Springboard Publisher

- Combines page layout, word processing, and graphics capabilities in one easy-to-use program. Too limited for serious desktop publishing but cost-effective for the small office. Version 1.0. Reviewed. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan '89) * $85 Eddie

TeX

- A powerful typesetting program that's easy enough for novices. Good for people trained on mainframes in the early days. Otherwise very sticky with a few bugs. Version 3.0. Reviewed. $199.50. Springboard Software, 7800 Creekridge Circle, Minneapolis, MN 55435. NCP (May '89)

Communications

AppleShare

- The file sharer marketed by Apple. AppleShare requires you to dedicate a Mac and a hard disk to it. It allows users on the network to protect things from other users on the folder level. Interface to network is provided simple commands. S299. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (May '87) * $66 Eddie

ComServe

- Allows you to read and receive computer mail. Works with most telecommunications packages. $195 per server. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. CP (Feb '88)

DesqExpress

- A simple-to-use, semi-automated program for using MCI Mail and Dow Jones News/Retrieval. Performance is traded off for ease of use. Requires 512K or more. S149. Dow Jones, P.O. Box 300, Princeton, NJ 08543. NCP (Jan '88)

InBox

- In an easy-to-use mail system. It's upped from a DA. Has a very slick interface. Dedicated Mac not required. S350 for starter set, which includes one Administrator disk and three connection disks. Additional Costs connect S125 each. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. NCP (May '87) * $86 Eddie

iTalk

- Comes with its own communications command language able to do unequaled sessions. Supports Xmodem and MacBinary. Has a micro key function. Many sample setup documents and command language files provided. S195. Palantir, 12777 Jones Road, Houston, TX 77070. NCP (Prem)

LapLink Mac

- Quicksly transfers data to and from the MS-DOS and Mac environments. Kit contains four software packages. S195. Palantir, 12777 Jones Road, Houston, TX 77070. NCP (Prem)

MacTerminal

- Provides basic telecommunications and terminal emulation. Has neither macros nor any sort of auto redial/auto log-on capability. Best for those needing faithful VT100 or IBM 3878 emulation — it's superb at those. S125. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Prem)

MacWorkStation

- A development environment and communications program that accesses custom mainframe applications through the Macintosh interface. Modular design allows for expandability. Mac II and MultiFinder friendly. Reviewed. Version 3.0. S2,500 for internal use license; S5,000 for commercial use license. Apple Software Licensing, 20525 Mariani Ave., Cupertino, CA 95014. NCP (Oct '88)

MicroPhone II

- A powerful terminal program that's easy enough for novices. Very powerful command language allows full automation of communications if desired. S295. Software Ventures, 2207 Claremont Ave., Berkeley, CA 94705. NCP (Jan '89) * $86 Eddie

Microsoft Mail

- An electronic mail system that runs under AppleTalk. Supports file transfers across the mail system. Full-on-line help facility. Also includes "While you were out" messages. Desk accessory based. Prices determined by number of users licensed. One to four users, $295.50; five to ten users, $499.50; 11 to 20 users, $749.95; 21 or more users, $949.50. Microsoft, 1601 N.E. 38th Way, Redmond, WA 98073-9717. NCP (May '87) * 87 Eddie

PC MacTerm

- Two programs that work together to take control of an MS-DOS machine from the Mac keyboard. Versions: PC-MacTerm 1.1: pMacAnywhere 3.0. Requires 512K. System 4.1 or later. $129. IBM MS-DOS compatible and MS-DOS 2.1 or later. PC-MacTerm $299 pMacAnywhere III, $345. Dynamic Microprocessor Associates, Inc., 60 E. 42nd St., New York, NY 10165. NCP (Jan '89)

Red Ryder

- A full-featured telecommunications program that supports MacBinary includes, and Kermit. Has big-screen support, automatic procedure creation, over 30 keyboard macros. Version 10.3 reviewed. $80. Fressoft, 150 Hickory Drive, Beaver Falls, PA 15010. NCP (Jan '89) * $87 Eddie

SmartMail

- Balances power and ease of use. Capable of unattended operation and has a powerful command language. The fastest speed updating available can keep you at 9,600 baud. The large-screen buffer can easily be archived. Version 3.0 reviewed. $149. Hayes, 5923 Peachtree Industrial Blvd., Norcross, GA 30092. NCP (Jan '89) * $85 Eddie

TOPS

- A file server designed to network computers with different operating systems. Supports Macs, MS-DOS compatible, and UNIX. Access to files and subdirectories is transparent to the user; they appear as Mac folders. Only handles ASCII or text files. $294 for Mac version. TOPS, 950 Marina Village Parkway, Alameda, CA 94501. Serial number protected. (May '87) * 87 Eddie

VersaTerm-Pro

- A very powerful terminal program with several special features. Does one of the best VT100 emulations available and specializes in�� 2041 and 4105 emulation. A pro's tool. Requires 512K or more. S295. Peripherals, Computers & Supplies, 2457 Perkiomen Ave., Mount Penn, PA 19066. NCP (Apr '87)

Word Processors

ArchText

- A text processor with many hyperactivated capabilities as well as the ability to include graphics. 'Nodes' of text are accessed by means of different 'mouse' keys. Very powerful. Version 1.0 reviewed. Requires 1 megabyte. S249.50. Brainbox, 24009 Ventura Blvd., Suite 250, Calabasas, CA 91332. NCP (Feb '89)

Document Compare

- Allows users to compare any two MacWrite 4.5, ASCII, or MOSS documents. Differences in spelling, punctuation, formatting, and wording are detected. Documents can be printed out with differences highlighted. S99. Legalware, 33 Young St., Toronto, Ontario M5E 1S9, Canada. NCP (May '86)

Document Modeler

- Can automate much of a professional office's correspondence. Comes in two parts: Template Maker and Document Maker. Initial setup requires time and is $79.95. Aegis Development. 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sept '87)

Doug Clapp's Word Tools

- A useful punctuation and style-editing program. It won't turn you into a proofreader, but it will help you make your writing cleaner and clearer. Word counts among different formats show discrepancies, but not to worry. Requires 128K or more. S79.95. Aegis Development, 2125 Pico Blvd., Santa Monica, CA 90405. NCP (Sept '87)

Expressionist

- A very powerful DA that allows you to create complex mathematical equations using two methods: macro language and from within an application. Equation manipulation has never been easier. S79.95. Allan Bonadio Associates, 1579 Dolores St., San Francisco, CA 94110. (July '97)

Feinna

- Allows users to create their own Chinese characters. This Chinese word processor follows the Mac interface more closely than BrushWriter. If you create your own characters for those that aren't included in the dictionary, Version P reviewed. Requires 512K or higher. S585. W& Co., P.O. Box 999, Avon, CT 06001. CP (May '89)

FullWrite Professional

- Combines outlining and word processing with page layout and drawing. Its many features translate into sluggish performance unless you have a lot of extra RAM. Impressive. Version 1.0. Requires 1 megabyte. Mac II and MultiFinder friendly. S395. Ashton-Tate, 20101 Hamilton Ave., Torrance, CA 90502. NCP (Sept '88)

Graham Speller

Put a Seagate drive at the core of your computer

If you're one of the millions of people who have adopted computers with an SCSI interface, then you should be one of the millions who can use a drive from Seagate, the world's largest manufacturer of SCSI disc drives. These drives come in a wide variety of sizes, capacities and access times, making them ideal for every application.

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Minifinders

Kadmos Greek Font

is a full character set of ancient Greek that prints on any PostScript printer. Requires learning new typing skills, but excellent quality makes it worth the effort. S$5. Aloctype Typographica, 1600 Packard Road, Ann Arbor, MI 48104. NCP (Oct '87)

Kailani Brushtwriter

is a Chinese word processor that fails to support the Mac interface. It has 6,000 characters that must speak Chinese to use the program. Won't work with System 6.0. Version 2.0 reviewed. Requires 1-megabyte SE or higher, adapter (included) to save and print files. $59.95 for professional package (reviewed). Pacific Rim Connections, 303B Alтвор Drive, Bellingham, WA 98240. NCP (May '89)

Laser Author

is a high-powered, oriented word processor. Good math-solving capability. Has style sheets, word count, and page layout capability. $199.95. Firebird Licenses, P.O. Box 49, Ramsey, NJ 07446. NCP (Mar '87)

Liberty Spell Checker

is a simple, effective, interactive checker. The dictionary is smaller than average but well chosen. Unfortunately, it has a few misspelled words. $95.95. DataPak, 1401 Ventura Blvd., Sherman Oaks, CA 91423. CP (Oct '86)

Lookout

is an on-call, quick, single-word spelling checker. Designed for the way users really work. Uses the 53,000-word SpellWell dictionary. $49.95. Working Software, P.O. Box 1644, Santa Cruz, CA 95061-1844. NCP (Dec '87)

Macspell

is a grammar, style, and spelling checker that’s like having your own personal copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections; it doesn’t make them for you. Checking process can be slow if your document is long. $195 for stand-alone copy editor. Grammar rules are fixed, and you may not agree with the choices. The program only suggests corrections; it doesn’t make them for you. Requires 512K or more, two drives or hard disk. $99. Creighton Development, 16 Hughes St., Irvine, CA 92718. NCP

MacWrite

is the leading word processor. Requires 128K or more, two drives or hard disk. Includes Command-key equivalents and spelling checker. Requires $125 or higher. $125. Collins, 440 Clyde Ave., Mountain View, CA 94043. NCP (June '88) • $5 Edgy

MergeWrite

is a mail-merge program for MacWrite (also works with ASCII files). Program contains names and addresses from a data file into predefined fields in a form letter. Also allows simple conditional IF-THEN-ELSE equations. $49.95. Software Discoveries, 137 Kravis Drive, South Windsor, CT 06074. NCP (Dec '87)

MindWrite

integrates outlining and word processing better than anyone. Version 1.1 fixes many problems of the earlier version. Sophisticated search and select options. Uniserv Oswald, 3480 S.W. 63rd St., Portland, OR 97219. NCP (May '89)

Mischu

is a DA that turns MacWrite and Microsoft Word into a Chinese word processor. Requires 128K or higher. $99. Sunwrite Tech, 5499 Alemeda Ave., Mountain View, CA 94043. NCP (May '88)

QUED/M

is an excellent text editor that saves documents in a form readable by most computer and printers. Doesn’t support graphics or multiple fonts. Programming language allows creation of database. Version 2.01. $129. Paragon Concepts, 4954 Sun Valley Road, Del Mar, CA 92014. NCP (Mar '88)

QuickLetter

is a well-designed and well-implemented DA for the creation of letters and envelopes. You can create stationery complete with graphics and maintain an address book including salutations. It’s the best choice for creative people or anyone who has to type a lot. $89. Xanatech, 20 Fresh Pond Place, Cambridge, MA 02138. NCP (May '89)

Sensible Grammar

corrects some of the more glaring errors that writers make. Also analyzes the word count and structure of sentences to come up with a readability rating. S$125. $99.95. Sensible Software, 335 E. Big Beaver, Suite 207, Troy, MI 48085. NCP (Dec '88)

Spelling Champion

is a fast and accurate batch-type spelling checker. Backup feature allows you to undo corrections in a paragraph. Works only with MacWrite 4.5. $39.95. Champion Software, 6617 Gettysburg Drive, Madison, WI 53715. NCP (Oct '85)

Spelling Coach Professional


Spellingwell

is a stand-alone batch spelling checker. Also checks for punctuation and other errors. Good dictionary, thorough checking, simple interface. Weak guessing. Version 2.0. $74.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Sept '88) • $35 Edly

Thunder!

is a DA spelling checker. Includes macro features. Fairly fast, good guessing of misspelled words. Small dictionary. MultiFinder hostile. Requires 1.1.1 Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. NCP (Sept '88)

Word Finder

is an electronic thesaurus that won’t replace your trusty Roget’s but is still useful for checking synonyms on the fly. Large, relatively new. Version 2.0. $125. Mac II and MultiFinder friendly. $99.50. Micrologs, 301 Main St., Rochester, NY 14604. NCP (May '88)

WordPerfect

is a good choice for offices needing capability but not so hot otherwise. Good internal file-management system and macro maker. Uses hidden formatting codes, hierarchical menu system. Requires Mac $125, System 4.1 or later. Two 800K disk drives or a hard disk recommended. Not fully compatible with System 6.0. $395. WordPerfect, 1555 N. Technology Way, Orem, UT 84057. CP (Feb '89)

WorksPlus Spell

is a speedy spelling and hyphenation checker for Microsoft Works. It includes a glossary for abbreviations and time/date stamping. The biggest drawback is its limitation to one program. $59.95. Lundeen & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (Oct '87) • $7 Edgy

Write

is a "beginner’s" version of Word 3.0. More features than some word processors in its class, but not all of the features work well. Poor value and an expensive upgrade path to Word. $175. Requires 125 or more. Microsoft, 1601 N.E. 36th Way, Redmond, WA 98073. NCP (Mar '88)

Writeflow for the Macintosh

has many of the features of MacWrite and then some, including the ability to work in columns. Has built-in spelling checker with 50,000-word dictionary. $175. T/Maker, 1973 Landings Drive, Mountain View, CA 94043. NCP (Mar '87) • $9 Edgy

HyperCard

Business Class

is a HyperCard stack that contains world travel information and itinerary planning. Uses maps to locate countries of interest, but it lacks United States domestic travel information. Requires 1 megabyte or more and HyperCard. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

CITY to City

imports travel information on 11 U.S. cities including details on hotels, restaurants, and nightlife. Helps plan an itinerary. Requires HyperCard, two disk drives, and a printer. $49.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Sept '88)

Focal Point

is a HyperCard stack that ties together a calendar, phone log, client accounts, and more in one easy-to-use organizational tool. Requires 1 megabyte or more and HyperCard. $99.95. Activision, 3885 Bohannon Drive, Menlo Park, CA 94025. NCP (Mar '88)

HyperAnimator

enables you to create talking heads for your HyperCard stacks. Use MacTalk or provide digitized sounds. Easy to implement. Version 1.0 reviewed. Requires 1 megabyte. System 6.0. HyperCard, $149.95. Bright Star Technology, Inc., 14450 N.E. 29th, Suite 220, Bellevue, WA 98007. CP (Feb '89)

HyperAtlas

is a collection of U.S. and World maps that are networked to stacks containing economic, political, and population data. Version 1.0. Requires HyperCard and second disk drive or hard disk. $99. MicroMap Software, P.O. Box 757, Lambertville, NJ 08735. NCP (Oct '88)

HyperDA

lets you browse through HyperCard stacks through a DA. A true equalizer for 512K Mac owners who cannot normally access stackware. Doesn’t support...
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MINIFINDERS

HyperTutor

is a stack that teaches HyperTalk, HyperCard's programming language. Uses an interactive Text Mac on each card to write scripts. A variety of windows makes it good for both beginners and advanced programmers. $49.95. Channelmark, 2929 Campus Drive, San Mateo, CA 94403. NCP (Apr '88)

Macintosh Bible: STAXI Edition

~

Design

FlowMaster

lets you play movies directly from a stack. One way to add color animation to HyperCard. Version 1.0. Requires 1 megabyte, VideoWorks II, and HyperCard; hard-disk drive recommended. $99.95. Macromind, 1028 W. Wolfram, Chicago, IL 60657. NCP (Dec '88)

Organizational Tools

Acta

is an outline processor in DA format. It has practically all the power of a stand-alone program, and then some. Can save files as Acta outlines, MacWrite files, or text files. Version 2.0. $79. Symmetry Corporation, 761 E. University Drive, Mesa, AZ 85203. NCP (Oct '88)

Comment

is an electronic version of Post-it Notes. A mini word processor lets you attach notes to a spreadsheet cell, to words in a text document, or to a window on the desktop. Version 2.0. Requires 1 megabyte, DeskWrite Software, 3385 N.W. 74th Ave., Miami, FL 33122. NCP (Dec '88)

Design

is a powerful organizational tool. It goes beyond mere flowcharting. Graphically depicts relationships between systems. Complex, detailed program aimed at software pros. $250. Meta Software, 150 Cambridge Park Drive, Cambridge, MA 02140. NCP (Apr '88)

FamilyCare

is a handbook to childhood diseases. The rule-based expert system gives advice based on symptoms. Ailments and diseases run the gamut from acne and appendicitis to whirring and yeast infections. Links graphics, Version 1.0. Requires 512K and 1 megabyte or more. Lundin Laboratories, 29451 Greenfield Road, Southfield, MI 48076. Mac II and MultiFinder friendly. NCP (Sept '88)

FlowMaster

charts your ad dollars in print, TV, billboard, and other mediums. Analyzes costs/benefit of a campaign in terms that even jaded Mad. Ave. execs will find innovative. Includes bar-cart and tabular output. Requires 512K or more. $49.5. Select Micro Systems, 40 Triangle Center, Yorktown Heights, NY 10598. NCP (Jan '88)

For the Record

is a database specifically designed for legal, financial, and personal records. Allows password locking of screens containing sensitive personal data. Version 1.0 reviewed. Requires 512K. $49.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Feb '89)

FormSet: Business Forms Edition

brings a wealth of business forms, such as expense reports and profit/loss statements, into the electronic arena. Fields are automatically calculated. Can't be customized by adding logos. Version 1.0. Requires 512K and two 600K floppy drives or hard disks. $95. SoftView, 4820 Archer Lane, Suite D, Camarillo, CA 93010. NCP (Jan '89)

GeoDB

guts your database on the map by accessing zip code information. Comes with maps of the U.S. Other areas available. Version 1.0 reviewed. Requires 1 megabyte or more and second disk drive. $349. Oidata, 4084 Commercial Ave., Northbrook, IL 60062. NCP (July '88)

Guide

allows you to cross-reference from within a document using hypertext. You can set up words or sections of the document as 'jump targets' and add links allowing you to jump from one target to another or to send mail. Costs $49.95. TenTen Software, 9495 S.W. Barbur Blvd., Suite 103, Portland, OR 97219. NCP (Dec '88)

Instant Expert

is an excellent way to learn the mechanics of creating an expert system. The inference engine (that ultimately finds the answer) is visible. Lacks a true Mac interface. Version 1.0. $49.95. Human Intellisystems, 1670 S. Ampthill Blvd., Suite 328, San Mateo, CA 94402. NCP (Jan '88)

MacProject

allows a user to plan and track a project from beginning to end. Uses CPM to produce schedules with start and finish dates for each task. Can report on resource interdependencies and generate all needed printed reports. $195. Chras, 440 Clyde Ave., Mountain View, CA 94043. NCP (Mar '89)

MacSchedule

is a simple scheduling program with substantial intelligence built into it, making the creation and maintenance of schedules nearly painless. Processes Gantt charts only (no PERT or CPM). Version 1.0 reviewed. Requires 128K or higher. $195. Version 1.0 reviewed. Symantec, Living Videotext Division, 10291 Torre Ave., Cupertino, CA 95014. NCP (May '89)

MacSMARTS

is a simple schedulin9 program with substanlial intelligence built into it, making the creation and maintenance of schedules nearly painless. Processes Gantt charts only (no PERT or CPM). Version 1.0 reviewed. Requires 128K or higher. $195. Version 1.0 reviewed. Symantec, Living Videotext Division, 10291 Torre Ave., Cupertino, CA 95014. NCP (May '89)

QuickBus

keeps your phone numbers in an electronic Rolodex. The DA even plays the tune through the Mac's sound port. Version 1.4a. Requires 512K; hard disk is recommended. $90. Casady & Greene. P.O. Box 223797, Carmel, CA 93922. NCP (Jan '89)

STELLA for Business

is a simulation tool used to model complex business systems. Requires you to master a discipline called "system dynamics." Requires 512K or more. Mac II version available. $350. High Performance Systems, 13 Dartmouth College Highway, Lyme, NH 03768. NCP (June '88)

SuperExpert

is an expert-system shell that induces rules from examples. Rules become unwieldy when many criteria and examples are used. Overpriced. Version 1.4 reviewed. Requires 512K. $199.95. Softsync, 162 Madison Ave., New York, NY 10016. NCP (July '88)

WillMaker

is a simple yet valuable run-lmgs BASIC program for creating simple wills. Not elegant, but it does the job well. Version 3.0 reviewed. Requires 80K disk. $59.95. Nolo Press, 950 Parker St., Berkeley, CA 94710. NCP (Mar '89)

Utilities

AutoMac III

is similar to Tempo II and Apple's MacroMaker but is generally easier to use and comes with excellent documentation and a powerful Macro Editor. Version 2.0 reviewed. Requires 512K. $79.95. Also distributed with Microsoft products (Word 3.02 and 4.0). Genesis Micro Software. P.O. Box 6236, 17124 N.E. Eighth Place, Bellevue, WA 98006. NCP (Feb '89)

AutoSave DA

is insurance against system crashes. It saves your work automatically at intervals from 1 to 99 minutes. Compatible with many applications, but not recommended for use with databases. $49.95. Magic Software, 1706 Galvin Road S., Bellevue, NE 68005. NCP (Jan '88)

Capture

saves any portion of a Macintosh screen to the Clipboard or as a PICT file. Works in color on the Mac II. Requires 512K or more. MultiFinder friendly. $59.5. Mustel, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '88)

ColorToy

adds pigments to the desktop and black-and-white applications. Also colors PICT graphics. System resources include saving and printing color screens. A useful novelty that's its course as developers add color to apps. Requires 512K. $49.95. Palomar Software, P.O. Box 2635, Vista, CA 92083. NCP (Dec '88)

Copy II for the Macintosh


DiskUpt

optimizes hard-drive performance by reorganizing fragmented files. Dangerous as its kind. Version 1.5. Requires 512K. $49.95. ASoft , P.O. Box 927, Spring, TX 77383. NCP (Jan '89)

DiskFinder

searches disks for files as well as cataloging disks. Requires 512K. $49.95. Williams & Macas, South 3707 Godfrey Blvd., Spokane, WA 99204. NCP (Feb '89)
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MINIFINDERS

**DiskFix**
- A utility for backing up and restoring hard disk files. Creates a “SmartSet” of floppy disks so incremental backups only update files modified since the last backup procedure. Backs up to floppies or another hard disk. Requires $12.95 or higher. 99.95. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June ‘87)

**DiskQuick**
- An easy-to-use cataloging program. Criteria selection option for generating subcatalogs. Requires $12.95 or more. $49.95. IdealForms, P.O. Box 1540, Fairfield, IA 52556. NCP (Apr ‘87)

**DiskPlus**
- Is a set of eight useful DAs and applications. Earlier version was sold as a Battery Pack. The DA Disk Tools II is a Finder replacement. Also included are an RPN calculator, Phone Pad, and Calendar Manager. Requires $12.95 or more. $49.95. Electronic Arts, 1850 Gateway Drive, San Mateo, CA 94404. NCP (Mar ‘88)

**DiskTop**
- Is a DA Finder replacement of extraordinary power and ease of use. Comes with the useful LevelStatus DA and Widgets application. The extras alone are worth the price. Requires $12.95 or more. Upgrade from version 1.0, $17.10 with new manual. $49.95. CE Software, 1654 Fuller Road, West Des Moines, IA 50265. NCP (Aug ‘87)

**Dubl-Click Calculator Construction Set**
- Lets users design personalized calculators with a variety of standard and special functions. Finished calculators can be saved as installable disk accessories or as clickable applications. $59. Dubl-Click Software, 19201 Gresham St., Northridge, CA 91325. NCP (Apr ‘86)

**Eureka: The Solver**
- Is a free-form numerical equation solver. Standard trigonometric and logarithmic functions are available, as is treatment of imaginary and complex numbers. $49.95. Casio International, 4658 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Mar ‘86)

**Fastback for the Macintosh**
- Is hard-disk backup software that is very quick, if not very efficient. Doesn’t automatically exclude applications. Creates a separate catalog disk. $99.95. Fifth Generation Systems, 1332 Bell Ave., Tuslin, CA 92680. NCP (Apr ‘86)

**Fedit Plus**
- Is the file and disk editor for everyone. From newest Mac owner to oldest. It can do more for your disks and files than any other application. Can recover deleted MFS files. If you own a Mac, get it. Its compatibility. $49.95. MacMaster Systems, 108 E. Fremont Ave. #37, Sunnyvale, CA 94087. NCP (Nov ‘86)

**Findswell**
- Is an indispensable utility that installs a new button in the Open dialog box of virtually every Macintosh application. Press the button, type a search string, click on find, and Findswell searches for any files that match. Click Open or double-click to open the correct file. Requires $12.95 or more. $49.95. Working Software, P.O. Box 1844, Santa Cruz, CA 95061-1844. NCP (Nov ‘87) • 87-EDV

**1staid KIS**
- Recovers lost or damaged files from floppy or hard disks. An excellent manual-turned-textbook actually teaches the Hierarchical File System. Requires $12.95 or more. Version 2.2 reviewed. $59.95. 1stAid Software, 42 Radnor Road. Boston, MA 02135. NCP (June ’88)

**FlashBack**
- Is a utility to back up HFS hard disks onto floppy. A unique graphic display makes the HFS directory facilities selectable. The program can handle files larger than 800K. $59.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Nov ‘86)

**Font/DA Juggler Plus**
- Gives you unlimited access to almost any number of fonts, desk accessories, and sounds. Uses hierarchical menus. $59.95. AlSoft, P.O. Box 927, Spring, TX 77383. NCP (May ‘88)

**Glue**
- Adds a print-to-disk capability to many programs. ImageSaver installs as printer driver: Viewer allows copying and printing of Glue files. Handy utility for desktop publishers. $59.95. Solutions International, P.O. Box 569, Montpelier, VT 05602. NCP (Dec ‘86)

**Hard Disk Util**
- Updates patch files to allow users to mount and run specified programs on their hard disks. The list of patches is constantly expanding. $89.95. FWB Software, 2040 Polk St., San Francisco, CA 94109. NCP

**HFS Backup**
- BN ranks as one of the preferred hard-disk backup utilities. Back up by file/folder or last changes. Backup specifications can be saved as templates. Good graphic interface. Reliable program. $49.95. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33643. NCP (Dec ‘86)

**HFS Locater Plus**
- C is an essential HFS DA. It can search for a file by name or date of creation, create folders from one folder to another, set a program to launch while in an application. $39.95. PBI Software, 1163 Triton Drive, Foster City, CA 94404. NCP (Sept ‘86)

**Icon-It!**
- Lets you create icons to use as an alternative to menu commands. Comes with 47 icon templates or you can create your own. Version 1.0. $79.95. Oldvai Software, 7520 Red Road, South Miami, FL 33143. NCP (Feb ‘86)

**LabView**
- Is a graphical programming environment that creates “virtual instruments” to perform calibrations, acquire laboratory data, and control instrumentation. Slow. Version 1.1 reviewed. $300. National Instruments, 12109 Technology Blvd., Austin, TX 78727-8204. NCP (July ‘88)

**LaserServe**
- Is a printer spooler for AppleTalk networks. After installation all operations are done with a DA. Works with both MacServe and TOPS. Requires $12.95 or more and 800K drive or hard disk. $59 per node. Infosphere, 4730 S.W. Macadam Ave., Portland, OR 97201. NCP (Feb ‘87)

**Mac Disk Catalog II**
- Is a utility which quickly organizes a medium-size disk library. Easy-to-use, with powerful reporting and labeling-make features. $49.95. New Canaan Micro Code, 139 Beech Road, New Canaan, CT 06840. NCP (Dec ‘85)

**MacFlow**
- Is a design tool created for programmers. Traditional flowcharting symbols are linked together, and a symbol can be connected to a separate flowchart file. Now supports custom symbols. $125. Mainstay, 2211-Berry Ave., Agoura Hills, CA 91301. NCP (Apr ‘87)

**MacThin**
- Tracks time spent in applications and saves info as text files. Installs on any disk, works in background. MF5. HFS compatible. Extremely valuable for tax purposes, client records, etc. $79. SoftView, 4820 Adior Lane, Camarillo, CA 93010. NCP (Jan ‘87) • 87-Eddy

**MacLabeler**
- Lets users instantly index and print labels for all the disks in a burgeoning collection. Choose border type and orientation of your label; index by folder or document. Starter set of labels is included. $49.95. Softform, P.O. Box 1540, Fairfield, CA 94535. NCP (Prem)

**MacNoby**
- Is a global disassembler. A very sophisticated user can use this program to look into the code of virtually any program. This advanced tool can take places no other Mac program could dream of going if you have the skill to guide it. Documentation is sparse. For pros only. $170. SC and Plus, 3503 Mackay Drive, 343 Trenton Way, Menlo Park, CA 94025. NCP

**MacSafe**
- Is a data file security program that allows you to place multiple files into a “safe,” and then you can further protect them through two types of encryption (including DES). Handy and very easy to use. Allows for installation on hard disk. $149.95. Kent Marsh Ltd., 1200 Post Oak Blvd., Houston, TX 77056. CP (Mar ‘88)

**MacTree**
- Displays your files in the form of a hierarchical tree. Good idea, poor performance. Can’t view tree easily. Good search function. Requires $12.95 or more. $69.95. Software Research Technology, 22001 Mill Creek Drive, Laguna Hills, CA 92653. NCP (Apr ‘88)

**MacZip**
- Is a three-part disk and memory utility. It can be used to recover some damaged files and disks, compare disks, analyze disk structure, and make backups. Copies of most disks. $60. Micro Analyst, 2505 Roxmoor, Austin, TX 78723. NCP (Jan ‘86)

**MasterJuggler**
- Is Fore/DA Juggler with so many features added that they can’t be listed here. A world-class utility. Not as elegant as Suitcase II but has more features. Version 1.0 reviewed. Requires $12.95 or more. $79.95. AlSoft, P.O. Box 927, Spring, TX 77383-0927. NCP (Mar ‘89)

**MockPackage**
- Is a set of extremely powerful DAs. Includes a text editor, text printer (supports LaserWriter), chart, terminal, and EZmenus. HFS compatible. $35. CE Software, 1854 Fuller Road, West Des Moines, IA 50265. NCP (Mar ‘87)

**MultiDisk**
- Is an excellent software disk partitioner that allows partitions to be dynamically resizeable, password-protected, and even encrypted. Version 1.0 reviewed. Requires $12.95 or more. $39.95. AlSoft, P.O. Box 927, Spring, TX 77383. NCP (May ‘89)

**myDiskLabeler**
- Is an excellent label maker. It can read directories and use large or small icons or anything desired. Comes with 54 precut labels. $44.95; with color printing ability (on the ImageWriter II), $64.95; with PostScript font capability (on the LaserWriter), $64.95. Williams and Macias, P.O. Box 19206, Spokane, WA 99219. NCP (Aug ‘87)

**Ncryptor**
- Is a simple, secure program that lets users password-protect their files. The same program is used for encoding and decoding. This is one of the best products in its category. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan ’87)

**NightWatch**
- Locks up your hard disk by using a floppy startup disk that acts as a key. Type in the correct password, and access to the hard disk is allowed. Version 1.02.

MAY 1989 MAC USER 259
MINIFINDERS

<table>
<thead>
<tr>
<th>Requires 512KE &amp; hard disk, and an 800K drive. Mac II and MultiFinder friendly. $149.95. Kent Marsh Ltd., P.O. Box 460289, 1200 Post Oak Blvd., Suite 210, Houston, TX 77056. NCP (Sept '88)</th>
</tr>
</thead>
</table>
| **On Connect**

lets you switch applications without returning to the Finder. Under MultiFinder, active applications are listed on a pop-up menu. Can also launch directly to a specific document.

Requires 512KE, Mac II and MultiFinder friendly. $99.95. COM Simulations, 485 Whittington Road, Wheeling, IL 60090. NCP (Sept '88)

| **OmniPage**

is a very good OCR program that can create editable text files out of scanned images. It works only with certain scanners and requires a lot of memory, so be sure you can meet its requirements before you buy. Version 1.0 reviewed.

68000 & 4 megabyte required. $965. Carec Enterprises, 100 Cooper Court, Los Gatos, CA 95030. NCP (Mar '89)

| **PowerStation**

is an extremely easy-to-use, versatile and powerful Finder substitute. Loaded with powerful features. Comes with Pyrol $59.95. Fifth Generation, 12025 Bell Ave., Tustin, CA 92680. NCP (Dec '87)

| **Printworks for the Mac**

is a comprehensive software-based dot-matrix printer control system. Operates from different applications and can be used. Requires 512KE or more. $75. SoftStyle. 7192 Kalanianaole Highway, Honolulu, HI 96825. NCP (Aug '87)

| **Programmer's On-line Companion**

puts an abridged version of Inside Macintosh in your system for reference. Simply read the text or transfer some or all of it directly into your normal editing window. No Mac-app interface makes the program confusing, so you'll have to do a lot of experimenting to use. $34.95. Addison-Wesley, Route 128, Reading, MA 01867. NCP (July '87)

| **QwikKeys**

lets you make full use of your keyboard. Assign any command (menu choices, DAs, etc.) or series of text blocks and/or command to any key or key combination. Extremely powerful; necessary for Apple Extended Keyboard owners. $29.95. Apple System Software, 1534 Fuller Road, West Des Moines, IA 50265. NCP (Jan '88) ¶ 87 Eddy

| **RemSnap**

is a RAM disk and disk cache in one easy-to-use package. Can store multiple configurations as files. Good product but a little pricey. $30. Dode Computer Corp., 1200 N. 23rd St., Wilmington, NC 28405. NCP (June '87)

| **Read-ill**

is the best consumer optical character recognition software. Works with any scanner that saves images as a bit-map. PICT or TIFF file. Comes with type tables that can be customized. Version 1.1. $395. ThundertScan Systems, 7525 Red Road, South Miami, IL 33143. NCP (Apr '86)

| **RoundUp**

searches your disk for a specified text string. Slow, awkward, poor performer. Does work with Mac II, but will not work with Mac II+.

Requires 512KE or more. $99.95. CE Software, 1954 Fuller Road, West Des Moines, IA 50265. NCP (Jan '88) ¶ 87 Eddy

| **Screw**

encrypts data files (or sets of files) using a super-secure DES or a super-fast SuperCrypt algorithm. Provides high-level security if you keep your passwords secret. Requires 512KE, $298. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (Apr '88)

| **Smart Alarms**

is the best reminder system for the Mac. Easy to use, versatile, and, well, smart. This self-running DA automatically reminds you of anything you enter into its Reminder file, giving you a wide range of useful advanced warning options. $49.95. Imagine Software, 19 Bolinas Road, Fairfax, CA 94930. NCP (Oct '86)

| **SmartScrap and The Clipper**

are two useful DA utilities for graphics work. SmartScrap is a major enhancement to the standard Scrapbook DA. The Clipper provides you with a transparent Clipboard window, allowing you to resize or crop graphic to the area that it will be pasted to. $95.95. Solutions International, 30 Commerce St., Williston, VT 05495. NCP (July '87) ¶ 87 Eddy

| **SoundWaves**

is a camcorder software that records sound and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr '88)

| **Stepping Out II**

is a software alternative to a large-screen monitor. Lets you create a virtual screen (as large as memory allows) inside the Mac's 9-inch screen. Automatically scrolls to new document position as you type or draw. Version 2.0.

Requires Mac II, 512KE, 256K RAM, 500K free disk space. $35. Berkeley System Design, 1700 Shattuck Ave., Berkeley, CA 94709. NCP (Oct '88)

| **StuffIt**

compresses files to reduce the amount of space they take up on disk. Great for transferring documents via modem. Alsoajoin and encrypts files. Version 1.5.

Requires 512KE, Shareware fee. $16. Raymond Lau, 100-04 70 Ave. Forest Hills, NY 11375-5139, also available on most electronic services. NCP (Dec '88)

| **Suitcase**

is a transparent program that automatically lets you use all your fonts and DAs. Foolproof and indespensible. Comes with Pyrol, the best screen saver. Requires 512KE or more. $59.95. Fifth Generation, 1322 Bell Ave., Tustin, CA 92680. NCP (Nov '87) ¶ 87 Eddy

| **SuperLaserSpoof**

is a LaserWriter spoiler. Very fast because it does conversion to PostScript in the background, but doesn't print a faithful rendition of PageMaker documents as a result. $149.95 single user, $385.95 for up to five users on one network. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. NCP (June '86)

| **Symantec Utilities for Macintosh**

is a useful sound recording and editing utility. Works with waveforms; able to change sampling rates. Previously known as SoundCap. $199.95. Impulse, 6870 Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Apr '88)

| **Tempo II**

is a powerful keyboard macro program that gives owners of extended keyboards their money's worth. Especially good for building sequential macros. Features include conditional branching and the ability to remember menu selections by number. Version 1.0. $149.95. AfterLogic, 100 bloomers Ln., 180 Walnut St., Suite 425, Boulder, CO 80302. NCP (Dec '88)

| **Top Disk**

is a set of seven self-installing (and self-removing) DAs. Menu Key adds command-key sequences to programs; View allows looking at and moving data in buffered windows. Version 2.0. $399.95. Imagine Software, 19 Bolinas Road, Fairfax, CA 94930. NCP (May '89) ¶ 87 Eddy

| **TMON**

is the debugger for the Mac. This isn't open to question. TMON is simply the best. Comes with the latest version of Darwin Adler's Extended User Area. $149. ICOM Simulations, 626 Wheating Road, Wheeling, IL 60090. NCP

| **Turbo Download**

is a DA designed specifically to increase the speed of Xmodem data transfers from national databases to your Mac. Speed increases range upward from 50 percent to over 300 percent at 2,400 baud. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP

| **TurboDesk Financial Desk Accessory**

brings all the power and functionality of a Hewlett-Packard 120 programmable calculator to your desktop. Can be programmed and all registers can be viewed while calculator is running. $49.95. Positive Works, 142 Cone Road, Ormond Beach, FL 32074. NCP

| **TypeNow**

is a DA that allows the Mac and ImageWriter to function as an electronic typewriter. Type can be placed into blanks in complex forms easily. Typing can be recorded and played back. $39.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (Jan '88)

| **WorksPlus Command**

lets you build and distribute macros for all Works modules. Predefined macros provide for an even tighter integration of the program's word-processing, spreadsheet, and database modules. Requires 1 megabyte or more. $99.95. Linden & Associates, P.O. Box 30038, Oakland, CA 94604. NCP (May '88)

| **Languages**

| **AAIS Prolog**

is a final Prolog with excellent debugging and error handling. Good for serious program development. Documentation is not as good as the program. $150. Advanced AI Systems, P.O. Box 39-036, Mountain View, CA 94039-0360. NCP (Mar '87)

| **Exponents**

lets advanced programmers create customized applications that will accomplish many telecommunication tasks — from automatically picking up E-mail to communicating with databases. Version 1.0. Eddy Machine, 10201 S. Shingle Creek Parkway, Minneapolis, MN 55430. NCP (Jan '88) ¶ 87 Eddy

| **Allegro Common Lisp**

is a development environment with an EMACS-style editor that implements most Common Lisp editing and debugging functions. Version 1.2. Requires a megabyte and a hard drive. $600. Coral Software, P.O. Box 307, Cambridge, MA 02142. NCP (Nov '86) ¶ 88 Eddy

| **ExperLisp**

is a LISP development system. Not fully Common Lisp compatible, but creates good compiled code and stand-alone applications. Requires 1 megabyte or more. $995. ExperTelevision, 559 San Ysidro Road, Santa Barbara, CA 93108. NCP (Aug '87)

| **ExperLISP**

is a useful programming language for high-level programmers. The more you use it, the more you'll figure out about it. $495. Requires 512KE or more. ExperTelevision, 559 San Ysidro Road, Santa Barbara, CA 93108. CP

| **ExperLogo**

is a version of the popular teaching language, Logo. Features three-dimensional

260 Mac User May 1989
Imagine having a 2 pound Mac everywhere you go...

You'd like to do some writing while you're on vacation in Hawaii; take your name, address and phone number file on a business trip; take a spreadsheet to a meeting down the hallway. You'd like to throw your Mac in your briefcase along with everything else.

Well, now you can - almost. MacLite isn't a Mac. It's a completely different kind of computer, with its own built-in word processor, spreadsheet, clock, calendar, diary, alarms, and operating system.

What's special about MacLite is that it can exchange data files with a Mac - and it weighs less than two pounds.

Word processing If your word processor can handle MacWrite or plain text files, you can create files on MacLite and transfer them to your Mac, and vice versa.

Spreadsheets MacLite can transmit and receive files in the WKS format, so you can download Excel files from your Mac, change them on MacLite, and upload them back to your Mac.

Keyboard MacLite has a silent keyboard, so you can use it anywhere - in the classroom, meetings, libraries.

HyperCard stacks MacLite includes HC Organiser - a HyperCard stack for your Mac that keeps track of names, addresses, phone numbers and things to do. Data from HC Organiser stacks can be transferred to and from MacLite.

Memory MacLite can be expanded to over 1.5Mb of memory. There's 32K built in, and three memory modules of up to 512K can be inserted under the keyboard. (A 128K memory module is included with MacLite, for a total of 160K.)

You can even put EPROM cartridges in the memory slots, and burn your own EPROMs.

Batteries MacLite runs on 4 AA disposable batteries for up to 20 hours, and your data is safe for months. You won't even lose data when you change batteries.

Display The display is a supertwist LCD with eight lines by 106 characters. There's even a page map to show you the "shape" of a complete page.

Peripherals MacLite is only 8.25"x11.5"x.875", but it's a complete computer, and can be used with a pocket modem, a serial or parallel printer.

Operating system MacLite's multi-tasking operating system allows you to have several documents open simultaneously, and to switch from one to another with just a few keystrokes. When you return to a document - even after switching off - you'll find it exactly as you left it, without booting, loading, opening, saving, closing or quitting.

MacLite includes Cambridge portable computer, an additional 128K RAM (for total of 160K), serial-to-serial cable, data file transfer software, and HC Organiser. $899 (plus $15 shipping; 5% sales tax in ME)

To order Call 800-366-0088 or 800-888-3723. Take MacLite everywhere you go for the next 21 days. If it doesn't change your life, send it back and owe us nothing. In fact, we'll even let you keep HC Organiser (retail value $99.95) as our way of saying thanks for trying it.


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TML Pascal, $79.95. TML Systems, 4241 Bay Meadows Road, Jacksonville, FL 32217. NCP (Dec '86)

Visual Interactive Programming

is a unique visual programming system for creating simple Macintosh applications. Programs are constructed in a flowchart-type manner. Easy access to most Toolbox routines. $149.95. Mainstay, 5311-B Derry Ave., Agoura Hills, CA 91301. NCP (June '87)

Z basic

is a fast, interactive compiler capable of creating stand-alone applications that take advantage of Mac's unique features and abilities. Includes Edit, RMaker, and MaxIMtalk. Requires 512K or more. $99.95. Zedcor, 4300 E. Speedyway Blvd., Tucson, AZ 85712. NCP (Dec '86)

Education

Alphabet Blocks

is a three-part series of cassette tape/disk modules that explain the intricacies of an on-screen cdf is clear and pleasant. Very intuitive. Requires 1 me./abyte or more. $59.95. Bright Star Technology, 14450 E. 29th Place, Bellevue, WA 98006. NCP (May '88)

American Discovery

is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 386 or more. $98.50. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (May '88)

Business Simulator


KidsTime

is a package of five quality educational programs for children between the ages of 3 and 7. The programs all have adjustable difficulty levels. Some use speech, and one is a nice introduction to musical notes. $49.95. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Oct '86) * 36 Eddy

LearWord 3.0

is a three-part series of cassette tape/disk modules that explain the intricacies of Word 3.0. They do the job but remind you why cutting classes was more fun. $49.95 per module. Personal Training Systems, P.O. Box 54240 San Jose, CA 95154. (Apr '88)

LXR Test

generates tests from a database of questions. Makes it easy to modify and scramble test questions. Flexible output. Requires Mac 512K or higher, two 3.5 drives, or a hard disk drive. Requires RAM and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 386 or more, 1 megabyte, two disk drives (one must be BOOK). Graphics, animation and sound can be integrated. Version 2.0 allows mathematical calculations. Poor documentation. $395, plus $10 shipping. Tele-Robotics International, 8410 Oak Hill Highway, Knoxville, TN 37933. NCP (Oct '87)

MacType

is an interactive United States geography game that teaches states, capitals, and, in a roundabout manner, postal codes. Version 2.0 reviewed. Requires 386 or more. $98.50. Great Wave Software, 5533 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (May '88)

MacType

defines structured typing instruction. Can teach both standard and Dvorak keyboards. Features include certificates for reaching certain levels. Can be used in a multi-student environment. $49.95. Patience Software, 12777 Jones Road, Houston, TX 77070. CP

MasterType

is proof that learning to type can be fun. In this arcade-style action game, words descend from four corners toward the center ship. The user must type them correctly. Features 16 skill levels, tracks errors, recommends lessons, and provides comparison scores. $49.95. Mindscape. P.O. Box 1157, Northbrook, IL 60062. CP

Mavis Beacon Teaches Typing!

has more features than a Selectric. Lots of diagnostics concerning typings. Incomplete documentation. Version 1.1. Requires 1 me./abyte. $49.95. Soft ware Toolworks, 6101 Torre Ave, Torrance, CA 90505. NCP (Mar '88)

On Becoming a Desktop Publisher

is a video training tape based largely on the syndicated television program, "The Computer Show." Good primer on the fundamentals of DTP products. Will eventually become dated. Requires Beta or VHS VCR. $49.95. Ocean Communications, 1514 N. First St., Suite 165, San Jose, CA 95112. (Cpt '89)

Reader Rabbit

receives 4- to 8-year-olds. How to read (in four elegant games that play and build on your progress. Requires 512K or higher, two 3.5 drives, or a hard disk drive. Requires RAM, two disk drives, and MacinTalk. Requires 512K or more. $99.95. The Learning Company, 6495 Kaiser Drive, Fremont, CA 94535. (June '88)

Sensical Physics

is a capable, intelligent, well-designed study aid. Covers Vectors to Thermodynamics to The Nature of Light. Animated experiments let you try out con-
The easiest way to learn Macintosh software is to play it by ear.

The fastest way to learn software is to have an expert sit beside you and talk you through the program, step by step. With your hands on the keyboard, trying each new skill as it’s explained, learning is a snap.

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ccepts. Requires $125 or more. $99.95. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. CP (Jan '88)

*Type! is a typing tutorial that is both practical and flashy. It allows users to interrupt and move easily between functions: however, use of the Return key or function bar are assumed but never explained. Version 1.0. Requires $125. $29.95. Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101. NCP (Nov '88)

*Typing Instructor Encore* recognizes that it's being used on a word processor. While it is easy to control, there are some strange bugs in the program. Requires $125. $49.95. INDIVIDUAL Software, 125 Shoreway Road Suite 300, San Carlos, CA 94070-3104. NCP (Nov '88)

*Typing Tutor IV* consistently tests your use of all keys, including seldom-used ones. It's hard to get a user's attention span, as the testing material is unimaginative. Requires $125. $49.95. Simon & Schuster, One Gulf and Western Plaza, New York, NY 10023. NCP (Nov '88)

Entertainment

The Ancient Art of War gives users a chance to relight some famous campaigns on both strategic and tactical levels. Campaigns can also be designed from scratch. Very playable, albeit $125. $35.95. Macworld, San Rafael, CA 94903-2101. CP (Apr '86)

Apache Strike would have been an excellent arcade game in the late '70s. Now, it's passé. Navigating a helicopter to destroy ever-increasing numbers of enemy aircraft and tanks. Mic I hostile. Requires $125 or more. $49.95. Silicon Bech Software, P.O. Box 261430, San Diego, CA 92126. NCP (July '86)

Balanced Power is the world's first computer peace game. This simulation allows players to become either the President of the United States or General Secretary of the Soviet Union. Exhilarating artificial intelligence routines and general play make this a classic. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Pren)

Battle Stations is a deport of simple game based on the pen-and-paper game of Battleship. Requires strategy on several levels. Makes excellent use of Mac sound and graphics. Fun, casual game, especially when the Mac is one of the players. Requires $125 or more. $39. Timeline, P.O. Box 89, Youngstien, MI 49187. NCP (June '86)

Beyond Dark Castle brings back Prince Duncan in an encore performance to run, jump, and beat his way to victory. But really, just more of the same. Requires $125E. $49.95. Silicon Bech Software, P.O. Box 261430, San Diego, CA 92126. NCP (Aug '86)

Beyond Zork is yet another installment in the famous Zork series of text adventures. Find the fabrid Cotton of Darroor to restore failed magic in this expert-level game. On-screen mapping and the Mac's window environment are utilized. $49.95. Infocom, 1144 65th St., Studio C, Emeryville, CA 94608. CP (Aug '86)

The Chessmaster 2000 is a masterful chess program that will appeal to both novice and master. You can view the board from a 2-D or 3-D perspective and turn the board for a better look. Play is smooth and easy, and the program responds by voice. You may get tired of hearing "Gotcha!" though. $39.95. The Software Toolworks, 125 Cambridge Park Drive, Cambridge, MA 02140. CP (Aug '86)

Chuck Yeager's Advanced Flight Trainer doesn't quite have the right stuff to hold interest for long. Simpistic controls. Lacks features found in versions for other computers. Version 1.0. Requires $125E and two 800K disk drives. $49.95. Electronic Arts, 1802 Gateway Drive, San Mateo, CA 94404. NCP (Nov '84)

Crystal Quest combines all the good elements of nearly every video game ever made. Move a piece around to gobbie up points and crystals. Shoot the nasties and get through the goal before they get you. Excellent sound effects. In color on the Mac II. Requires $125. $39.95. Casady and Greene, P.O. Box 223779, Carmel, CA 93922. NCP (Apr '86) ★ 86 Eddy

Dark Castle is an outstanding achievement in action games, integrating RealSound with superb animation and graphics. You'll need better-than-average hand-eye coordination, but it's well worth the effort. Requires $125 or more. $39.95. Silicon Bech Software, P.O. Box 261430, San Diego, CA 92126. NCP (Apr '87) ★ 87 Eddy

Deja Vu: A Nightmare Comes True is a graphic adventure that breaks new ground. Innovative use of the Mac interface in a training and exciting game. A great introduction to graphic adventure games. $49.95. Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Jan '86) ★ 86 Eddy

Dinner at Eight is a useful recipe-rating system that includes a collection of recipes from a nationwide sampling of restaurants. Users enter number of diners and program scales recipes. $49.95. Rubicon, 2111 Dickinson Drive, Austin, TX 78704. NCP (Jan '86)

Down Hill Racer is an action game with three skier personalities, four courses, and four skill levels. There's something here for everyone, no matter how bad or good. Full digitized sound (very nice!), $49.95. Miles Computing, 7741 Alabama Ave., Caroga Park, CA 91304. CP (Sept '87)

Falcon simulates an F-16 fighter jet with gut-lightening, sweat-making realism. Go against MiGs and dodge SAMs scenarios. Requires 1 megabyte or more. $49.95. Spectrum Holobyte, 2611 Challenger Drive, Alamada, CA 94501. NCP (May '88)

Ferrari Grand Prix is an exciting race-car simulation game. Mastering it takes quite a bit of time and effort. Startup course and four other courses are built into the program. You can also design your own courses and backgrounds. Requires $125 or more. $59.95. Bullseye Software, P.O. Drawer 7900, Incline Village, NV 89450. CP (July '87)

Fool's Errand is an outstanding collection of 60 puzzles woven around a mythical theme of an evil priestess and the search for wisdom. Requires $125 or more. $49.95. Miles Computing, 7741 Alabama Ave., Caroga Park, CA 91304. NCP (July '88)

Gato puts players in command of an American submarine in World War II. This superb simulation game uses all of the Mac's graphic capabilities to really make you feel that "you are there." $49.95. Spectrum Holobyte, 2611 Challenger Drive, Alamada, CA 94501. CP (Nov '85)

Goliath is the Chinese equivalent of chess. Players plonk markers on a grid to gain territory andeut a opponent or the computer. Requires $125 or more. Mac Pac Hostile, MultiFinder friendly. Version 1.0 reviewed. $49.95. Infotainment Software, 1144 65th St., Studio C, Emeryville, CA 94608. NCP (June '86)

Handwriting Analyst produces a personality profile based on answers to questions about one's handwriting. It's simple and the results will amaze and astound. $49.95. TypeRite, 2017 Cedar St. Berkeley, CA 94705. NCP (Apr '88)

Hollywood Hijinx substitutes a modern Hollywood estate for the famous Underground Empire, but otherwise represents a return to Zork game play and feel. There's even a maze to navigate. Simpistic but good. $39.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 01240. CP (June '87)

Kindle is a version of solitaire that uses video-game-like scoring to create a superb, totally addictive game. Simple to play, nearly impossible to stop playing. Version 1.3. Shareware: $10. Unison Software, 413 Clyde Ave., Mountain View, CA 94043. NCP (Dec '87)

Leather Goddesses of Phobos is another in the long line of witty and entertaining Infocom text adventures. This one lets you choose your own action and dialog with 12-D, comic and a few 'n sniff card. It has three levels of play: tame, suggestive, and lewd. $19.95. Infocom, 125 Cambridge Park Drive, Cambridge, MA 02140. NCP (Feb '87)

Lone Racer puts you in the role of a bonewoiler ready to save a moon colony from invasion. Blast the enemy while you travel from town to town trading products for the supplies you need for your mission. Version 1.0. Requires $125E. $39.95. Practical Computer Applications, 1303 Jefferson Highway, Champlin, MN 55316. CP (Jan '89)

MacGolf is a dynamic simulation of real golf. Players have a choice of courses and difficulty levels. Superb playability makes this a must for all golfers and gamers. Requires $125 or more. $59.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (May '86)

Mac Pro Football is a terrific sports simulation that gives you the chance to pit any combination of 38 Super Bowl teams against each other and direct team play. It comes with excellent, detailed (and necessary) documentation. Play selection can generate 'n sniff card. $39.95. Volecule, 11216 S. 84th St., Seattle, WA 98177. NCP (May '87)

Mac Racquetball uses digitized video and sound of professional players for a realistic simulation. Has lots of control settings and can be played with someone else over a modem or between wired Macs. Turn off hard disks before playing. $29.95. Practical Computer Applications, 1305 Jefferson Highway, Champlin, MN 55316. CP (Oct '87)

MSFL: Pro League Football is a professional football league simulation that encourages teams to go easy on people, not the machine. Fast with lots of stats. Quirky MS/BASIC behavior. Sporty manual. No LaserWriter support. Requires 1 megabyte or more. $49.95. TheSports, P.O. Box 12793, Chattanooga, TN 37414. NCP (Apr '88)

NewGammon is animated backgammon that will challenge even good players. Features include variable skill levels and strategies and options to play the Mac or watch
MINIFINDERS

the Mac play itself. An arcade-like high-speed mode is included. $39.95.

Newport, P.O. Box 3046, Newport Beach, CA 92663. CP

Ogre

is a strategy tank game played on a hexagon grid. The ogre is an intelligent
cybertank out to smash your command post. Customizable your defense. Excep-
tionally good Mac graphics. Has two-player option. $30. Origin Systems, 340
Harvey Road, Manchester, NH 03103. CP (Nov '97)

Pawl vs. Rommel

is a traditional-style strategic wargame. It covers events in Normandy in 1944.
While complex, it's well designed and very playable. $39.95. Electronic Arts,
1820 Gateway Drive, San Mateo, CA 94404. CP (Apr '97)

Puppy Love

is a combined game and teaching tool. As you teach your puppy tricks and
routines, you learn the basics of programming logic. Great with wandering
and collecting gold. Nice work if you can get it. $39.95. Electronic Arts,
1820 Gateway Drive, San Mateo, CA 94404. CP (Mar '97)

Seven Cities of Gold

is an educational program masquerading as an adventure game and is prac
tically unique in being equally good in both respects. You are to land (not the
easiest part) in the New World and attempt to placate the natives, send a few
missions, and collect gold. Nice work if you can get it. $39.95. Electronic Arts,
1820 Gateway Drive, San Mateo, CA 94404. CP (Mar '97)

Shadowgate

is a copy-based grafic adventure. You, as the seed of prophecy, must save
the world from the warlocks. Far surpasses all others with great animated
graphics, sound, and adventure. $49.95. Mindscape, P.O. Box 1167, North-
brook, IL 60065. CP (Dec '87)

Shanghai

challenges players to clear a board of all 14 tiles by matching pairs of man-
jianging tiles and removing them. Terrific strategic options plus the ability
to randomly generate game boards keeps this one fresh. $44.95. Activision,
3885 Bohannon Drive, Menlo Park, CA 94025. CP (Nov '88) + $8 Eddy

Snake-Bar

lets you guide a snake (or train or semi) through a maze, picking up objects
that feed and make your snake grow. Options include changing languages,
editing the maze, and playing an X-rated game. Shareware. $15. Georges
Malmoun, 37 Bis rue des Abesses, Montmartre, 75018 Paris. France. NCP
(Mar '97)

Saltaire Royale

is a collection of eight solitary card games. The Tour mode cycles through
each game. Tournament deals the same hand for several players. $34.95.
Spectrum Holobyte, 2061 Challenger Drive, Alameda CA 94501. CP (May '96)

Space Quest

is a 3-D animated adventure in which you play a janitor in a icy situa-
tion. An arcade-like high-speed mode is included. $39.95. Mindscape, P.O.
Box 1167, Northbrook, IL 60065. CP (Dec '87)

Star Fleet I: The War Begins!

is a space opera of the Star Trek variety. Fife through the ranks from ensign
to admiral in this serialized adventure. Requires $12K or more. $85. Interpole,
P.O. Box 57825, Webster, TX 77498. NCP (Mar '98)

Strategic Conquest Plus

challenges you to discover an unexplored world and conquer it by manufac-
turing and deploying armies, ships, and planes. A two-disc game that doesn't
support an external drive. Requires $12K or more. $59.95. IBM Software, 1111
Triton Drive, Foster City, CA 94404. CP (Feb '98)

Trust & Betrayal: The Legacy of Sibov

requires negotiating with six artificial characters in a strength of power for-
not surprising considering that it comes from the maker of Balance of Power.
Uses hieroglyphics to communicate in a fantasy world. Requires $12K or more.
Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Mar '88)

Uninvited

is an icon-based adventure game set in an extremely haunted mansion. Graphic
interface makes it easy to play. Animation and sound add to the thrill. $49.95.
Mindscape, P.O. Box 1167, Northbrook, IL 60065. CP (Sept '96) + $8 Eddy

Winter Games

lets up to eight players compete against each other in Olympic events includ-
ing figure skating, bob sledding, biathlon, and ski-jumping. Excellent anima-
tion, good graphics, good theme music. $39.95. Lyle's, P.O. Box 8020, Red-
wood City, CA 94063. CP (Mar '88)

Music

Alchemy

leads and edits digitally sampled sounds from most commercial samplers.

Works with 512K, but it eats up memory quickly. Requires MIDI or RS-422
interface, and sampler. $495. Blank Software, 1477 Felton St., San Francisco,
CA 94110. CP (Oct '88) + $8 Eddy

Apple MIDI Interface

is a simple Musical Instrument Digital Interface with a 1-megahertz clock rate.
Has one input and one output. Works with all Macc, adapter required for
512K and 128K. $69. Apple Computer, 20525 Marnani Av., Cupertino, CA
95014. (June '88)

ConcertWare+

is an enhanced version of ConcertWare. Has different instruments and com-
positions on a MIDI keyboard. Easy to use if you read music. Handles eight tracks of
eight voices each. Requires 128K. Version 4.0. $149.55. Great Wave Software,
5333 Scotts Valley Drive, Scotts Valley, CA 95066. NCP (Dec '87) + $8 Eddy

Cue: The Film Music System

is a powerful and versatile assistant for scoring films. Automates spotting
and logging cue points and searching for matching tempos. Also performs
career minor jobs, such as generating a performing rights cue sheet. Version 2.0
reviewed. Requires 512KX. $59. Opcode Systems, 1204 Hamilton Court, Menlo
Park, CA 94025, CP (Feb '89)

Deluxe Music Construction Set

lets you enter up to 48 voices on eight staves and play the music through the
Mac's internal speaker and/or via MIDI. Requires 512K or more. Mac II and
MultiFinder hostile. Version 2.0 reviewed. $39.95. Electronic Arts, 1820 Gate-
way Drive, San Mateo, CA 94404. CP (June '88)

Graphic Notes Music Publisher

is a very good pop layout program for music notation, with MIDI support.
Comes with special musical notation keypad. Version 2.0 reviewed. Requires
1 megabyte and second disk drive. $555 (including Presto keypad). Graphic
Notes, Inc., 200 Seventh Ave., San Carlos, CA 94070. CP (Apr '98)

Jam Factory

is a program for performing complex manipulations on MIDI data in real time.
Unique, entertaining, and very powerful, but requires lots of patience and
practice. Requires 512K or more. MIDI interface, and MIDI synthesizer, $189.
Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP
(Oct '87)

Jam Session

is a music program for those who think MIDI refers to the length of skirts.
Without any skill, you can "jam" with rock, jazz, rap, or country tunes. A sort of
"Sing Along With Mitch" for the computer set. Requires 128K or more. $99.95.
Brodbender, 17 Paul Drive, San Rafael, CA 94903-2101. CP (July '88)

Listen

is an educational tool for ear training. It has both a piano keyboard and a guitar
fretboard for the student to nod notes, and it offers a wide range of exercises.
$99. Renotate, P.O. Box 996, Menlo Park, CA 94026. (Jan '87)

Music

in a music composition and creation program that works with MIDI data in real

time. Unique, entertaining, and powerful, but requires lots of patience and
practice. Requires 512K or more. MIDI interface, and MIDI synthesizer. $119.
Intelligent Computer Music Systems, P.O. Box 8748, Albany, NY 12208. CP
(Oct '87)

Master Tracks Pro

is a full-featured second-generation MIDI sequencer that adheres to the Mac
Interface very well. It's the first program to have graphic controller editing. No
longer needs patch chasing for professional use. Version 3.3 reviewed. Requi-
s 512K or higher. $395. Passport Designs, 825iramontes St. #103, Dalt Moon
Bay, CA 94019. CP (Dec '87)

MIDIBasic

is a simple but highly useful routine for writing MIDI software. Good stuff
Sketchy documentation. Works with both Microsoft and IBM R6, Requires 512K
more plus Basic. $49.95. Alien Systems, S' Kings Highway, Streteport,
LA 71117. MCP (Aug '87)

Music Mouse

is a music program in a genre all its own. Called an "intelligent instrument,"
Music Mouse gives you instant musical feedback as you move the mouse and
highlight a note. This is the first program to have graphic controller editing. No
longer needs patch chasing for professional use. Version 3.3 reviewed. Requi-
s 512K or higher. $39.95. Passport Designs, 825iramontes St. #103, Dalt Moon
Bay, CA 94019. CP (Dec '87)

Music

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s 512K or higher. $39.95. Passport Designs, 825iramontes St. #103, Dalt Moon
Bay, CA 94019. CP (Dec '87)

Practica Flautica

uses an interactive game and practice approach to teach music theory and ear
training. Excellent training tool for the serious music student, it is also fun for
anyone who wants to develop a trained ear for intervals, chords, and melo-

M A Y 1 9 8 9 M A C U S E R 265
**ACCESSORIES**

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**FEDERAL EXPRESS**

Free Air Express Shipping
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We Pay The Air Difference

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**FREE AIR EXPRESS SHIPPING**

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- Business Sense $282
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Please circle 32 on reader service card.
MINIFINDERS

Professional Composer
produces performance-quality sheet music using Apple's Sonata font. Scores can be created from scratch or imported from Performer (and can be exported to Performer's "Virtual Playback"). Requires 1 megabyte or more. $395. Mark of the Unicorn, 222 Third St., Cambridge, MA 02142. CP (Jan '88)

Softsynth
creates sounds for additive synthesis samplers. Downloading from Mac to sampler is time consuming. Requires 512k, sampler, MIDI interface. $295. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

Sound Designer
sets the standard for editing sounds on lower-cost cassettes, but it still locks real-time high-fidelity playback. Requires 512k, sampler, MIDI interface. Emz, E II, 2000-2002. OSS-1, $995. All other, $395. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

Studio Session
consists of two programs, an Editor and a Player, that produce music with six voices of digitalized sound. Excellent original scores and manual make this a good buy. $995. Baja Productions, P.O. Box 6999, Sunnyvale, CA 94089. NCP (Aug '87) * 36 Edy

TurboSyn

UpBeat
forms the Macintosh into a front panel for a highly complex and versatile drum machine. Input patterns with mouse, MIDI keyboard, or drum machine. Required. 512k. $150. Intelligent Music, P.O. Box 7478, Albany, NY 12203. CP (May '88)

Hardware & Accessories

AppleCo SC
reads CD-ROM optical discs that contain up to 656 megabytes of data. Also plays audio compact discs. Reads High Sierra format, an industry standard for CD-ROM. Requires SCSI port. $1,250. Apple Computer, 20525 Mariani Ave.. Cupertino, CA 95014. (Dec '88)

Apple Scanner
is not a state of the art, but it is adequate for scan neophytes. The 4-bit/16 levels per pixel has graphics IC with Apple's SuperScan software, sharp, high contrast. $250. Bill Atkinson. Requires System 6.0, hard disk for full-page work; SCSII connection cables. $1,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Nov '87)

AST TurboScan
is a 300-dpi scanner with sophisticated graphics software. Scans at resolutions from 72 to 320 dpi. Super Scan software offers halmtones, line art, and more. Makes integration of visual and printed media easy. "Mutilary processing" lets you scan images too large to fit in RAM. $1,899. Requires 512k or more. SuperScan software included. AST Research, 2121 Altson Ave., Irvine, CA 92714. NCP (Nov '87)

Classic Professional Graphics Display
is a low-cost color monitor for the Mac II. Good value, but has an IBM look about it. Green tint is annoying. Requires Apple video card. $549. Classic Professional Graphics Display, 415 Artesia Blvd., Garden Grove, CA 92641. (June '88)

DATAPAK
is a 45megabyte removable Winchester hard disk. Great for backing up your main hard disk or transporting large amounts of data between office and home. Requires: Sait controller and System 4.1/5.5 or later. Drive. $1,799.55; cartridge. $145.5 each or tri-pack for $419.55. MASS, MICRO Systems, Inc., 590 Old Hwy. Re, Sunnyvale, CA 94086-3258. (Jan '89)

DaynaFile
hooks up to a SCSI drive to read MS-DOS disks in the Mac environment. Use Mac applications to manipulate data created with an IBM PC. Comes in both 5.25-inch and 3.5-inch formats, $695 for single floppy. Dayna Communications, 30 1/2 S. St, Fifth Floor, Salt Lake City, UT 84144. (Jan '89) * 99 Edy

DEST PC Scan 2000
is an 8-bit scanner that saves images in up to 256 levels of gray. Can be configured for IBM PCs. One megabyte, scanner, $1,995. Pub Pac software, $595. OCR text processor card, $995. DST Corporation, 1201 Cadillac Court, Milpitas, CA 95035. NCP (Dec '88)

FaxKit
is an early entrant in the fax modem race. Adequate, but slower than most fax machines, and using it as a normal modem requires changing plugs. Requires 1 megabyte of memory, and a hard disk is strongly recommended. $695. STF Technologies, P.O. Box 247, Hesperia, CA 92347. NCP (Feb '89)

Felix
is an optical-tracking graphics tablet that replaces a mouse. Precision mode gives pixel-by-pixel control. Doesn't collect dirt like a mouse does. The 6-inch-square device is designed primarily for right-handed people. Works with Mac Plus. $149. Alta, 1200 Skyline Drive, Laramine, WY 82070. (Sept '88)

Grapper LO
hooks Mac up to parallel laser and 24-pen letter-quality printers. A cable, direct software, and special fonts combine to make dozens of once-unfriendly printers now compatible with the Mac. Requires 1 megabyte and a parallel printer. $149. Orange Micro, 1490 N. Lakeview Ave., Anaheim, CA 92807. (Nov '87)

Hewlett-Packard ColorPro Graphics Pletter
is an eight-pen desktop plotter that requires third-party software to drive. Fonts are mimicked to an optional Graphics Enhancement Cartridge that requires some BASIC programming. $1,295. Hewlett-Packard, 16389 W. Bernardo Drive, San Diego, CA 92127. (Feb '88)

HyperWriter INTX
provides an interface between a phone and your Mac so you can dial a number using one of the Rodol-type programs, like SideKick, Focal Point, or QuickDex. Hook's up between the Mac's sound port and a telephone handset. Requires 128K. Minifinder, friendly, $39.95. Dataset International, 7651 Haskell Ave., Van Nuys, CA 91405. (Sept '88)

ImageMaker
creates sounds for additive synthesis samplers. Downloading from Mac to sampler is time consuming. Requires 512k, sampler, MIDI interface. Emz, E II, 2000-2002. OSS-1, $995. All other, $395. Digidesign, 1360 Willow Road, Suite 101, Menlo Park, CA 94025. CP (Oct '88)

ImageWriter LO
outputs letter-quality text and graphics at 216 dpi. To do so, it reduces 72-dpi screen fonts to a third of their actual size. Takes a lot of memory. Printer Driver version 2.0. Requires 1 megabyte and large font sizes. $1,400. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (Jan '89)

iS/ONE tablet
with Penworks software lets you use a corded or cordless pen or mouse and a high-res tablet for precise graphics input. Minor bugs with some applications and DOS. Keystroke macros can be launched from the tablet. Minimal documentation. Requires 1 megabyte or more. $955 to $1,154. Kuta, 4510 S. 35th St. Phoenix, AZ 85040. (Jan '88)

LaserWriter INT
is Apple's mid-priced PostScript laser printer. It's faster than the LaserWriter Plus with blacker blacks. Gray scale is less even than that of Plus. Requires 512k or more. $4,995. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

LaserWriter INTX
is Apple's post-of-the-line PostScript laser printer. 68020 chip makes it very speedy; expandable to 12 megabytes; SCSI hard disk can be attached for fonts. Requires 512k or more. $6,599. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

LaserWriter ITC
is Apple's low-end QuickDraw laser printer. Can be upgraded to INT or INTX; reasonably fast. Requires 1 megabyte or more. $2,799. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014. (May '88)

Mac II Workstation
is the best, most versatile computer workstation around. This freewheeling or wall-mountable box from Apple includes a highquality Intel processor. The Mac II is a moveable, damped arm for your monitor. The unit comes in a variety of configurations. $540. Ergotron, 3450 Yankee Drive, Suite 100, Eagan, MN 55121. (Mar '89)

Mac-101
is a keyboard alternative that has a good feel to it. Has a keypad, 15 function keys, and more. The 101-Keys DA lets you define macros. Also comes in an ADB version for the SE and II. Requires 512k or more. $189. Datalab Mac II interface. GW Instruments, 7650 Haskill Ave., Van Nuys, CA 91406. Software NCP (Apr '88)

Mac-105 Keyboard
is a good alternative to Apple's Extended Keyboard, with a larger Return key, higher and more sculpted key tops, and a lower overall weight. Requires Mac I or Mac II, $179, with QuickKeys, $199. Cutting Edge, P.O. Box 1290, Evanston, WY 82930. (Feb '89)

MacAIDOS II
is a hardware and software interface for laboratory instruments. Standard configuration samples up to 142 kilohertz. Documentation is sketchy. $1,290 for Macintosh II--ready data-acquisition card and $900 for MacAIDOS II software interface. GW Instruments, 264 Msgr. O'Brien Highway, Cambridge, MA 02141. (July '88)

Macbottom 45 SCSI and Internal Modem
has a modem that fits into the top half of the 45-megabyte SCSI hard-drive case. Comes with HFS Backup and Eurolux. $1,795. Personal Computer Peripheral Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. (Oct '87)

MacBottom HD-21
is a very low (about 2 inches high), external 20-megabyte hard drive. Fits under the Mac. Very quiet, very reliable. Good utility software, including HFS Backup and SCSI per, $125 or more. New ROM. $1,195. Personal Computer Peripheral Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. (Feb '87) * 99 Edy

MacBottom HD-70 Hard Disk
is an excellent drive that comes with some very good software, including HFS...
These untouched print samples show the superior print quality of QMS-PS 810 over printers using first-generation print engines.

The QMS-PS 810 can compose and print the most complex pages in record times, with richer, more saturated blacks than ever before. All with the desktop publishing power of Adobe PostScript*, and the superior print know-how of QMS, an industry leader.

**Under the hood** QMS ASAP™ (Advanced System Architecture for PostScript) is proprietary technology that helps eliminate the hardware bottlenecks that hinder other PostScript printers. As a result, QMS-PS 810 boasts processing speeds remarkably faster than other PostScript printers in its class. And faster output means greater productivity. In addition, the QMS-PS 810 laser printer's Canon* SX* print engine covers solid areas and prints fine detail better than previous-generation engines.

**Fast start, strong finish** You can adorn your documents with one or all of the 35 Adobe typefaces. Thanks to PostScript, there’s an infinite number of font variations available. You can also make type as large or as small as you want. And put it anywhere on the page. In fact, with PostScript you enjoy total control over the design of your page. It gives you the complete desktop publishing power to do things that would otherwise be virtually impossible. So you get high-quality output exactly how you want it.

Along with PostScript, the HP LaserJet+, Diablo* 630 and HP-GL™ printer emulations are added for your non-PostScript software.

The QMS-PS 810 laser printer is easy to use, maintain, and comes with a one-year warranty. It’s available from Laser Connection dealers. Laser Connection is a sales and marketing subsidiary of QMS. For the dealer nearest you call 1-800-523-2696.
**MINIFINDERS**

**Backup.** Requires SCSI port. $1,995; 1,200-baud Hayes-compatible modem. $200 extra. Personal Computer Peripherals Corp. (PCPC), 4710 Eisenhower Blvd., Building A, Tampa, FL 33634. NCP (Apr 89)

**Mac Ethiopia 60B Hard Disk**

puts a Seagate drive in a platinum casing. At $14 per megabyte, it's a good consumer value. Also comes in 20-, 40- and 80-megabyte models. Requires SCSI port. $399. Cobe Technology, 8850 Vineland Ave., Building M, North Hollywood, CA 91605. (Nov '88)

**MacLarger**

is a 12-inch external monitor for 512K machines on up to the SE. Displays the same number of pixels as an internal monitor, only one-third larger. Bigger and brighter, but less crisp than the Mac's own screen. $449. Power R. 1606 Dexter Ave. N., Seattle, WA 98109. (Apr '88)

**MacReport**

transforms the Macintosh into a digital oscilloscope, waveform generator, and chart recorder. Psc/Manager is software expandable by means of external routines in Turbo Pascal and other languages. Version 1.03 reviewed. $995. Biopac Systems, 42 Aéro Camino, Goleta, CA 93117. NCP (July '88)

**MacRecorder**

is an easy-to-use sound digitizer. Includes software to turn sounds into HyperCard files, mix sounds, add special effects, and convert sound formats. Stereo recording possible on the Mac II. Requires $1,512 or more. $199. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. NCP (June '88)

**MacPlus 2**

is a 2-megabyte memory upgrade for the Mac Plus. The board has 256 kilobits. User installable. Not compatible with existing big screens or internal hard drives. Can be expanded further. $729. Drive Computer, 1200 N. 23rd St., Willingtton, NC 27605. (June '87)

**MacTable**

is an elegant Danish worktable that holds a Mac and printer with room to spare. The 30-inch deep by 60-inch wide table is made of particleboard and must be assembled. Cabinet is optional. Table, $269; cabinet, $139. ScanCo-Furn, P.O. Box 3217, Redmond, WA 98073-3217. (Mar '88)

**MacTilt/MacTilt SE**

is a Mac (and external drive) holder that allows a full range of swiveling and tilting. Very strong, this well-made unit is also easy to use. $99.59. Ergotron, P.O. Box 17013, Minneapolis, MN 55418.

**Magic Digitizer**

is a hardware digitizer that works with video cameras. With LaserMagic software, you can generate 300-dpi images (in PostScript). Requires 512K or more. Digitizer with Magic software. $395. laserMagic software. $49.50. New Image Technology, 10300 Greenbelt Road, Seabrook, MD 20706. NCP (May '87)

**Microtek MSF-300C**

is a 300-dpi flatbed scanner. Really fast when used with optional MS-SCSIC adapter Comes with Versa-Scan Plus software (to scan) and manipulation routines in Turbo Pascal and other languages. Version 1.24 reviewed. $465. Compatible Systems, P.O. Drawer 17220, Boulder, CO 80308. (Oct '88)

**Mighty Pixel Modem**

is a 500/1,200-baud portable modem about the size of a 3-x-5-inch index card. Comes bundled with MacTerm 2.0, Borland's telecommunications DA. Manual is confusing, and technical support is minimal. $29.59. Midget, 865 Tahoe Blvd., Incline Village, NV 89450-6862. (Nov '87)

**NetModem**

is a 1200-baud modem that can be accessed by all users on an AppleTalk network. The modem's display lights and the dial tone are simulated on-screen. Requires Mac II or more. $599. Silver, Suite 1200, 222 Third St., Cambridge, MA 02142-9919. (Feb '88)

**One Plus One**

is a user-installable memory upgrade for a Mac Plus. Adds 1 megabyte up to the 1 megabyte already there. Simple one-evening project. Includes MacBreeze, an excellent small fan. Requires Mac Plus. $375. Levco, 6160 Lusk Blvd., San Diego, CA 92121. (Aug '87)

**Personal LaserPrinter**

is a non-PostScript laser printer at a great price. Clumsy workarounds required in many applications. Printing can be slow. Requires Mac II or more. $1,995. Fontus Plus, $299. General Computer, 580 Winter St., Waltham, MA 02154. (Apr '88)

**Personal Writer WPV 5**

is a tablet-based handwriting-recognition system that also allows graphics and macros. Excellent handwriting recognition is too high for general word-processing. Requires 1 megabyte or more. $995. Personal Writer, 1801 Avenue of the Stars, Los Angeles, CA 90067. Software NCP ('Mar '88)

**PhoneNET**

is an AppleTalk-compatible network. Network can be up to 3,000 feet in length. In-place, unstrung phone cabling can be used for network and can be combined with AppleTalk on the same network. $259.50 per node. Farallon Computing, 2150 Kittredge St., Berkeley, CA 94704. (Dec '89) ★ 87 Eddy

**ProPoint**

replaces the mouse with an ADB trackball. Works better on the SE than it does on the Mac II. Lefties will find the button positions uncomfortable. Requires SE or Mac II. $139.95. Atanas, 48413 Millmont Drive, Fremont, CA 94538. (Oct '89)

**QMS Colorprint 100**

is the first color PostScript printer that uses a four-color thermal wax-transfer technology. Works on AppleTalk. Excellent typographic capability. Currently supports only a hardware digitizer 1 megabyte at $2,199.50, QMS, 1 Magnam Bus, Mobile, AL 36618 (Oct '88)

**Quickstore**


**Radius Accelerator 25**

can make your Mac II run 50 percent faster than a Mac II. The add-in accelerator board has a Motorola 68200 CPU that runs at 25 megahertz, and an optional 25-megahertz 68881 math coprocessor. $1,695; $2,195 with optional 25-megahertz 68891. Radius, 1710 Fortune Drive, San Jose, CA 95011. (Oct '88)

**SpeedCard**

is an accelerator board for the Macintosh SE that reduces the speed of most applications. The board uses the 68000 chip found in the SE and an optional floating-point 68000 chip for number crunching. Requires Macintosh SE. $399; $599 with coprocessor. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (Nov '89)

**SuperRam 2**

and SuperRam 4 are 2- and 4-megabyte RAM upgrades. Should be dealer installed but can be carefully user installed. SuperRam 2 includes RAM adapter module, 1-megabyte memory module, modified power cable, jumper, and fan. SuperRam 4 adds power-supply booster and two 1-megabyte memory modules. Not compatible with most big screens. $499. SuperMac Technology, 485 Potrero Ave., Sunnyvale, CA 94086. (Oct '87)

**Tektronix 4693D Color Printer**

is a 300-dpi bitmap color printer. Colors look smooth and rich. Uses bit-mapped screen fonts, most type has noticeable jaggies. Requires Mac II with color monitor. Recommended 8-megabyte configuration, $1,490. Tektronix, P.O. Box 300, Beaverton, OR 97077. (Oct '88)

**ThunderScan**

replaces the ribbon cartridge in an ImageWriter, which is required to turn laser scans at all that can be run through the ImageWriter, producing high-quality digitized images. The images can be manipulated as they are created or afterward. $249. ThunderScan, 21 Crinrda Way, Orinda, CA 94563. ★ 86 Eddie

**TimeWand**

is a bar-code reader with a built-in time-date stamping clock. Can be used with TimeWand Manager software, a database that's extensive though difficult to use. Poor documentation but good support. Requires 1 megabyte and hard disk. $995. TimeWand 2K version, $198. TimeWand Manager, $489. Videx, 1105 N.E. Circle Blvd., Corvallis, OR 97330-4285. (Dec '87)

**Turbo Mouse ADD**

makes an excellent mouse replacement, even if you're not a trackball fan! If you're seeking absolute control, you can buy the optional cdev that enables you to specify custom tracking and double-click speeds. $169.50; cdev $15 direct order only. Kensington 6-megabyte configuration, $1,295. TechCon, P.O. Box 500, Beaverton, OR 97077. (Oct '89)

**TV Producer**

is an add-in card that overlays Mac graphics and text onto a video signal. Software is clumsy to use. Requires Mac II. Apple video card, and video source. $299. Computer Friends, 14250 N.W. Science Park Drive. Portland, OR 97229. Software NCP (May '88)

**V-series Smartmodem 9600**

is the fastest modem you can get for the Mac. To achieve high speeds, you'll need a special cable and software that supports the format. Requires $1,252. Mac-to-modem cable, and connection software. $1,295. Hayes Microcomputer Products, 705 Westech Drive, Norcross, GA 30092. (Jan '89)

**WriteMove**

is the smallest, fastest Mac printer around. It's an ink-jet unit that can produce resolutions up to 192 dpi. It can run off rechargeable batteries and addresses weighs just 3 pounds. Comes with a good selection of Bistrum fonts. Printing quality varies widely depending on the paper and ink used. Printer Driver version 1.0, $1,295 and hard disk. $399. QMS Technologies, 580 Winter St., Cambridge, MA 02154. (Apr '89)
MacinStor gives you a good deal to chew on.

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For many of you, mail order is your primary means of purchasing Macintosh products and services. That's why MacUser has put together the following special section. It's what you've been demanding — a convenient place to quickly find the products you need from the vendors you want to buy from. MacUser's Direct Line to products is just one more reason to turn to MacUser for relevant information aimed at the serious user.
**WARNING:** Beware of money-back offers on hardware! MacLand sells only NEW, NEVER USED merchandise. We will not send you re-packaged, slightly-used hard disks.

### Spring Sale!

#### Externals

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### Removables

- **Removable Cartridges**
  - (Will fit Any 44 Removable Drive) $119
  - Qume Crystal Print Publisher $3,299
  - Radius $739
  - Full Page Display + SE $1,299
  - Two Page Display SE II $1,849

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ACCOUNTING

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BUSINESS

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COMMUNICATIONS & NETWORKING

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<td>Quick Mail (10 Users)</td>
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<td>Red Ryder</td>
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<td>Timbuktu</td>
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<td>TOPS (Mac)</td>
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<td>Liaison</td>
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<td>VersaTerm Pro</td>
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DATABASES

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<td>Filemaker II</td>
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<td>Foxbase</td>
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<td>McMax</td>
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<td>Record Holder Plus</td>
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<td>Reflex Plus</td>
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DESK ACCESSORIES & UTILITIES

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<td>AffiniFile</td>
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<td>AutoSave DA</td>
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<td>Copy II Mac</td>
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<td>Disk Express</td>
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<td>Disk Fits</td>
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<td>Disk Tools Plus</td>
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<td>Expressionist 2.0</td>
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<td>Gopher</td>
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<td>HyperDA</td>
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<td>Call</td>
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<td>LaserTalk</td>
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<td>Menu Fonts</td>
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<td>PC Tools Mac</td>
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<td>Suitcase II</td>
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<td>SUM</td>
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<td>Super Laser Spool</td>
<td>199</td>
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<tr>
<td>Virex</td>
<td>45</td>
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</tbody>
</table>
When you're sure of the software you want, buy it with our promise... if there's something you don't like, we'll take it back.
We'll treat it as a trial purchase, and refund the difference between what you paid to buy the software, and what it would cost if you had taken it on trial (10-day minimum and we provide six free days for shipping). When you're not sure, ask about trial purchase. You can look at one or several competing programs, and save with our Try-Pack specials. Either way, we'll help you get Software That Fits.
Storage Solutions

20MB Flexible Disk Drive

Our fast and secure 20MB SCSI Flexible Disk Drive runs five times the speed of a floppy disk, and can be used for either primary or archive storage.

$795

- High capacity cartridges
  $49 each, or four at $179!
- Ability to store 20MB of data,
  the equivalent of 26 double sided diskettes.
- With removable media that can be locked away when required.
- Lifetime warranty on cartridges and a one year warranty on
  Flexible Disk Drive system.

New

Teac Tape Drives

60MB $749
150MB $899

Low profile chassis fits neatly under the Macintosh Plus and SE. The drive uses high density data cassettes to backup your drive fast.

Shamrock Hard Disk Drives

Capacity Internal External
20MB $379 $499
30MB $399 $569
47MB $499 $669
62MB $529 $699
80MB $699 $879

Low profile chassis is only 2.5” high. It has a built in power supply, a
cooling fan, and a rotary SCSI address switch.
Internal drives include mounting brackets and cables. All Shamrock
drives are Preformatted and Tested, and all products carry a one
year warranty.

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In Calif. (805) 373-7847
Fax (805) 379-9345
- No extra for Visa/Mastercard (AMEX add 3%).
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- Federal Express shipping just $1.50 per pound.
- 30 Day Money Back Guarantee.
- Corporate & Institutional PO’s accepted.

Please circle 9 on reader service card.
## SOFTWARE

<table>
<thead>
<tr>
<th>Category</th>
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<tr>
<td>3G GRAPHICS</td>
<td>Images with Impact Graphics (32)</td>
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<td>4ABATO Networks</td>
<td>Mac 3200, Mac 4000, Mac 6000, Mac 8000, Mac 12000, Mac 12800</td>
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<tr>
<td>Adobe Systems</td>
<td>Illustrator '88, Photoshop '89, FreeHand '89, Pagemaker '89, PageMaker '90,</td>
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<td>AEC Management System</td>
<td>AutoCAD 2D, AutoCAD 3D, AutoCAD LT, AutoCAD LT 2000, AutoCAD LT 2004</td>
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<tr>
<td>AEGIS Development</td>
<td>Wind Words, Showcase FX</td>
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<tr>
<td>Aldus</td>
<td>PageMaker, FreeHand 2.0, Persuasion</td>
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<td>ALSOFT</td>
<td>Font/DA Juggler, PageMaker</td>
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<tr>
<td>ASD Software</td>
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<tr>
<td>Bedford Software</td>
<td>Simply Accounting, Shopping Cart</td>
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<td>BERKELEY SYSTEMS</td>
<td>MacWrite, MacWrite II, MacWrite III, MacWrite IV, MacWrite V</td>
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<td>Brodubend</td>
<td>Drawing Table, DTP Advisor, Print Shop</td>
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<td>Breakthrough ProD.</td>
<td>Market Master R/A, Market Master R/A, Market Master R/A, Market Master R/A,</td>
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<td>CENTRON SOFTWARE</td>
<td>Casino Games, Casino Master, Casino Master, Casino Master, Casino Master</td>
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<td>CE Software</td>
<td>QuickKeys, Calendar, DiskWork, DiskWork, DiskWork, DiskWork</td>
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<td>DATA VIZ</td>
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<td>DBFast</td>
<td>eBusMac, eBusMac, eBusMac, eBusMac, eBusMac</td>
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<td>Deneba</td>
<td>Canvas 2.0, Canvas 2.0, Canvas 2.0, Canvas 2.0, Canvas 2.0</td>
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<td>DIB SCIENCE</td>
<td>CES 500, CES 500, CES 500, CES 500, CES 500, CES 500, CES 500, CES 500, CES 500</td>
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<td>DMA</td>
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<td>FIFTH GENERATION</td>
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## HARDWARE

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<td>ABATON</td>
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<td>Aldus</td>
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<td>DUB CLICK SOFTWARE</td>
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## POLICIES

- Corporate Accounts Welcome. Please send Purchase Orders (PO) via FAX to (818) 501-0861 for R.A. number before return. All prices subject to change without notice.
- Returns: 100% money back if product is returned in original condition within 14 days of receipt. Sale items, clearance items, and special orders are non-returnable. Contact us for special order return policies.
- Dr. Mac welcomes corporate, educational, and international accounts. Please circle 166 on reader service card.
**Rent Before you Buy? Of Course!**

We'll match any software rental price in this issue. If you don't see what you want - call us!

<table>
<thead>
<tr>
<th>Software</th>
<th>rent</th>
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<td>Accounting Packages</td>
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<td>Battery Pak</td>
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<td>Bulk Mailer +</td>
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<td>Click Art, Effects, Letters...</td>
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<td>Coach Professional</td>
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<td>Accelerator Boards</td>
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<td>Audio Digitizer</td>
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<td>Disk Files (plastic or Teak)</td>
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<td>Write Now</td>
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<td>Work</td>
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<td>Carrying Cases for Macs</td>
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<td>Box/10 Sony Disks 55/DD</td>
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<td>Disk Drive Cleaning Kit</td>
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<td>Uninterruptible Power Supply</td>
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**Networks**

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<td>124.35</td>
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**Software Insurance**

For Fried Apples?

When your surge protector fails will your insurance save you? SAFEWARE: computer insurance covers power surges, lightning, theft, fire, accidental damage and more! Full replacement of hardware, media and purchased software for as little as $39 per year.

<table>
<thead>
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<th>Total Value</th>
<th>Annual Premium</th>
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<td>Hardware, Media &amp; Purchased Software</td>
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<td>$2,001-$5,000</td>
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<td>$11,001-$14,000</td>
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For immediate coverage, information and rates on higher coverages, call 1-800-848-3469. On Compuserve, call SAFWARE.

SAFWARE, The Insurance Agency Inc. 2929 N. High St., P.O. Box 56986, Columbus, OH 43202

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Please send your NEW address PLUS your current mailing label to:

MacUser
P.O. Box 56986
Boulder, Colorado 80322-6986

Please allow up to 60 days for change of address to take place.
The BEST MAC DISKS
Quality User Supported Software. Works with all MAC Systems.

The B E S T
MAC DISKS
Quality User Supported Software. Works with all MAC Systems.

$7 Each
Buy 1-4 Disks
$6 Each
Buy 5-14 Disks
$5 Each
Buy 15 or more Disks

So easy to Use
\[ \text{No Computer Experience Necessary} \]
\[ \text{Instructions for each Order} \]
\[ \text{FREE Phone Support} \]

So Easy to Order
\[ \text{FREE Membership} \]
\[ \text{FREE 800-14 For Orders} \]
\[ \text{FREE Same-day Shipping} \]
\[ \text{UPS 2nd Day Air Service when you need it Now!} \]
\[ \text{FREE Catalog. Your Satisfaction Guaranteed} \]

NEW ADDITIONS
\[ \text{Teacher (2112) - Allows you to track grades and create quizzes.} \]
\[ \text{Spelling Tutor (2114) - Listen and learn how to spell. (Requires MacinTalk.)} \]
\[ \text{Music 1 (2300) - Many music learning and creation tools.} \]
\[ \text{Painting Tools (2400) - Includes several programs to get you started painting.} \]
\[ \text{Writing Tools (2500) - Helps you write and correct that paper or essay you got to get done.} \]
\[ \text{(This one really comes in handy.)} \]
\[ \text{Desk Accessories 1 (2520) - Over 40 Desk Acc. for business, utilities, and just plain fun.} \]
\[ \text{MACpage (2719) - Play.yatzee on your MAC. (1 to 4 can play.)} \]
\[ \text{Checkers (2725) - Try to beat the MAC or a human. (Multiple levels to choose from.)} \]
\[ \text{Concentration (2726) - Like the TV game, but you match icons instead of prizes.} \]
\[ \text{Trivia (2729) - Many different questions and categories to choose from.} \]
\[ \text{Blackjack Tutor (2730) - Teaches you to play, and to increase your odds of winning.} \]
\[ \text{Risk (2731) - Try to conquer the World. (Up to six can play.)} \]
\[ \text{Space Station Pheta (2732) - Cumb, jump, and run through the space station picking up keys before you run out of oxygen.)} \]
\[ \text{Crossword (2733) - Play the crossword puzzles provided for you, or create your own.} \]

PU S T 4 0
TOP 4 0
TOP 4 0

BUSINESS
\[ \text{MACmail (2000) - A super mail list manager for MAC. Stores names, addresses, and other vital information. (Also prints labels.)} \]
\[ \text{Bi-Plane Spreadsheet (2010) - An extremely powerful and complete program with a multitude of options and functions.} \]
\[ \text{House Inventory (2012) - Keeps track of all your personal items, expenses, and budgets.} \]
\[ \text{Accounting & More (2016) - Has a cash accounting, and loan evaluating program.} \]

EDUCATION
\[ \text{Science (2100) - Teaches Biology, Physics, and general science topics. (Junior high to adult)} \]
\[ \text{Stars (2102) - Star charting-Astronomy (Breathtaking graphics and really fun education.)} \]
\[ \text{Math Tutor (2104) - Several fun math quiz games. A really great educational tool for kids.} \]
\[ \text{Desk Utilities (2200) - Disk and file recovery and install menus.} \]
\[ \text{Menu Utilities (2200) - Use these to edit and install menus.} \]
\[ \text{Disk Utilities (2202) - Disk and file recovery tools that everyone should have - just in case.} \]
\[ \text{Vacine (2204) - Programs that will Check for, eliminate, and protect against viruses.} \]
\[ \text{Screen Dump (2206) - Allows you to print anything on the screen to your printer or disk.} \]
\[ \text{Disk Librarian (2210) - A complete disk cataloging program.} \]

CREATIVITY
\[ \text{MACinTalk (2300) - Allows your MAC to utilize its speech ability.} \]
\[ \text{Songs (2306) - Over twenty musical selections with a player utility.} \]
\[ \text{Calendar Maker (2400) - Make your own monthly calendars and monthly planners.} \]
\[ \text{MACFonts (2410) - Several new font styles for use with your Word Processor or Desktop Publishing programs.} \]
\[ \text{Banner Maker (2430) - prints large or small banners using the imagerwriter printer.} \]

GAMES
\[ \text{Football (2700) - Be a computer desk quarterback (choose to be any NFL team.)} \]
\[ \text{Billiards (2701) - Fantastic graphics and realistic gameplay. Plays several different styles.} \]
\[ \text{Blackjack (2703) - Includes great Blackjack and Poker games.} \]
\[ \text{Space Invaders (2704) - Defend against the aliens in three great space games.} \]
\[ \text{Donkey Doo (2707) - Like "Donkey Kong." Has unlimited levels.} \]
\[ \text{Casino Fun (2708) - Craps, roulette, and slot machines - The fun of Vegas without the risk!} \]
\[ \text{MAC Landing (2710) - includes great Blackjack and Poker games.} \]
\[ \text{Monopoly (2712) - Play against the computer or a human. (Great graphics & sounds.)} \]
\[ \text{Wheel (2713) - Like TV's "Wheel of Fortune." (Sorry Vanna not included with your order.)} \]
\[ \text{Backgammon (2714) - Try to outplay your MAC! (Before it's too late.)} \]
\[ \text{Tic-Tac-Toe (2715) - Two Challenging, new approaches. One is three-dimensional, and the other is two-dimensional, but allows you to increase the number of squares.} \]
\[ \text{Solitaire (2716) - A whole slew of great styles and versions.} \]
\[ \text{Cenipto (2718) - Two excellent versions of the arcade game everybody loves.} \]
\[ \text{Destroyer (2720) - Two versions of the arcade game everybody loves.} \]
\[ \text{VAC (2722) - Run for president! Maybe you can get rid of the deficit.} \]
\[ \text{Tank (2727) - Tank battle against the MAC!} \]
\[ \text{Super Pinball (2750) - Many great pinball games. Great sound and last action!} \]
\[ \text{Zodiac Pinball (2754) - More great pinball games. Based on the signs of the Zodiac.} \]
\[ \text{Adventure 1 (2776) - "Radical Castle" is one of the best adventure games of all time. Amazing graphics and sounds!} \]
\[ \text{Adventure 2 (2776) - Be warned "Psychotic" is not for everyone. You become Jason and go on a killing spree. Fantastic sound and graphics. (Requires an 800x drive.)} \]

HYPER-CARD
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\[ \text{Business (2800) - Includes Checkbook, Checkwriter, Hypercheck, Bill Tracker, Appointment Master, and much more!} \]
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<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh Plus</td>
<td>$1295</td>
</tr>
<tr>
<td>Macintosh SE 2 800k drive</td>
<td>$2295</td>
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<tr>
<td>Macintosh SE 30mb internal</td>
<td>$2695</td>
</tr>
<tr>
<td>Macintosh SE 40mb internal</td>
<td>$2895</td>
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<tr>
<td>Macintosh SE/30 40mb internal...Call</td>
<td>$3995</td>
</tr>
<tr>
<td>Macintosh II 40mb internal...Call</td>
<td>$3995</td>
</tr>
<tr>
<td>Macintosh II 60mb internal...Call</td>
<td>$4150</td>
</tr>
<tr>
<td>Macintosh IIX 80mb internal...Call</td>
<td>$5695</td>
</tr>
<tr>
<td>Apple keyboard for SE or II...Call</td>
<td>$100</td>
</tr>
<tr>
<td>Apple extended keyboard...Call</td>
<td>$185</td>
</tr>
<tr>
<td>Apple 13'' color monitor...Call</td>
<td>$750</td>
</tr>
<tr>
<td>Mac II 8 bit video card...Call</td>
<td>$495</td>
</tr>
<tr>
<td>Imagewriter II w/cable...Call</td>
<td>$450</td>
</tr>
<tr>
<td>Imagewriter LQ w/cable...Call</td>
<td>$995</td>
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<tr>
<td>Apple Laserwriter II NT...Call</td>
<td>$3695</td>
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<td>General Computer P.L.P. Plus</td>
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   a) Mac Plus
   b) Mac SE
   c) Mac SE II
   d) Mac I

2. How many micro computers do you buy products?
   a) 1-4
   b) 5-49
   c) 50+

3. Your primary job function is:
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   b) MIS/DF, Communications Systems, Programming
   c) Engineering/R&D
   d) Financial Accounting
   e) Marketing/Sales
   f) Computer Dealer VAR

4. For which of the following products are you interested in selecting brands/models to be bought by your company or organization?
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   b) Spreadsheet
   c) Financial Planners
   d) Project Managers
   e) Word Processors
   f) Database Managers
   g) Graphics
   h) CAD/CAM
   i) Communications
   j) MIS/DF, Communications Systems, Programming

5. Are you involved in the purchasing of microcomputer equipment at your company?
   a) Yes
   b) No

6. If so, what function do you serve in the purchasing process?
   a) Evaluation/Specification
   b) Recommendation
   c) Buyer/Purchaser

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Kristi Coale,
MacUser magazine

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Mouseway, Mouse Pockets, $9.95 ea.

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It's become a Mac on the Street tradition, every year at about this time, to take time out from our oh-so-busy schedules to pay homage to those Macintosh products and ads that have brightened our lives this year by adhering to the credo, "It's hype, hope, and hoopla that make the world go round." We honor these paragons of the community with the prestigious Shreddy Award, bestowed on those things we'd most love to run through the paper shredder.

**BEST NEW SPREADSHEET**

**SHREDDY**

Wingz Tote Bag

The Best New Spreadsheet Shreddy was really no contest — the Wingz tote bag was the runaway winner. We hear version 2.0 of the tote is due out any day — possibly just in time to coincide with version 1.0 of the software.

The next Shreddy goes — we know, you see it coming — to NeXT. What other company could refute charges of offering a vapor product by pointing out that version 0.8 shipped right on time, only six months after the product introduction?

Does one alternately shout and whisper when discussing TENpointO? What is the proper glottal position to assume when asking your software dealer for a copy of Aask? What's the real story about Smart-Serp's behind-the-scenes battles with The Clipper? Inspiring minds want to know.

**BIG CHILL SHREDDY**

**Focal Point II**

Speaking of TENpointO, it also receives the special Big Chill Shreddy for its Focal Point II ads that feature a man wearing a briefcase and little else. How the company got John Dvorak to pose for it we'll never know.

---

*"EXCUSE ME, YOUR PINK SLIP IS SHOWING" SHREDDY* Apple Computer

Finally, the "Excuse Me, Your Pink Slip Is Showing" Shreddy goes to Apple Computer for its continuing efforts to add the verb reorg to the English language. Apple, using the patented Guess Who's Using Your Office Today technique, has honed the art of the reorg down to a science, reducing some employees to nothing more than a disembodied voice-mail message. (No wonder they thought Finder was an appropriate metaphor for office activity.)

Our good friend Anna Weighwego of Singalondwyd, Mich., seems to have too much time on her hands and has begun collecting Mac-related palindromes — phrases that read the same forward or backward — and offers the following samples. First, for the jubilant new Mac owner: "Emote! Mac came to me!" And for Jean-Louis Gassée, if asked if he took his Mac laptop with him on his Mediterranean cruise: "Remote Mac came to mer." If you have any submissions for the Weighwego collection, send them in, c/o Mac on the Street, MacUser, 950 Tower Lane, 18th floor, Foster City, CA 94404 — and "O, demo, help pay Apple home, do!"

— Jon Zilber

---

**BEST PACKAGED GOODS**

**Finale**

Our Shreddy for Best Packaged Goods goes to Coda's Finale. Open up this $1,000 music notation package, and you'll think you've stepped into a new car. What with a video, three manuals, gold-leaf disk labels (with extra pre-printed labels for your backup copies, no less), a laminated handy reference card, and textured packaging, about the only plush extra missing is Corinthian leather trim and an endorsement from Ricardo Montalban. (It may also be the first software to come with optional GMAC financing.)

**"HUH?" SHREDDY**

**Wingz AND TENpointO**

A number of product names tie for the "Huh?" Shreddy. Is it pronounced "Wingz" or "Wing-zez"?

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ARKANOID

Remember when Crystal Quest came out and everybody breathed great sighs of relief that there was finally an arcade-style game for the Mac? Now we really do have an arcade game for the Mac. The real thing, Arkanoid — no, not a large boat for small claymated characters with floppy ears from Domino's Pizza commercials — is the arcade game we've been waiting for.

Arkanoid is a tremendously spiffed up incarnation of the classic Breakout. For those not in the know, Breakout was one of the primal paddle-type video games where the player bounced a ball off of a paddle at the bottom of the screen to hit and remove bricks layered higher up on the screen. Arkanoid made immediate addicts of several members of MacUser's staff, myself included.

When Crystal Quest appeared, a MacUser editor was quoted as saying that the game was so hot he had to ban it from the office. Well, anyone who ever tried banning this game from the office would have a mutiny to deal with.

Arkanoid is played in a window the size of an ordinary Mac screen. It does not get larger for Mac II users, nor does it need to. The playing window consists of a field containing a background, brick formations, and the player's paddle at the bottom of the screen. To the right are the player's score, the high score, and the number of lives left to the player.

The startup dialog box lets the user choose one- or two-player mode, the maximum number of lives available, and whether the player should be considered Beginner, Normal, Advanced, or a Jedi Master. Even the Advanced level provides an amazingly fast ball on the Mac II.

Game play and animation are both extremely smooth. A ball may start out moving at a survivable pace, but the longer a ball is in play, the faster it gets.

For those people with bosses who enjoy watching over their shoulders, Arkanoid features a boss mode. Just hit the B key and up pops a word processor (the name of which should amuse a certain company in Orem, Utah). Although it is not a full-featured word processor, future versions may very well include Save and Print functions. Then not only will you be getting a wonderful game, but you will also have a good quick-and-dirty word processor.

Arkanoid is also proof that an arcade-style game can be made Macintosh legal and even MultiFinder friendly (as opposed to tolerant). This is something that most Mac games don't even attempt. The game ran fine in the foreground while a MicroPhone II dialer script did its thing in the background. On another occasion, Excel imported a file in the background while I played Arkanoid. Aside from a minute jerkiness, there are no adverse side effects, although the version of MultiFinder used can affect the smoothness of game play.

Arkanoid is also novel in the area of copy protection. It isn't protected — unusual for a game. Realizing that a determined cracker would bypass any copy-protection mechanism on the game and distribute it, Discovery Software decided to remove it. Besides, the legitimate user would be faced with the inconvenience of launching the game from the original floppy. Without copy protection, legitimate users can put the game on their hard disks and play it whenever they like without hassle. I immediately installed Arkanoid into On Cue, an application-launching utility from ICOM Simulations, and that's saying something.

If you like this game, buy your own copy. Arkanoid is Discovery Software's first venture into the Mac market; if you want them to keep producing games of this quality, support them.

As far as more fun is concerned, Discovery promised (at press time) to release the Arkanoid Construction Set in the second quarter of '89. It will enable you to design your own brick fields, use digitized pictures as the background, and make games with many more levels than the original. For an Arkanoid addict, the construction set will be the ultimate tool for continued bliss. And look for a full-color version of Arkanoid, possibly by the time you read this.

— Stephan Somogyi

Arkanoid

List Price: $49.95
Published by: Discovery Software, 163 Conduit St., Annapolis, MD 21401; (301) 268-9877.
Version: 1.00
Requires: 512K RAM
Compatibility: Mac II and MultiFinder friendly
Application Size: 315K
Copy Protection: None
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If you're looking into scanners—even black and white scanners—don't overlook the future. The future is mouth watering color. For information, call 1-800-BE-SHARP.

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Simulated Picture on Monitors
Sometimes Mac tips are those simple ideas that people take for granted. If you have such an idea, send it to Bright Ideas, c/o MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404. If we print your tip, you'll receive $10.

A LITTLE DAB'LL DO YA

If you like to spend an evening with your feet on the desk and the keyboard on your lap, you have surely had it slide toward you about a million times. A good way to remedy this is to put Velcro on the bottom of your keyboard and on your clothes, though I recommend putting it on your clothes temporarily unless you want to make a fashion statement. [Be careful to remove the key-

board from your lap before leaving your computer. Otherwise, you risk dragging your Mac with you wherever you go. — Ed.] If you don't care about the clothes you wear when you're working on your Mac, you might try beeswax as an alternative. Just apply it generously to the bottom of your keyboard — no slipping.

ERIC BEAR ALBRECHT
TAOS, N.M.

SHUT YOUR TRAP!

Maybe you like to keep your Mac and its peripherals covered when they're not in use. When I first got my Mac, I didn't like being able to look all the way into the disk drive opening to see those glowing lights and wires curling around all over the place. Being a smoker and not a very good housekeeper, I was a little concerned about what might be going into the Mac's mouth besides 3.5-inch disks.

I started covering the openings (both the Mac's and the external drive's) with little doors I made of heavy paper and duct tape until I noticed that the tape was adversely affecting the Mac's finish. I have since discovered the perfect ready-made product for the job — Post-it Notes. These pads come in many sizes, including 3 x 5 inches, and have a special nondestructive adhesive. You can use them just as they are right off the pad or do as I do and make little handles for them. MacMouthShut is what I call it. Just put the adhesive on top of the drive housing and give the paper a right-angle bend down.

Keep your MacMouthShut and have many happy, smiling startup icons.

RONALD M. HOUSE
CONNELLAT LAKE, PA.

A SPRINKLE A DAY

An important feature of any external hard disk is the visibility of the drive's light. Jasmine drives tend to have tons of dust built up on the blue filter (mounted on the front), turning this filter gray and blocking your view of the drive light. Because of the way the filter is mounted, there is no easy way to clean it — even vacuums don't work.

That's when I decided to hit the showers, literally. Just take the cover of the drive into the shower with you. Rinse out the filter from the inside of the case first and rotate it to rinse the outside (so you don't create a soggy mess). Blow dry. Now you have a clean, blue filter through which you can see the drive light.

BILL BUMGARNER
PITTSBURGH, PA.
I didn’t like. For some unknown reason, the show management chases out of the front entrances so the sluggish shuttle buses dogs and too many bodies in a badly ventilated space. Too bad the mentality of today’s show-goer ignores most shows that take place in offbeat but interesting locales. The now-defunct SoftCon show was tried in New Orleans, as I recall, and established an aura of failure for the event. I can’t understand it. Even Los Angeles doesn’t seem to draw a decent crowd. Both Comdex and the original West Coast Computer Faire have tried and failed in L.A.

The only acceptable places to hold a major technology-related show, it seems, are Las Vegas, Anaheim, New York, Atlanta, and Chicago — and maybe San Francisco and Boston. The Las Vegas Convention Center (the biggest there is) offers an immediate million square feet of space. In addition, each of the major Vegas hotels has its own convention center. Critics of big shows, myself included, have long since determined that it’s a physical impossibility to see any trade show adequately in facilities this size. But most show-goers don’t need to see the whole show. They go because it’s an opportunity to meet certain people. They make appointments and see what interests them.

The show attains critical mass when you know everyone is going to be there. Salespeople know it’s a chance to corner their best prospects. So the big shows thrive despite the protests of lazy writers who claim these shows are too big and too unwieldy, like dinosaurs.

The Green Badge Discouraged

Actually, they’re more like H-bombs than dinosaurs. The bigger the critical mass, the more effective the explosion. Bigger is better. And the big-show phenomenon means that the small convention center operators like Reno, with its nifty 200,000-square-foot center, will never be the nucleus of anything other than state and regional conventions.

Will anything thwart this worsening trend? Personally, I hope so. I’d hope that people would get sick and tired of going to the same five superficial cities and staying in the same boring, homogenized hotels year after year after year. Wouldn’t these show-crawlers like to visit Miami or Pittsburgh or Philadelphia or Denver or New Orleans once in a while?

Unfortunately, the answer is no. Today’s businessperson is not an explorer. Plenty of people fly into a city, take a cab to the hotel, go to the show, take a cab to the airport, and fly back home. The idea of exploring a new city and its environs isn’t a consideration. After all, what does a CEO expect to learn from a drive through the outskirts of Birmingham?

I’m sure these people would learn something, but you can’t say what it might be. Perhaps they’d discover something about how people in the real world feel about and use computers. Perhaps they’d stumble across an untapped market or find the perfect night spot for power schmoozing. Perhaps they’d learn that you can’t read black ink on a dark, green background. That would be a start.

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By John C. Dvorak
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