The Mac Goes Hollywood
Make Mac Movies for $99

- New! Apple’s Network Tool for Business
- How to Capture Images—Step-by-Step Digitizing
- The Complete Guide to Word 3.0
- What to Do about Mail Order—Including an Unprecedented Exposé
Borland software: technically superior

SideKick:
The Desktop Organizer, Release 2.0

Thousands of users already know that SideKick is the most complete and comprehensive collection of desk accessories available.

Well, with Release 2.0, the best just got better. We've just added two powerful high-performance tools to SideKick. We've added Outlook: The Outliner and MacPlan: The Spreadsheet. They work in perfect harmony with each other and while you run other programs!

Outlook: The Outliner
- It's the desk accessory with more power than a stand-alone outliner
- A great desktop publishing tool, Outlook lets you incorporate both text and graphics into your outlines
- Works hand-in-hand with MacPlan
- Allows you to work on several outlines at the same time

MacPlan: The Spreadsheet
- Integrates spreadsheets and graphs
- Does both formulas and straight numbers
- Graph types include bar charts, stacked bar charts, pie charts and line graphs
- Includes 12 ready-to-use templates free!
- Pastes graphics and data right into Outlook creating professional memos and reports, complete with headers and footers, in a snap

Reflex: The Database Manager

Why are so many critics praising Reflex?

Because Reflex is the high-performance relational database manager that every Mac user has been waiting for.

- Its simple spreadsheet approach makes calculations a snap.
- And creating database designs, forms, and reports is as easy as drawing them on your screen.
- Reflex lets you organize, analyze and report information faster than ever before.

Reflex is the full-featured database manager that everyone who manages mailing lists, customer files, budgets and almost any other set of business numbers needs today.

Whatever business you're in, whatever you manage, you need Reflex: The Database Manager.

MacPlan does both spreadsheets and business graphs. Paste them into your Outlook files and generate professional reports.

System requirements:
Macintosh 512K or Macintosh Plus with one disk drive

SideKick: The Desktop Organizer, Release 2.0 now includes
- Outlook: The Outliner
- MacPlan: The Spreadsheet
- Mini word processor
- Calendar
- Telecommunications (new version now supports XModem file transfer protocol)

Upgrade Now! If you are one of the thousands of SideKick users, just send us your original master disk back with a check for $34.95, and we'll rush you a brand new SideKick, Release 2.0, complete with manual.

Introductory offer expires July 1, 1987

System requirements:
Macintosh 512K or Macintosh Plus with one disk drive.

MacUser Editor's Choice Award 1986
Reflex: The Database Manager-

Reflex: The Database Manager—

System requirements:
Macintosh 512K or Macintosh Plus with one disk drive.
Second external drive recommended.
Innovative, and easy to use

Turbo Pascal

Compiled source code races from Turbo Pascal at the astonishing rate of more than 12,000 lines per minute. Anything less than Turbo Pascal is an exercise in slow motion. You can expect what only Borland delivers: Quality, Speed, Power and Price.

Turbo Pascal at a glance

- Compilation speed of greater than 12,000 lines per minute
- "Unit" structure lets you create programs in modular form
- Multiple editing windows—up to 8 at the same time
- Options include compiling to disk or memory, or compile and run
- No need to switch between programs to compile or run a program
- Streamlined development and debugging
- Compatible with Hierarchical File System
- Compatible with Macintosh Programmer's Workshop Pascal (with minor changes)
- Ability to define default volume and folder names used in compiler directives
- Search and Change features in the editor speed up and simplify alteration of routines
- Unlimited use of available Macintosh® memory
- "Units" included to call all the routines provided by Macintosh Toolbox

The Critics' Choice

"Turbo Pascal is the true winner in the stand-alone Macintosh development environments. Turbo Pascal provides ease of use, extremely fast compilations, excellent documentation, great support and a company that is well known in the industry. To end it off, you get all of this for the paltry price of $99! Now isn't that a reason to get moving with Turbo?"

Robert Forras, MacTimes

"Turbo Pascal is already an industry standard in the IBM-compatible world and we're very excited to see Borland International's new commitment to provide this and other modestly-priced, high-quality software for the Macintosh computer."

John Sculley, Apple Computer, Inc.

System requirements:
Macintosh 512K or Macintosh Plus with one disk drive. (The complete Turbo Pascal package, including compiler and editor, occupies only 50K of memory.)

*Introductory offer expires July 1, 1987

What more can we say?
If you use a Mac, get Reflex: The Database Manager.

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_Surgeon_ medical simulation game.
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JANUARY 1984. (Cupertino, California.)—Apple introduces the Macintosh. At the press conference, six software developers, including Microsoft and Lotus, announce their commitment to the new machine. Among them is THINK Technologies, a start-up developer of advanced systems software.

THINK announces Macintosh Pascal. It is a breakthrough. For the first time, a practical interactive interpreter is available for Pascal. People can now learn to program in a whole new way. They can look inside their program and get immediate feedback. Incorporating the Mac interface in this programming environment, THINK creates a new future for the Macintosh in education.

Writing in The New York Times, Erik Sandberg-Diment says “MacPascal alone might be reason enough for the college-bound science or engineering major to purchase” a Mac. The product becomes a standard in university computer science courses. Users are enthusiastic. But in time they demand even more from THINK.

AUGUST 1986. (Boston, Massachusetts.)—THINK introduces Lightspeed Pascal at MacWorld Expo. It is a breakthrough. It utilizes new compiling and linking technology previously available only with THINK’s Lightspeed C. But it goes even further. Like Macintosh Pascal, it provides the same ability to look inside a program, but without the need for an interpreter. It offers blinding speed and the ability to build large programs. The response is overwhelming. In the first two weeks THINK sells thousands.

Lightspeed Pascal marks a turning point in programming the Mac. It has all the features that made Macintosh Pascal a standard. And much more. Now users can create real standalone “double-clickable” applications and desk accessories. THINK creates a new future for Macintosh programmers.

Lightspeed Pascal is priced at $125. It is not copy-protected. The package includes a 600-page manual with extensive index. It provides complete Toolbox/OS support. It is compatible with Macintosh Pascal and Lisa Pascal.

The future is here. Order Lightspeed Pascal now.

Please send me Lightspeed Pascal today. Enclosed is $ for copies. ($125/copy)

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Mail to: THINK Technologies, 420 Bedford Street, Lexington, MA 02173. Or call 617-863-5595

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Every time you create a document, AppleShare lets you decide how (or if) its to be shared.
Thanks to AppleShare access control, you can grant rights to specific individuals, at three different levels:
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And each folder will contain the most recent versions of the work within. Because the system is constantly updating itself.

ALL TOGETHER NOW.
Apple Desktop Communications can do wonders for productivity beyond merely sharing folders.
Using a program like Inbox, one person can easily send electronic mail to anyone on the network. Or just as easily, to a pre-defined list of people. And these messages can include complete documents, such as those created by Microsoft Word or Excel.
With this new power, Apple Desktop Publishing becomes a whole new game. Because quickly and electronically, you can collect the information you want to publish. Even from people who don't use Macintosh.

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Once you've begun sharing information within the workgroup, you'll likely thirst for greater power.
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Or, with FastPath and EtherSC, even tie the whole company together on Ethernet cabling.
The full power of Apple Desktop Communications can be yours today.
And to get going, there's only one thing you have to do.

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And to get going, there's only one thing you have to do.

With Apple Desktop Communications, you can share information amongst a group of computers, including even those of the MS-DOS variety.

Put a document into a folder, and it's available on the network. Instantly.
In fact, to use AppleShare, you need only a fleeting familiarity with two of the most basic Macintosh skills. Pointing. And clicking.

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In the beginning... there were floppy disk drives. They were slow. Then came Winchester hard disks that plugged into a Macintosh™ serial or floppy port. These offered increased storage but were still slow.

And then one day... someone invented SCSI (Small Computer System Interface), a much faster interface than floppy or serial ports. And suddenly, hard disks were more than just lots of storage. They were fast.

Hard disks became very popular. But a new problem arose. Disk crashes. Though infrequent, crashes were very traumatic.

Thus it came to be... tape backup was developed. And it was good. Data stored on a hard disk could now be "backed up" onto a tape cartridge and stored. In the eventuality of a crash, data could then be restored to the hard disk. The trauma was over.

Tape backup was slow, however, and the engineers at AST Research could not rest. They labored to create a better hard disk/tape backup system. And, thus, after many months of toil they developed a 256K Cache and a Tape Motion Optimizer Algorithm.

An Unprecedented Advance... the Cache was a RAM buffer into which files could be moved for backup to tape. The computer would then be freed up. Work could continue while backup was occurring! And, yes, it was even user friendly.

And, if the hard disk should need maintenance, the tape could be used like a floppy diskette — written to directly via the fast 256K RAM Cache.

The system was complete! The AST-2000™ was born.


Contact your nearest AST-authorized Apple Products Dealer today! Or send the coupon to AST Research, Inc., 2121 Alton Avenue, Irvine, CA 92714-4992. Phone: (714) 553-0340, BBS: (714) 660-9175, FAX: (714) 660-8063.
AST Research Announces The AST TurboScan. It's the perfect addition to your Macintosh desktop publishing system.

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Mac Bulletin

VideoWorks

Macromind of Chicago has bought back the rights to develop new versions of its original programs MusicWorks, VideoWorks, and M.U.D. Leading the way is VideoWorks Interactive, which offers a new concept in programming using icons, animation, and a real-time procedural language. VideoWorks Interactive's programming capabilities range from interactive presentations and courseware to market research tools and video games. Macromind will also offer VideoWorks II, an improved version of the original, and M.U.D. II, which will include the airbrush as a desk accessory (as seen in GraphicWorks and ComicWorks). The airbrush can be installed in PullPaint and other paint programs. Spinaker Software continues selling the original versions of M.U.D. and VideoWorks. Macromind will provide upgrade credit for all previous owners of its products.

Micro Planner Project Exchange

Micro Planning Software, International, has released two new products to complement Micro Planner, its sophisticated project management application. Micro Planner Project Planner allows you to plot network logic diagrams and/or resource or cost histograms on multicolor pen plotters. Micro Planner Project Exchange provides for easy exchange and manipulation of information between projects, other applications, and other computers. The software lets users convert MacProject files into Micro Planner files, merge separate projects into larger projects, break large projects into smaller projects, import and export files to and from mini and mainframe applications, and swap files between Micro Planner on IBM PCs or compatibles and Micro Planner on the Mac. Both products retail for $100.

The Seven-Digit Mac

Apple expects to have rolled the one-millionth Mac off the assembly line by the beginning of March. Perhaps it will be gold plated or bronzed for posterity. Whatever the case, the Mac is gaining on the IBM PC and compatibles market, and should continue to multiply fruitfully.

AppleTalk Star

Farallon Computing of Berkeley has developed a controller and software for managing large AppleTalk-compatible networks on ordinary phone lines. The PhoneNet StarController allows for star-configured networks with up to 12 branches. An add-on board and software provide the capability to monitor and debug the network from a remote location. TrafficReporter, the software package, watches all conversations between nodes and keeps track of the size and number of packets sent, as well as errors between nodes.

Farallon is also providing a repeater that will extend the network connection capability beyond the current 3000 feet. The repeater will have an RS-423 port, which provides separate transmission and reception lines, allowing you to run AppleTalk to other media, such as infrared, microwave, laser, and fiber optic channels.

The controller will sell for about $1000 and the software for $500. The repeater will sell for under $200.

Laser Spooling

Think Technologies has published a LaserWriter spooler capable of spooling documents for existing and future versions of PageMaker. LaserSpeed works with all downloadable fonts and sells for $99 for a single Mac. The $499 LaserSpeed Office Pack includes five LaserSpeed disks and manuals, and it allows you to distribute disks freely to anyone hooked up to the LaserWriter.

SuperMac Technology has introduced SuperLaser Spool, an upgrade of Super Spool for the ImageWriter. The program derives its speed from spooling QuickDraw rather than PostScript-interpreted code. As a result, the print management process—including the conversion of QuickDraw to PostScript—takes place in the background. The single-user version costs $149.95, and the multiuser version, which includes five disks and allows five people to spool concurrently, costs $395.

MacNosy, Part II

Steve Jaski, author of the disassembler MacNosy, has introduced "The Debugger", a window-based, high-level symbolic debugger. "The Debugger" features an intelligent "stack crawl" that can work its way out of ROM back to the user's program, and it has the ability to display system structures in understandable formats. The $100 program is available through dealers or from the author.

IBM File Transfer

Dayna Communications is now shipping its FT100 file-transfer unit, which translates files between IBM PCs and Macintoshes. The $595 FT100 is a 5-inch-wide unit that fits next to the Macintosh and includes a 5 1/4-inch PC drive, Mac software, and cables. The unit connects to the Mac's serial or SCSI port. For an additional $95, Dayna will also include a file-translation program developed by DataViz that preserves formatting features, such as boldface, underlining, and tabs, when files are transferred. The program works with WordStar, MultiMate, DisplayWrite, dBase II and III, and other popular PC software.

Letraset Switches

On the eve of the Macworld Expo last January, Letraset of Paramus, New Jersey, bought the rights to market Manhattan Graphics' desktop (continues)
publishing program ReadySetGo and dropped LetraPage (formerly MacPublisher). LetraPage will be released as MacPublisher III by its developer, Boston Publishing Systems. Officially, Letraset made the switch because LetraPage wasn’t bug-free at Expo time. The change was so abrupt that documents used in Letraset’s “ReadySetGo” Expo demonstrations were cosmetically altered LetraPage/MacPublisher III layouts.

New HyperDrives
- General Computer has introduced a conversion kit for $9.95 that lets you format a HyperDrive FX/20 for the Apple II line of computers. The conversion, which is performed by HyperDrive dealers, also requires a SCSI port adapter from Apple. In addition, General Computer now offers a 40-megabyte external hard disk, the HyperDrive FX/40 ($1995), which includes the same software and utilities as the $1199 FX/20.

Desktop Presentations
- Programs like MacDraw and More have proven the value of the Mac for producing visual aids for business presentations. Now, Forethought, Incorporated, has developed a new product especially for creating desktop presentations. The program—code named Presenter—allows you to produce overhead transparencies or 35mm slides with ease. The product should be available this spring and will cost between $295 and $395. In addition, Forethought has teamed up with business forms publisher NEBS to create a package of business templates for its database FileMaker. The $69.95 package allows you to enter data into a series of preformatted FileMaker screens and then print information directly onto NEBS’s most popular business forms.

Run-Time Tempo
- Affinity MicroSystems has developed a run-time version of Tempo called Tempo/RT. The new macro program is designed for publishers who want to distribute software demos that will run themselves; or for value-added resellers who create macros for customers. Tempo/RT allows you to encrypt macros so you can protect proprietary macros. In addition, Affinity is developing a desk accessory that will provide a limited database and a voice recognition device that can trigger Tempo macros with a single voice command.

SuperPaint Scanners
- Touching up scanned images is an application for which paint programs are ideally suited. Silicon Beach Software, publisher of SuperPaint, has persuaded the major scanner manufacturers in the Macintosh market to make their products compatible with SuperPaint. Since 300-dpi documents can be edited from within the program, SuperPaint conveniently parallels the maximum resolution of several scanners. Scanner manufacturers, such as Microtek, New Image Technologies, Datacopy Corporation, DEST Corporation, and Kurzweil, plan to modify their software so that scanned images can be saved in SuperPaint’s file format, allowing users to open files directly from within SuperPaint. In addition, some of these companies have agreed to bundle or resell SuperPaint with their scanners.

More 1.1
- Living Videotext has been shipping a new version of its popular outline/desktop presentation program, More. New features implemented at the request of program users include a comprehensive Undo command, the ability to mix type styles in an outline, multilevel bullet charts, the ability to modify default settings, and template enhancements. A free upgrade is available for registered owners of More.

Mac C Jr.
- Consulair has released Mac C Jr., a new C development system aimed at the university market and anyone interested in learning C programming on the Mac. The compiler is the same as the one in the $425 Mac C Toolkit development system, but the new package doesn’t include the Toolkit’s library of routines. At $79.95, Mac C Jr. costs less than competitors like Lightspeed, and should attract student programmers on a budget.

Memory for Less
- MacMemory, one of the leading suppliers of memory upgrades for the Mac, is offering a low-cost upgrade board for 128K and 512K Macs. The Max 2+ adds 1 megabyte, expandable to 4 megabytes, of SIMM memory. The board also includes a SCSI adapter and MaxSave, RAM disk recovery firmware. In addition, software runs about 30 percent faster than it would without the board. The 512K upgrade costs $399, the 128K upgrade $499.

DiskEnsure
- ASoft, publisher of DiskExpress and MaxExpress, has developed a backup utility program for hard disks called DiskEnsure, which provides a true incremental backup—replacing old versions of files with current ones. The $39.95 program also has a "disk rejuvenation" feature, which lets you automatically back up a drive, reinitialize it, and restore it.

Memorandum
- Target Software, publisher of Voila and MacLightning, has introduced Memorandum, a desk accessory that allows you to attach "electronic Post-its" to any document. Memorandum is intended primarily for attaching notes to spreadsheet cells.

Faster Networks
- Although AppleTalk is adequate for many tasks, its current data-transfer rate is limited to 234 kilobits per second. Kinetics, Incorporated, is developing an Ethernet controller for the Mac Plus that will speed up AppleTalk networks. The Ether-SC increases transfer speeds by directly linking the Mac’s SCSI port to Ethernet networks. Kinetics is working to ensure compatibility with future 68020-based Macs.
See what you’ve been missing.

Full page views of your documents, for example. Unobstructed displays of several windows simultaneously. And dozens of other applications for which the Macintosh™ has been able to give you only part of the story. Until now, that is.

Introducing the Radius Full Page Display.
The Radius FPD™ works side by side with your Macintosh to make creating, editing, and laying out documents easier than ever — by letting you see a full 8½" by 11" page.

That means less scrolling. Less enlarging and reducing. And, because your Macintosh doesn’t sit idle, a much more useful way to work.

The FPD extends your investment in the Macintosh.

Lay out a page on the FPD, for example, while the Macintosh holds tools, palettes, desk accessories, and other windows. Or treat the two screens as a single, contiguous display, viewing large, horizontal documents. Even drag text or graphics between the two.

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The team that developed the Radius FPD is the same group of experts that designed and built the original Macintosh. Which means you’re assured of the highest-quality product, from top to bottom.

Want to find out more? Contact your nearest authorized Radius dealer to get the full story. (Or call us at 408-732-1010 for the name of the dealer nearest you.) And see what you’ve been missing.

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Circle 577 on reader service card
How to dramatically improve the way you manage meetings, ideas, time and people with MORE.

If you're like most people your time is valuable. You believe you should, and could be more effective managing your daily tasks. Perhaps you've even tried conventional methods of increasing efficiency—making lists of priorities, delegating, keeping diaries, etc.—only to find little has changed because you're still wasting valuable time.

That's why we wrote this guide. We want to explain four ways to improve the way you work by using the power of MORE and a Macintosh.

If you're too busy to read further, please skip ahead to the coupon and see how easy it is to receive our free limerie booklets on Managing Meetings, Preparing Business Plans, Creating Tree Charts and Organizing a Status Center.

1 Start a revolution at your next meeting.

How often do you come away from a meeting satisfied with the results? Probably not as often as you would like. Here are some simple ways to get more accomplished at your next meeting:

- Have a specific objective in mind, as the meeting progresses, be sure you're still dealing with the same problem.
- Only cover things that cannot be put across in other ways—bulletins, manuals, direct contact with supervisors, etc.
- Don't try to cover more ground than time will permit. You can't solve the world's problems in a 30-minute staff meeting.
- Prepare for the meeting. Find out what the other people attending need to know before the meeting.

Why MORE is so revolutionary in meetings.

Try taking a Macintosh and MORE into your next meeting. Start with an outlined agenda, develop the issues into a group action plan. The participants—even those who don't use a computer—can direct the content and organization of the plan. Graphic Tree Charts and Bullet Charts help you present the impact of your decisions. At any point, you can review an agenda that's been accomplished. Everyone gets a uniform set of meeting notes, on disk or printed. This frees the participants from having to take detailed notes. Everyone knows what was decided, so next time you sit down there won't be a debate. Spreadhseets started a revolution for people who work with numbers. MORE is starting a revolution for people who spend time in meetings.

2 Manage people and projects effectively.

Managing people and projects can be very difficult. Some managers apply common sense, others learn by doing, others simply avoid the problem altogether. In an effort to simplify a complicated subject here are a few things that will help any manager:

- Managing requires a great deal of talking and listening. It sounds easy, but it is a constant job that requires a concentrated effort.
- Job descriptions and boundaries should be provided for every person's job.
- Feedback on performance and encouragement improve motivation. Doing and saying nothing leads to stagnation.
- Find the best people you can and support them.

Now there's a way to manage people and projects better using MORE. Managers, executives, corporate planners and personnel staff can use MORE to outline their management ideas and instantly transform them into a Tree Chart. You can use Tree Charts for organizational charts, project flowcharts, decision trees, block diagrams or time lines. MORE also is a powerful tool for writing job descriptions and preparing employee reviews. As a project management tool, MORE is fast and flexible.

3 Create a time saving Status Center.

The first step in becoming more time-efficient is to identify how you spend your time. Naturally, once you've figured how and why time is spent, you begin to do things that give you higher payoffs and more satisfaction.

For you, MORE becomes a convenient and powerful electronic notebook and card file. You collect and organize the details of your daily work.
daily work in an outline—your personal Status Center. You keep this outline up-to-date, using it to:
- List and organize your tasks
- Record names, addresses, and phone numbers
- Keep your daily calendar
- Write and file notes and memos
- Track your expenses

MORE's power outlining lets you change and interconnect your lists with ease. You can use the Templates feature to store "boilerplate" such as an address form and call it up at any time. The calendar feature will generate a daily schedule automatically. Most of your writing and word-processing work can be done right in MORE. You can even dial a phone, record the time and date, and calculate a sum—all by pressing a key. MORE is the ultimate tool for desktop productivity.

4 Process your ideas, then present them.

If you've ever had to prepare a presentation in a hurry—you know how frustrating and time-consuming the task can be. Technique is an important part of presenting your ideas effectively. Here are some simple steps that will take you from rough ideas to finished presentations:
- Make a "laundry-list" outline of basic ideas.
- Become uninhibited with your ideas—don't edit on your first pass.
- Be generous with headings, call-outs, charts and illustrations.
- Allow yourself the flexibility to change your presentation, even at the last minute.

Now you can prepare a presentation quickly and professionally, even at the last minute. For the first time, MORE integrates idea processing with idea presentation. You can outline your ideas and quickly transform them into attractive Bullet Charts. Add Tree Charts and pictures, and you have a full-fledged slide show. MORE is ideal for the entrepreneur writing a business plan—and also for anyone who develops presentations: managers and decision makers, executives, corporate planners, sales staff, educators.

There's more...

To receive your free time saving booklets, fill out the coupon below. To experience the power and speed of MORE in person, visit your local computer dealer for a demonstration.

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And from there, print out a high-quality half-tone with the best resolution your laser printer can print.

What's more, you can do the same with drawings, logos, mastheads, charts and other graphics. Which means now you don't have to be an accomplished artist to accomplish a lot.

But then, considering all the power you're adding to your desktop, that's not too surprising. You see, unlike less intelligent scanners, PC Scan Plus comes with its own microprocessor,
more memory than most PCs, and even a SCSI interface.
All of which lets you do plenty more, plenty fast. And in much more graphic detail.

WE ALSO HAVE A WAY WITH WORDS.
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So now, instead of retyping text, you can simply scan it into your computer. Edit or add to it. Then transfer the information into your desktop publishing program and go to press.

Of course, scanning words is nothing new to us. For nearly a decade, DEST has been making the leading line of scanners for word processing systems. And now we're out to do the same for desktop publishing.
So call and ask us about PC Scan Plus today. Or you won't know what you're missing.
Introducing the only desktop publishing program capable of real-time hyphenation, automatic text runarounds, kerning and spell checking.

Click on Ready, Set, Go! 3's Design Grids and a preformatted grid appears. Your layout takes shape effortlessly as text blocks snap to the nearest grids. As you type, words hyphenate in an eyeblink. Editing changes ripple through your columns while paragraphs reformat and rehyphenate instantly.

Misspelled your boss's wife's name? Ready, Set, Go!'s Find feature flashes through your text to replace this fatal *faux pas.*

A 60,000-word spelling checker proofs your stream-of-consciousness prose quickly — giving you more time to be creative.

No need to type *supercalifragilisticexpialidocious* repeatedly. Glossaries speedily retrieve this and other verbose text with a single keystroke.

Just finished a great novel in Microsoft® Word or MacWrite™? No problem, import these files as formatted.

**Ready, Set, Go! gives you the runaround.**

When you're ready to add graphics, Get Picture retrieves your MacDraw™ MacDraft™ MacPaint™ FullPaint™ — or other compatible art — quickly.

Now drop a picture block on any text area. Spontaneously, the text reconfigures itself to snake around your graphic — an incredible timesaver.

Use this technique to wrap text around large capitals or graphics created with built-in drawing tools.

**Windows with a view.**

Open several windows to combine cut-and-pasted elements from many different documents.

You'll be the Dali of desktop publishing, splashing text and graphics throughout several works at once. Not just productive — but prolific, too.

And you won't mind doing windows using Ready, Set, Go!'s five fascinating views — which include full-page editing.

**Remarkable design features.**

Ready, Set, Go! also kerns, letterspacing or shifts text up or down with a single keystroke. Not sold yet? How about direct PostScript™ programming for stunning effects? And an unlimited page capacity with automatic page numbering, time-and-date stamping and left/right master pages?

We're sure that no other program even approaches Ready, Set, Go! in design power, text entry flexibility, ease of use, execution speed or price: only $295. While words cannot adequately describe this revolutionary program, our video demo can. For $15 we'll send you an informative videotape to demonstrate Ready, Set, Go!'s versatility. To order Ready, Set, Go! or the videotape call us at 800-634-3463 (in New York call 914-769-2800). Or visit your nearest dealer.

Nice try, Copyright © 1987 Manhattan Graphics. Ready, Set, Go! requires a 512K Macintosh.

Circle 2 on reader service card
David Bunnell

Hypervisions

In the next two or three years, more data will be generated and disseminated than in all of recorded history.

Not only is the volume of information increasing at a staggering clip, but the rate of increase is also accelerating phenomenally. The way it's going, our existing knowledge base will be doubling and tripling before we can even say "on line."

This is not just a megatrend. It's a maxifact. And it's going to be one of our biggest headaches in the coming century if we don't get our information act together soon.

The problem is not just the quantity of data. It is accessibility. How do you deal with all this information? How do you absorb it? How do you make sense of it? How do you structure it? Most important, how do you access it?

Clearly, the current media forms—television, radio, print, and even electronic publishing—are not equipped to deal with this information onslaught on their own.

What we need is an information medium that will bridge the gaps between the existing media and provide us with ways of coping with massive amounts of information. CD ROM and the development of other broadband publishing technologies will, I believe, constitute this new medium.

Although it's impossible to predict how fast these technologies will evolve, there is no question in my mind that we are on the verge of a new era of information handling.

Because broadband electronic publishing—which allows us to mix text, sound, graphics, and video—is a new medium, we will need new information-handling tools to help us grapple with the otherwise indecipherable text of the future.

In my opinion we have one adaptable tool right now. You might even be familiar with it. It's "hypertext."

The concept of hypertext was originally developed back in the sixties by personal computer visionaries Ted (Project Xanadu) Nelson and Doug Engelbart, the genius behind the idea of windows and the mouse. Nelson defines hypertext as nonsequential writing.

"We've actually been doing it for years," he says. "We've been speaking hypertext all our lives and never knew it. It's essentially nonlinearity of speech. The fact that pages have to be numbered because of the way books are built has led us into thinking that things need to be in sequence. But the best expositions are those you pursue yourself, nonsequentially."

As hypertext and hypervideo usher in a new age of information literacy, all the world's an electronic stage—and you're the media director.
Here at Warp Nine, we manufacture Macintosh products that excel in 3 areas: Price, quality and price. You see, we refuse to sell through computer stores. Instead, we sell direct. Saving you about 40%.

But when we left out the dealer's mark up, we didn't sacrifice the quality. For example, every Warp product comes with our Quality and Assurance Report detailing each step of production, signed by the person responsible for that step.

Our commitment to quality continues with our special fans. They keep our drives cool as a cucumber. Some manufacturers think fans are too expensive to install. That's why you can fry an egg on their drives. And Warp drives are delivered preformatted, ready to go. Just give them some juice and take off.

So if you're hungry for some big savings, roll up your sleeves, lick your lips and feast your eyes on these prices. They're awfully easy to swallow.

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A 21Mb external SCSI hard drive. Store as much information as fifty-two 400K floppy disks. HFS and MFS compatible. Supports all your Macintosh software. Can daisy chain up to seven SCSI devices. MacPlus $589.00 *512K with our PlusPort. $745.00

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The Fullback—Called the best back up program for the Mac. Backs up text and graphics from your hard drive to floppy disks very quickly. Volume back up (everything), file-by-file and incremental (last changes). $39.95

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Circle 639 on reader service card

David Bunnell

As Ted Nelson likes to point out, he never reads a book straight through from the first page to the last. He starts in the middle, then flips to the end or the beginning. He claims that he retains more information that way. I've tried it myself, and I think it's true.

Hyperreading is not exactly an easy process to learn. For years, you've been a "sequence r," and suddenly you have to flip back and forth. It's like learning to read all over again.

Recently, we at PCW Communications took our first step in hyperpublishing when we used OWL Software's Guide program to produce an experimental hyper-text edition of parts of the January issue of Macworld on disk, as well as a similar hypertext issue of PC World.

Guide, created by software entrepreneur Alan Boyd, is an ideal hypertext maker because it allows you to organize database information in a visual way. For example, what appears on the Macworld editor's computer screen can represent the page as it will appear in Macworld magazine-complete with actual photos, type fonts, and headlines. It can look like the real magazine will look.

I hope that we will soon be able to put a whole year's worth or even more of a magazine onto a single CD ROM disk. The key to reading these giant issues will be Guide's hypertext method of accessing information.

With its elegant design—you simply click mini-icons, or buttons, to obtain the information you want—readers will find it a much more friendly and intuitive way to search for information than the traditional method of keyword searches.

Future hypermagazines will be much more impressive than these Macworld and PC World prototypes.

First of all, it's obvious that simply providing translations of publications from paper to electronic form is not the optimum use of this new medium. We are going to very quickly find ways to enhance the existing information.

For example, a future hypertext issue of Macworld might contain useful databases such as directories of personal computer companies with their addresses and phone numbers, lists of computer stores and computer clubs, and so on.

(continues)
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The Most Productive Development Utility Ever Created.

Say, for example, you have three possible solutions to the same problem. With Prototyper™, you can quickly build all three. From menus, to buttons, to the shape of the cursor.

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Without writing a line of code.

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Circle 438 on reader service card
Desktop Publishing is one of today's most exciting computer applications. And PageMaker® has certainly been a major contributor to this revolutionary technology. It has allowed the user to assemble newsletters, brochures, data sheets and the like of near typeset quality. Unfortunately, however, PageMaker also provides the user with severe limitations on the speed and design of a page layout. The user is pretty much restricted to a rigid column format and rectangular images. While circular or irregular images may be incorporated into a layout, it is a painfully time-consuming task to run the copy around the image. So the final product lacks a truly professional look.
On the other hand, a Scoop™ layout would do credit to an outstanding graphics designer. Like PageMaker, Scoop enables the user to produce all kinds of documents at considerable savings. Newsletters, pamphlets, catalogues, flyers and direct mail pieces may all be turned out very quickly and conveniently.

And that's not all. Scoop also allows the user to set the text to conform to the dimensions of any object. With a click of the mouse, text automatically wraps around the most irregularly shaped graphic, including all sorts of images from both MacPaint™ and MacDraw™.

More than that, Scoop lets you create and manipulate both the text and the graphics. Unlike PageMaker, there's no need to develop text and graphics separately and then have to combine them. And Scoop has so many more special features, too. It is truly the first great advance in Desktop Publishing since PageMaker.

The fact is, Scoop will run rings around its predecessor. Get the Scoop from your software dealer beginning May 1st. Or you can call Target Software™ right now for more information at 1-800-622-5483; in Florida, 305-252-0892. Or, write 14206 SW 136th St., Miami, FL 33186.

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We're going to run circles around PageMaker.

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Sony
3 1/2 Disks
Boxed in tens

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Sony MAC • PAC
Packaged in fifties

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3 1/2 Double Sided 1.32 ea., 100+

DataTech
Boxed in tens

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what I wanted to look at. It could even create video previews of all this collected material for my viewing-selection pleasure.

Why stop there?

The genie could desktop-publish a personal TV-Movie-News-Info Guide for its owner's reference. If you're interested in, say, the aerospace industry, your genie would make sure that you had all the latest bulletins and news flashes on that subject. Now, that would make for an interesting hypertext, wouldn't it?

But back to the present for a moment.

If hypertext is going to effectively transform the way we structure and deliver information—if it really is the tool we need to help us deal with the massive amount of information that keeps doubling and tripling—then we'll definitely have to hone our hyperskills.

D. W. Griffith influenced the entire film industry when he developed techniques such as his fade-out and fade-in to convey the passage of time in films like his classic Birth of a Nation. Prior to that, the film industry was a creative infant. The camera was used simply as a static recording device to capture stage plays on celluloid.

Griffith's innovative techniques are to film what hypertext is to information. In fact, there is a close parallel between early motion pictures and the development of a new information medium. In its early days, film, too, was a completely new method for conveying information and entertainment.

Similarly, hypertext is going to challenge a new generation of publishers, filmmakers, and broadcasters. Anyone and everyone who is involved in the information/communications business will have to become hyperliterate.

The question is, how are we going to decide the standards of this new information medium? Who is going to set the trends? What technical information do we need to exchange in order to establish the ground rules?

The hyperpublisher of tomorrow is going to need a wide variety of media skills—filmmaking, magazine publishing, news publishing, and database publishing, to name just a few.

Meanwhile, we need a place or an organization where people from all parts of the information industry can come together to exchange ideas.

The only such development on the horizon that I'm aware of is the new Information Institute being created by Sat Tara Singh Khalsa, the American Sikh software wizard who founded Kriya Systems and created the best-selling Typing Tutor 3 program.

According to Sat Tara, his nonprofit Information Institute is "the first interdisciplinary forum for all information technologies." The launch will be this year in Aspen, Colorado.

"We're seeing enormous communications and information conglomerates being built up," he says, "but there is no comfortable fit between media. CBS, for example, has TV, radio, computer software, and books. But each is run as a separate entity. While they all exist under one corporate umbrella, they have an uneasy relationship."

By exchanging ideas, new ideas will emerge for dealing with the diverse entities. Sat Tara's Information Institute can be a place where the relationship between such media will be worked out.

The ultimate goal, of course, is for all of us to be up to speed with our burgeoning twenty-first-century information technologies.

Better buckle up to your keyboards. It's time to break through the information barrier.
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Letters
A forum for Macworld readers

Still Burning
My Mac’s power supply died last spring on the operating table while a Plus upgrade was being installed. So, with the upgrade, it received a new power supply. Within six months the new board expired—I heard a poof before the picture shrank to half its size. Prior to its demise, I noticed the left side of the cabinet felt feverish. I added a Kensington System Saver Mac, which seemed to reduce the temperature.

I encourage Macworld to keep a scorecard of reports about these failures. If analysis indicates the power supply has an intrinsic, designed-in suicidal tendency, Apple owes a lot of dedicated Mac owners about $153 per power supply board.

Michael B. Baker
Forest, Virginia

To sign up electronically for GENie Information Services ("The GENie in the CRT," Reviews, Macworld, November 1986), connect by modem at 800/638-8369, and then at the U# prompt enter the following ID number and password: XJMV1999,GENIE.

Apple Smalltalk-80 comes in two versions not mentioned in November’s Where to Buy: version 0.2, which runs on a 512K Mac, and version 0.3, which requires at least 1 megabyte of memory. Both versions are available for $50 from the Apple Programmer’s and Developer’s Association, 290 S.W. 43rd St., Renton, WA 98055, 206/251-6548 (membership $20). The association also distributes the Macintosh Programmer’s Workshop, which is now available in version 1.0 with preliminary instruction manuals.

Some Cool Words on Burnouts
The Mac Bulletin item about power supply burnouts in the November 1986 issue is half right and half wrong. You’re right to say a fan inside the Mac would help prevent burnouts. But it’s wrong to categorically blame the problem on the additional load of memory upgrades.

The power supply board (properly called the analog board) also contains circuitry for the video display. As president of a company that specializes in Macintosh re-
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Sales in the New England Division alone were ahead of last year by over 6%.

Also, a number of the company’s quarter sales, primarily in the middle market segment, were brought about by above average use of Intelltech’s long-distance services, and by lower than average cost for installation of the New England fiber-optic network.

Intelltech also exceeded expectations, accounting for 4% of quarterly earnings, part of which also has a high profit margin. The company’s effective rate relief received in Michigan and Ohio, and also from increased use brought about through a greatly increased advertising schedule, has brought about above average use of Intelltech’s long-distance services, and by lower than average cost for installation of the New England fiber-optic network.

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Infoworld

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— Infoworld software review, 3 November 1986

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Letters

pair—including repairing analog boards for dealers all over the country—I can tell you that nine out of ten analog board failures are video circuitry failures. It is heat that causes these failures, not draw from the power supply.

If the upgrade load were the cause, we’d see a higher failure rate for Macs with upgrades, but that hasn’t been the case. I suggest that all Mac owners—including 128K owners—have a fan installed. I know that Apple is adamant that a fan is not needed, but our experience shows that a fan helps, although it does not prevent all failures.

Low Spurlock
Computer Quick
La Mirada, California

Back to Basics

I applaud the new column on the basics of the Macintosh ["Getting Started," monthly since November 1986]. Sometimes we get so caught up in looking for more intricate software that we forget all the intricacies within some of the most basic programs for the Mac.

Richard Sherwin
Chattanooga, Tennessee

A Different Mind

In emphasizing the many page-layout and graphics features that are appearing in new word processors, your feature article ["Writing Your Own Ticket," December 1986] overlooked the significant contribution MindWrite can make in the writing process. MindWrite offers new tools that didn’t appear on your comparison chart, such as an accumulating Clipboard and a Find All command that gathers references and creates a new document. Your chart omitted MindWrite’s automatic table-of-contents function and listed the program as having split windows (similar to Microsoft Word’s); instead, it offers multiple windows on the same document, for greater flexibility. In addition, MindWrite simplifies the formatting of complexly structured documents such as contracts, reports, and technical specifications.

Susan Raab
MindWrite Software
Carmel, California

For a separate assessment of MindWrite, see Reviews in Macworld’s forthcoming April issue. — Ed.

(continues)
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Our products are selling to companies like Honeywell, AT&T, 3M and Apple. Yet we've also pleased some companies that you probably haven't heard of. Like Don's Dog Service, Anderson's Nursery and Himalayan Expeditions. Who knows, maybe now that they have the right tools, these companies, too, will become household words.

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For the serious user who can't afford to lose data. These "safety nets" keep a portable, permanent record of your data. So reliable, the Library of Congress uses us to backup their most critical data. Free software update policy so your tape drive can be updated as we update ours. We're the only one to deliver file by file, volume and incremental backup. With incremental, you backup only the data you've changed since your last backup. These totally secure systems run silent and cool. When we designed the new Tape 40, we worked side by side with Apple and 3M so it would be compatible with any products released by Apple in the future.
THE MAGNET 40/40.

A very fast 40 Meg hard with a dependable 40 Meg tape backup as a “safety net.” Sits under your Mac so it doesn’t take up extra space. The premier drive/tape backup combination in the market. Backup file by file, volume or incrementally. With incremental, you can usually backup your daily data in under 4 minutes. Comes standard with MacServe ($250.00 value) to allow you Multiuser, Multitasking. This drive is based on the NEC drive and the 3M Tape 40 — two leaders in their respective industries.

MAGNET 85X, 172X AND INTRODUCING THE MAGNET 340X.

Three times faster than standard hard drives because we use voice coil technology. These combine blistering speed, enormous capacity with tape backup and Multiuser, Multitasking software (includes MacServe, a $250.00 value). All 3 are combination drives with integrated tape backup. Powerful, compact, quiet alternatives to the AST 4000. The 172 offers twice the capacity for the same price. (Based on the November 1986 suggested retail pricing.)

WE'RE REVVING UP FOR THE FUTURE.

The Macs of tomorrow are just around the corner. And with Mirror Technologies, you can hit the ground running when they arrive. Currently, we're shipping more drives than any other company except Apple. Like the 85X, 172X, the Magnet 40/40 and tape drives, too. When File Servers hit the streets in January, we were there with big enough hard drives to tie dozens of Macs together. Other drives would blow an engine trying to do that.

And it's no secret that Apple is about to introduce bigger and better machines. We're ready for them, too. Because we're not waiting for the future to come to us. We're going out half way to meet it. That way, we come back with products that'll let you blow the doors off all those who remained standing still.

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Another in the acclaimed Macintosh Library series, *The Macintosh Advisor* will help you learn advanced methods for making Macintosh hardware and software work to their fullest capabilities. This book provides techniques, tips, and advice on how to shortcut some of the Macintosh’s more elementary procedures and enable you to use your Macintosh or Macintosh Plus more productively. Learn how to increase the speed of computing tasks by gaining a better understanding of the Finder, RAM disks, memory management, and other features. The book examines powerful hardware options such as hard disks, RAM upgrades and the LaserWriter.

256 Pages, No. 046569, $18.95

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- How to Write Macintosh™ Software
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- MacAccess: Information in Motion
- MacBook
- Object-Oriented Programming for the Macintosh™
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- Macintosh™ Revealed, Volume One
- Unlocking the Toolbox
- Macintosh™ Revealed, Volume Two
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**Letters**

**When in Rome**

Reading about Apple’s purchase of a supercomputer [Macworld News, November 1986] reminded me of an anecdote I heard last spring when John Rollwagon, chairman and CEO of Cray Research, spoke to my MBA class.

After Apple purchased its Cray, Rollwagon telephoned Seymour Cray, the genius behind the company. “Seymour,” said Rollwagon, “Apple just bought a Cray.” “What are they going to use it for?” inquired Cray. “Well, I think they’re going to design the next Apple computer on it,” Rollwagon replied.

Silence from the other end of the phone. Finally: “That’s interesting. I’m designing the next Cray on an Apple.”

Lynette Hough

Maple Grove, Minnesota

**Who Cares?**

Regarding David Bunnell’s editorial in the November 1986 issue: Who cares if many microcomputer industry brains behind significant revolutionary products are homosexual? I don’t lie awake at night wondering if my washer, dryer, TV, and personal computer were designed by gays, or the KKK, or communists, or rednecks, or right-wingers, or football players, or fat people, or skinny people. However, if I pick up a magazine on dryers, I want advice, reviews, and editorials on the dryer industry.

Arden Henderson

Angleton, Texas

**Fractured Fairy Tales**

Boy! Did David Bunnell stick his neck out this time (“Coming Out of the PC Closet,” November 1986)! It sounds as if he’s starting to believe the fairy tales about personal computer guys being idealistic “renegades” who are “committed to individualism.”

That’s right—you can’t buy us PC guys. Money means nothing to us. If it did, instead of giving our programs away, hell, we’d be selling our code for $600 a shot and copy protecting it just to give everybody a hard time. Yeah, and instead of using computers to fascinate the intellect and solve human problems, we’d be using them at work—probably doing payroll and accounting stuff—and getting paid to do it as though it were a job.

If Georgia governor Joe Harris knew all this tough stuff about us, he’d probably think twice about inviting a wild bunch like us into his state. He probably thinks it’s
To help clear up the confusion about Macintosh Plus™ memory expansion products (and to point out some of the reasons why our MaxPlus 2Mb upgrade immediately became the world's best-selling memory board), we offer this list of five key questions to ask when comparing products.

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   **YES** MacMemory, MaxPlus  
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3. Do I get extras like RAM disk and print spooler software? 
   **YES** MacMemory, MaxPlus  
   **NO** Levco, SuperMac

4. Will I have toll-free technical support and the longest board warranty available? (Two years) 
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   **NO** Levco, Dove, SuperMac

5. Am I getting the most for my money? 
   **YES** MacMemory, MaxPlus ($399)  
   **NO** Levco ($395), Dove ($399), SuperMac ($499)

For a more extensive comparison chart, and the dealer nearest you, just call us at 800-862-2636, or 408-922-0140 inside California.

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- Added super-speed SCSI port, up to two times faster than the Macintosh Plus. Adds 30-pin port to 512K Macintosh or Mac Plus. Ready for optional internal hard disk.

CPU
- 16MHz 68000 processor. 200% faster than the Macintosh or MacPlus. Addresses all daughterboard RAM with no video wait states for overall speed improvement of 250%.

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We added our super-speed SCSI port. It nearly doubles the speed of the SCSI on your Macintosh Plus, and adds the high-speed SCSI to your Mac 512K. Hard disks run faster. (And internal hard disks will just plug in.)

We made sure your Mac would remain 100% compatible with your software.

We built in MaxSave™, our hardware/software system that gives you a reliable, recoverable RAM disk in memory and the ability to work while your ImageWriter™ prints. To complete the package, we included an additional power supply, internal fan and a full, two-year warranty.

And price? Beyond compare. For the price of its closest competition you can buy the TurboMax and two ExceIs (the spreadsheet from Microsoft and the car from Hyundai).

Who could ask for anything more?
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Requires 512K Macintosh with two disk drives, or Mac Plus with one internal drive.

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Letters

get a bunch of straight, white, fundamentalist Christian electronic engineers who work to make money. Well, he’d better realize that if Georgia ever sets up a computer system to track gay people (or any other group of un-American deviates) so that at a moment’s notice they can be effectively identified, isolated, punished, and corralled into concentration camps, be sure can’t count on any help from us high-minded PC guys, right?

I gotta admit it though, those squirming little minorities really have it rough. At least Japanese-Americans like me know that nothing like that could happen to us.

H. Doug Matsuoka
Honolulu, Hawaii

The South May Rise Again

I applaud David Bunnell’s statement in the November issue. Anti-sodomy laws and laws against evolution make a lie of the promise of the new rising in the old South.

Stuart N. Atwood
Olympia, Washington

The Irony of Deregulation

It was a ray of sunshine to read David Bunnell’s November editorial on Georgia’s sodomy laws; I fully agree with him. What an irony that under the guise of deregulation and freedom we unleash handguns, encourage reckless trucking, stifle the EPA, cripple OSHA, and at the same time try to regulate our bedrooms (and urine).

Dick Dememis
New York, New York

A Graphic Representation

Thanks for the masterful consumer-level technical information in “The Graphic Mac” in the November issue of Macworld. It represents an exciting polarization toward the high quality of information, technical clarity, and logical presentation that, in the past, have successfully differentiated Macworld from the rest.

Stephen J. Staus
Northridge, California

Screening the Numbers

Several times “The Graphic Mac” refers to the Mac’s screen resolution as 340 by 512, in the accompanying diagrams, 340 appears as the horizontal resolution. Actually the resolution is 512 horizontally by 342 vertically. It was also quite a revelation that all the 8088 microprocessors in all the IBM PCs have magically turned into 8086 processors.

(continues)
CRICKET DRAW

Draw has been around as long as the Macintosh. It took Cricket Software to perfect it. Finally, the Mac’s graphics capabilities can truly be realized with Cricket Draw, the revolutionary new draw program from Cricket Software.

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The kind of features you only dreamed possible, such as full rotation and tilting of any object, controlled shadowing, shading with a gray scale (0-100%), fountains (graded tints), starbursts, grates, bezier curves and much, much more. And with an Imagewriter II printer you can see it all in dazzling color.

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Precision drawings? How about vertical and horizontal rulers with your choice of inches, centimeters, picas or pixels? Also, you can show the measurements of any object, precisely align objects using grids or guidelines, zoom-in, zoom-out — Cricket Draw has it ALL.

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Prints Charming.
Printworks is the first color, high-performance ImageWriter driver to walk down the aisle with the Mac. High speed spooling lets you work and print at the same time. Print previews of pages to the screen, then skip or print. On the ImageWriter II, print color directly from MacDraw, MacDraft, Jazz, Excel, Chart or other drawing and charting applications—each graphic will be colored automatically. Letters and memos look great using your printer's built-in fonts along with our enhanced word spacing. Even merge printer text with graphics on the same page. Installs with a click for good on application or hard disks. You'll print happily ever after, and as easily as with Apple's standard ImageWriter driver. Only better. $75.

Compatibility: Macintosh 512K, 512K Enhanced, or Plus with Finder 5.3 or equivalent.

Plotstart™
A brilliant affair.
Plotstart links your Mac with HP desktop plotters for professional color graphics. Dazzle them with brilliance on paper or transparencies. There's no cut and paste needed. Just select "Print" and you'll plot in vibrant color. Plot directly from MacDraw, MacDraft, Jazz, Excel. Chart and other standard object-oriented applications—each graphic is colored automatically. Plotstart is so simple and fast, you can easily experiment or tailor your pen colors and fills. Switch between your printer and plotter with a click using Chooser. Make your next presentation an affair to remember. $125 with cable.

Compatibility: Any Macintosh; Finder 4.1 or 5.3; HP ColorPro with GEC, 7475A or 7550A plotters.

New. Bluestart™ & Daisystart™
IBM and Daisywheels marry into the 'Start family.
Opposites attract. The 'Start family makes your Apple Mac compatible with IBM printers and Daisywheel printers. Bluestart marries the IBM Proprinter, Color Jetprinter, Quietwriter 2, and Wheelprinter E. Daisystart marries Brother, Diablo, NEC and other daisywheel printers.
Bluestart $45. Daisystart $95 with cable.

Marry your non-Apple printers to the Mac with the 'Start family of drivers.

Meet the other members of the 'Start family: Epstart™ for Epson printers, $45; Jetstart™ for HP Thinkjet and Quietjet printers, $45; Laserstart™ for all HP Laserjet printers, $95 with cable; Ti-start™ for Texas Instrument printers, $75 with cable; and Toshstart™ for Toshiba printers, $45.

Compatibility: Any Macintosh; Finder 4.1 or 5.3; Choose Printer or Chooser; printers require serial interface; works with virtually any software following Macintosh printing standards.

Improved. MacEnhancer™
Connect more things to your Mac.
We are gathered here to join together this one port with any four of these: modem, laser, dot matrix, scanner, daisywheel, color plotter, IBM PC and other computers, AppleTalk and more—all at the same time. It's now Mac Plus compatible with new, improved control software. MacEnhancer is attractive, compact and completely mouse

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controlled. Plug it in and use your applications as you normally do. Apple's Installer puts SoftStyle's proven driver control software on your disks for good. Apple's Chooser lets you switch instantly between devices. Full featured communications software is included along with drivers for over 25 non-Apple printers and plotters. MacEnhancer—a port for any brainstorm. $245.

**Compatibility:** Macintosh 512K, 512K Enhanced or Plus; Finder 5.3 and Chooser; Apple modem and Hayes Smartmodem or compatible; ImageWriter and LaserWriter; selected daisywheel and dot matrix printers from Brother, Diablo, Epson, Hewlett-Packard, IBM, NEC, Star Micronics, Texas Instruments, and Toshiba; HP desktop plotters; HP LaserJet laser printers.

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MacEnhancer expands one port into four with one standard Mac RS-422 serial port, two RS-232C serial ports, and a serial-to-parallel Centronics port.

**Colormate and Colormate Art**

Something borrowed, something blue. You don't have to learn the art of 4-color separation to print in color from a black and white Mac. Colormate makes it quick and easy to create a green eyed monster or true blue hero on your ImageWriter II. The first coloring utility for the Mac is still the most versatile. Do all your coloring in one file. Open MacPaint and FullPaint files directly, even cut and paste from others. Easy coloring, easy color editing. Colormate Art adds sparkle with two disks full of more than 100 professional colored images. Colormate $75. Colormate Art $45.

**Compatibility:** Any Macintosh; ImageWriter II and color ribbon.

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Marry into the laser jet set.

Step ahead with first class work from an HP LaserJet, and other laser printers. Print as usual with unusually stunning results. Even combine letter quality text from font cartridges with laser quality graphics on the same page. Preview pages to the screen, then skip or print. The built-in spooler lets you get to work on your next assignment while your last job is printing. $145 with cable.

**Compatibility:** Macintosh 512K, 512K Enhanced or Plus; Finder 5.3 and Chooser; does not support advanced PostScript features. Supports HP LaserJet family, Cannon LBP-8A, Xerox 4045, and NCR 6416 laser printers.

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Letters

Overall you have a good magazine, but watch those numbers!

Michael J. Gibbs
Surprise, Arizona

No Money Back
My company responded to a Data Graphics ad for Sr. Accountant that promised a 30-day, money-back guarantee. We were not satisfied with the program and mailed it back to the firm two days later. We’ve waited and called repeatedly, and finally two months later an executive called us back but wouldn’t agree to send a refund. I feel an advertiser is bound by his word.

Ken Mabood
Leesburg, Virginia

Jack Cauldwell of Data Graphics told us he was worried about people duplicating the un-copy-protected program and then sending it back for a refund. He said, “We only give money back to people who tell us specifically why they don’t like the program, within the 30 days.” That is not the same guarantee that was advertised. You could try offering a note from your mother.—Ed.

Worlds Apart
Though I think Jazz is great, it doesn’t sort its worksheets or databases alphabetically by the Norwegian alphabet, which includes characters such as Æ, Ø, and Å. This problem isn’t limited to Jazz—even the Finder doesn’t place files in the correct order (it goes…X, Y, Z, Æ, Ø, Å). I hope future releases of software for Europe have proper language extensions.

Christian Falck
Tromsø, Norway

The monoglot alphabetization results from the standard ASCII character set contained in Toolbox routines that all applications call on. It’s not a simple matter of upgrading the system software, because the routines are partly in ROM. An Apple representative said the company is looking into a solution.—Ed.

Networking
Though we appreciate your review of MacServe [“A Network Divided,” Macworld, October 1986], some of our product’s most outstanding features were overlooked, such as the hard disk management aspect that increases performance and reduces fragmentation, support for multituser data-bases, and per-server pricing with no charge for user nodes.

More important, MacServe offers the practical convenience of global access. All users have access to whatever resources they need even if the person who manages the hard disk has not manually “published” them.

Also, MacServe has phenomenal crash-recovery capability. If the Mac being used as the server crashes, the user node receives an alert message. Meanwhile, the server starts up again, and MacServe reloads automatically and lets the users pick up from where they left off with no loss of data. The program even responds to the last command issued before the crash.

Paul O’Brien
Vice President
Infosphere
Portland, Oregon

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Our ultra quiet fan pulls air through the drive and sends it out the bottom.

In a world full of experts and overpriced product lines, Mac enthusiasts dream of a company that will give them quality engineering at a price the rest of us can afford. Here's how Jasmine fulfills that dream:

Only Jasmine
- adds shock absorbers to protect your drive.
- ships your drive with a full P.D. and shareware library.
- tests each drive in real time before shipping.
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- never requires you to open the box to daisy chain multiple drives.
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The Mac was designed for the rest of us. Nothing complicated. No archaic language. Elegant simplicity. Then something happened. Users are asked to solder, open boxes and become technicians. In the SCSI drive market, Jasmine finally put an end to that.

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Trapeze™ is a revolutionary new spreadsheet created especially for the Macintosh™. It was designed by a spreadsheet user who was tired of the limitations of row and column spreadsheets. He wanted a program that was as easy to use as his Mac. One that would let him do things like organize his spreadsheet model as he went along, and change his model without ruining it. He wanted to be able to define what the spreadsheet would do, rather than have the program define what he could do. He wanted to use logical names, and formulas he could understand. He wanted to see graphics, charts and text on the same page as his spreadsheet data, and to make the output look professional enough to use in presentations. And he wanted to do it all fast.

The result is a spreadsheet that is as innovative as the Macintosh. Trapeze is so unique, in fact, that it is being called the next generation spreadsheet. Here's why:

**Flexibility**—Trapeze doesn't lock you into a grid of rows and columns. Instead, it stores information in blocks. You define the block according to what it is, not where it is, and can move it anywhere on the page. That gives you the freedom to do things like add a row without ruining your model. And the unique auto-sizing feature causes blocks to automatically adjust in size when you make additions or changes to your worksheet.

**Power**—The block format of Trapeze lets you set up worksheets quickly. Even complex models can be created easily, because Trapeze contains over 100 functions and formulas, many of which are unavailable in other spreadsheets. You can create charts which plot thousands of points, and multiple databases allow you to efficiently organize your data for presentation. Trapeze takes full advantage of the power of the Macintosh; in fact, the size of your model is limited only by available memory.

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**With Trapeze, There You Can See With**
Style—Trapeze lets you use all of the Macintosh fonts, styles, and sizes—even color—in any block. You can create graphs on the same page with your spreadsheet or import graphics from MacPaint™, forms from MacDraw™ or text from a word processing program. Blocks may contain text, charts, graphics, numbers—virtually anything you need to make your worksheet look good. Since the blocks can be moved around freely, you can lay out your page however you wish. And you can do most of it without ever touching the keyboard.

Versatility—Its unique function set makes Trapeze as useful for nonfinancial users as it is for financial ones. The program can perform matrix operations, simultaneous equation solutions and more statistical functions than any other spreadsheet. Up to 32 documents may be open at the same time, so you can work with figures for different divisions of your company—or perform several analyses of engineering data—and consolidate the information into one report. And the elimination of copying formulas and checking all related information lets you analyze complex technical data with unprecedented speed and accuracy.

Trapeze is available now for $295, and comes with a 30-day, money-back guarantee. To order, contact the dealer nearest you or call toll free 1-800-443-1022 today. Once you begin using Trapeze, there's no limit to what you can see.

Minimum system requirements—Macintosh 512K with external drive or enhanced Macintosh 512K. Supports Laserwriter™ and ImageWriter™ I and II.

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Commentary/ Jerry Borrell

The Spring of Our Disk-Content

The last several months have brought a wealth of Macintosh product announcements, and many of us expect the next two months to bring even more. But in the midst of my growing expectations, the hoary ghost of unfulfilled promises rises to haunt my vision of new technology. Each month I see more products announced long before the manufacturer is able to produce or ship them.

Until the 1960s this was common practice. Then the federal government sued IBM, and was successful in forcing the company to stop preannouncing its products. The reasoning behind this landmark decision was that by preannouncing products IBM was effectively chilling competitive forces in the market. For a long while this provided guidance in an industry that regulators little understood and legislators tended to ignore.

Over the last several years—certainly during the Reagan administration's era of deregulation—the precedent set by this action has fallen into disuse. The change became apparent to me in 1981 when Sony announced the Mavica, a filmless camera that was going to enable us to capture images on magnetic disks, view them on our own TVs, and print them on low-cost thermal printers. Several years later, there are still no Maviclas in my local camera store, though Sony periodically hails one out for a demonstration.

More recently, I recall the banner headlines of PC magazines heralding the arrival of networking products for the IBM PC. Has anyone actually seen one of these things stomping around on two legs? Token-Ring? Didn't Bilbo throw that into Mount Doom? How can IBM get away with announcing something that doesn't work? We Macintosh owners don't want that sort of thing to happen with our machines. And despite the criticism I might have for some developers who spend months fine-tuning a Macintosh product after its announcement and before shipment, I'll hold back because most of their products turn out to be real.

In fact, I am writing today not to criticize products but to praise them. In this issue we discuss two products with special promise: Apple's new file server, AppleShare, and MacMovies from Beck-Tech. Both products have been widely discussed and anticipated. Both seem to have been under development for longer than necessary. But now that they're here, the wait has paid off.

AppleShare is one of those seminal products that could have the impact of VisiCalc, the original spreadsheet. Yes, it is an expensive solution for the casual user, but for multiple-Macintosh environments, it is a boon. By further refining the AppleTalk network architecture and defining its data communications protocols, Apple has erected a platform upon which dozens of useful applications can be built—the sort of functionality that IBM should have defined under SNA but never did. With AppleShare, files can be shared among people in a network.

AppleShare also expands communications possibilities to other computers by allowing UNIX or DOS operating systems to access files on the network. Files are accessed from AppleTalk or from other networks via bridges such as Interbridge from Hayes.

Much as the Mac's system resources gave a boost to developers, so will AppleShare encourage new development. Because the file server resides in nonapplication RAM on a dedicated Mac, it is one step closer to another important revolution in

(continues)
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Choosing a database manager is no easy task. It's by far the most confusing and fiercely competitive field in Mac software. But now your buying decision is crystal clear, because the editors of MacUser and the readers of MACazine have both selected OverVUE as the Best Database of the Year.

Said MacUser (Jan. 1986), in selecting OverVUE for its Editors Choice Award: "OverVUE 2.0 is a deceiving program in that the more you use it, the more you realize what it can do. Power, speed and logical menus make this a dream database."

When MACazine (Jan. 1986) bestowed OverVUE with its Readers' Choice Award, they wrote: "We selected OverVUE because of its ease of use, clairvoyance and statistical capabilities. The fact that OverVUE was subsequently selected by our readers as Best Database simply confirms our original assessment: the product is a jewel and the customer support a bonus!"

OverVUE's clean sweep of these two prestigious awards only confirms what everyone else has been saying all along:

InfoWorld (July 8, 1985): "...it is Macintosh software done right."
Icon Review (Fall 1985): "OverVUE 2.0 is our favorite database workhorse...it simply offers the best balance of power and ease of use available on the market today."
Nibble Mac (Oct. 1985): "OverVUE is not only easy to set up, it's the easiest for data entry. Its tools for entering repetitive data minimizes typing time."
Online Today (electronic version - Nov. 1985): "OverVUE 2.0 is a heavy duty database management tool...It does all the things a good relational database manager should."

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Commentary/Jerry Borrell

personal computing—access to remote processors and multitasking. For example, the CPU of the dedicated server could act either as the raster image processor (RIP) for a low-cost laser printer or as a printer spooler, freeing up the Mac and lowering costs. After all, the system board of a Mac is remarkably like that of a laser printer, so why not remove the RIP from the printer and sell a very inexpensive laser printer?

Perhaps more important, the file server gives us one more reason to use the AppleTalk network. The editors at Macworld are connected via AppleTalk with an electronic-mail product. But keeping a large group "up" on the mail system is cumbersome—everyone must have the same System Folder, the electronic-mail program must reside as the start-up application, and certain add-on products don't work on the network. It's a great application, but it requires almost as much time to keep running as it saves. The LaserWriter attached to the network is a hands-down winner—even on a busy network it's better to queue up from our desks than to stand in line at the printer.

But we need more reasons to use networking, and AppleShare is one of the best yet. Because Apple has left plenty of functionality for other companies to define and develop, we should see even more reasons for networking. If that happens, the cost of dedicated network servers and the salaries of system administrators will be more in keeping with the systems' value.

Another ground-breaking product comes from Beck-Tech. MacMovies brings a near-video-quality animation and presentation tool to the Mac. It may not compare with the best IBM PC-based systems, such as Cubicomp or West End Video, but then it costs $100 instead of $10,000, and it's easy to use. And now that files can be shared, MacMovies should lend itself to network use, making dry memos a thing of the past.

In short, although we may sometimes think we're in no-ware land, products such as these two support our original reasons for buying the Mac.
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Contributors Notes


Daniel Ben-Horin ("Insights on Microsoft Word") is a San Francisco journalist and computer consultant who works with writers and nonprofit groups. His work has appeared in the New Yorker, Redbook, and Mother Jones, and he is a regular contributor to Macworld with coauthor Charles Seiter.

Cynthia W. Harriman ("Mac Business Tools") is coauthor of The Macintosh Advisor; published last year by Hayden. She is director of the Boston Computer Society Summer Institute and formerly ran her own personal computer consulting and training firm. After years of teaching people to use Lotus's 1-2-3, she now specializes in Excel training. She also sits on the InfoWorld review board.

Jim Heid ("Getting Started with Spooling") is a contributing editor of Macworld and author of dBase Mac in Business, published last year by Ashton-Tate Publishing Group. Each month he turns his attention to a different topic in his Macworld column on Mac fundamentals.

Carol Johnson ("Kids' Stuff") is a 38-year-old freelance writer who has many of the interests and inclinations of typical 12-year-old boys. In her avocation as a semiprofessional aunt before she traded up to a Macintosh, she devoted many hours to programming children's games in BASIC on her Apple II to entertain and edify young relatives.

Gordon McComb ("Hands-On Digitizing") is a contributing editor of Macworld. He has authored three books on the Mac, including Mastering MacDraw, due out this spring from Compute, and Macintosh Graphics, published in 1985 by New American Library.

Erbert Nielsen ("Moving Pictures") was a founding member of the Macworld staff who specialized in graphics. Now a contributing editor, she sandwiches her assignments in between treks to the Far East, the Midwest, and the Trinity Alps.

Lon Poole has been educating Macintosh users since the machine was introduced. He helped found Macworld and has contributed articles regularly. Every month he answers readers' questions in the Quick Tips column. He has also authored two Mac books: MacWork MacPlay, a beginner's workbook, and Mac Insights, a collection of tips, shortcuts, and enhancements recently published by Microsoft Press.

Charles Seiter ("Insights on Microsoft Word") is a chemistry professor turned computer writer who telecommutes from his woodland home in Willis, California. His published works include The Skeptical Consumer's Guide to Used Computers from Ten Speed Press and books on Pascal and computerized financial planning from Addison-Wesley.
There's a lot of Mac software on the market, and more coming every day. Choosing which program is right for your application doesn't have to be a gamble.

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MUG Shots

Can you judge a computer by its user groups? Yes—the New York group is a case in point.

We are at the November meeting of NYMUG—the New York Macintosh User’s Group. A small auditorium. People selling public domain software and shareware disks at the tables in the back; a Mac and a mike in front. The meeting is called to order late, and the 250 or so people attending—one-fourth of the total membership—are slow to quiet down.

The president is a bearded man in a business suit. Quick announcements: Remember to bring your membership cards to dealers who offer us discounts. There’s a vacancy on the club’s board of directors (one more burned-out volunteer). Our First Annual Mac Fair is in less than 10 weeks. Our electronic bulletin board is operating again, and yes, you’ll probably get a busy signal when you call it. Try calling during weekdays.

He yields to a succession of speakers who briefly announce the locations and discussion topics for various Special Interest Group (SIG) meetings later this month. Anyone needing help in setting up a database can drop by the DB group meeting in Brooklyn. The Assembler group will discuss “Debugging on the Mac,” apparently not for the first time. The Business SIG will feature a guest speaker at its session in the Wall Street area. Music SIG members meet this month at the chic Limelight Disco to witness Macintoshes running the sound system. The Novice SIG meets on Staten Island this month—“A little out of the way, but worth it.” The Artificial Intelligence group “kind of ran out of software about six months ago,” so is now meeting with the AI SIG of the IBM PC user group. This elicits scattered hisses.

Now comes the period when anyone can ask a question or speak out, as long as no more than 60 seconds are consumed. “Who knows the name and address of the author of Captain Magneto? I want to send him the money!” Someone has the info.

“Did Micah file for Chapter 11 today?”
Yep.

“Has anyone here worked with kerning tables? See me during the break.”

“Is there any way to get information about Desk Organizer?” Ask the publisher. No, they’re out of business. Yeah, but the authors took over the program. I know, but they’re out of business, too.

“Can someone explain the difference between a Bernoulli and a hard drive?”
Many can, and do.

“What’s the trick for addressing envelopes with a LaserWriter?” Use #10 bond envelopes.

And so it goes, for 40 minutes. Then comes the featured product demo, which is not dBase Mac, as promised in The Mac Street Journal, the club’s newsletter. Ashton-Tate sends regrets, and is replaced by Microsoft and its announced-but-not-released Word 3.0.

Lights dim, the demo begins, and the questions fly. “Does it automatically repaginate? Can we see columns on screen? Is it . . . faster?”
Yes. Applause. A night at the user group.

You’ve Seen One . . .

Even though NYMUG is one of the larger Macintosh user groups and has some unique characteristics (how many SIGs convene at the Limelight?), the November NYMUG meeting was essentially no different from hundreds of other Macintosh group sessions across the country. From the mammoth Show Page group in San Francisco to the modest yet enthusiastic Macintosh Apple Corps of Wilmington, North Carolina, Mac people are Mac people. As Apple software despot Guy Kawasaki, who has visited dozens of user groups, says, “You could drop me in any . . . (continues)
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The Icon Review

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sought out others who shared the same glorious affinity.

On the other hand, there was a matrix of need that bound the early Mac users. Charles Kadushin, a sociology professor at the City University of New York who has studied computer user groups, notes that "there is a curious similarity between having a disease and owning a computer... For every existing disease, there is a self-help group that will, say, exchange information about prosthetic devices or arthritis aids. Computer user groups are their equivalent."

Handicapped by insufficient memory, a lack of storage devices, and an anemic software base, early Mac users had to rely on each other, and that need fueled the wildfire growth of user groups. Since the Mac's handicaps were temporary, and generally seen as such, there was little of the entrenched bitterness of user groups who felt abandoned by the manufacturer. Well, maybe more than a little. When, for instance, the first Apple representative addressed NYMUG, she was abused by a flurry of questions concerning the unfinished state of the original Mac. A sympathetic soul, noting her stunned response, called out, "Welcome to New York."

But generally, the meetings were love-fests. If you were a writer trying to produce a novel with a word processor that limited documents to nine pages, so what? You were part of a movement. And each month, you met new people who coped with the same problems. You heard rumors of software just around the corner that would solve all your problems. Computer consultants may charge exorbitant hourly rates, but for your measly $32 membership (the amount was chosen to conform to the 32 bits of the 68000 chip inside the Mac), you could find, free of charge, people who seemed amazingly plugged in to the secrets of Macintoshing, and who were more than eager to share their wisdom. Is it any wonder that NYMUG and other early MUGs were bombarded with membership requests from distant Mac owners, some from exotic lands?

Someone even noticed that money could be made in the user group business. NYMUG copresidents Sandler and Doochin insisted that the group remain nonprofit and local. But around the coun-

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try, a few other user groups took the profitmaking route. Most notable was the supernova Club Mac, a Denver-based group that solicited membership worldwide, offering member disks, a state-of-the-art newsletter, and a help hot line. By the end of 1984, Club Mac was 5000 members strong.

MUG Officer Burnout
If its astronomical growth had continued, of course, NYMUG would have had to look into renting Madison Square Garden for its meetings. But the New York group and other groups around the country hit the wall around autumn 1985. Many of the original Mac owners had found solutions to their specific problems, and with Mac sales flattening, there wasn’t a huge group of new owners to take their place. With the failure of Apple's Mac Office promotion, some of the luster had worn off the Macintosh. And in the case of NYMUG, the details of organizing the group as a legal nonprofit entity, as well as handling the demands of the membership, had taken their toll on the volunteers in charge. Doochin and Sandler had married, moved out of the city, and were expecting a child. They turned over the reins to a new president, who was chosen, he explains, "because my 'no' was the least emphatic." During the new leader's first week, NYMUG's Mac and hard drive were stolen, closing down the group's BBS.

NYMUG's problems were not unique. Other big user groups had similar experiences. And though at least one national user group thrived—MAUG, which did all its business electronically on CompuServe—Club Mac did not, finally petering out in early 1986.

Ironically, it was at this standstill point that the parent company finally began to notice the valuable resource represented by MUGs. Apple Computer decided to set up a support system through which it could disseminate information to the groups and help them in other ways.

"While we had this little lull, we used it as a building time," says Ellen Leanse, who was chosen as Apple's first user group evangelist. "We built a communications system to user groups, set up a speaker's bureau, and began building a structure to integrate user activity into more areas of Apple."

(continues)
This effort was officially launched in January 1986, as part of the AppleWorld Conference that introduced the Mac Plus. MUG representatives were honored guests, as they would be for all major product launchings thereafter. And though Leanse’s group was not a be-all and end-all to MUGs hungry for support (the plan for discount sales of Apple equipment has been tortuously slow in execution), it allowed MUGs access to Apple for help previously withheld.

A good example of Apple’s new approach is NYMUG’s recent Macintosh Fair. It began when the group asked Guy Kawasaki to come to New York to speak. With Apple’s encouragement, the event ballooned into a one-day computer show involving several user groups, over a dozen third-party developers, a list of speakers including three Apple evangelists and Scott “Red Ryder” Watson, and a raffle. The grand prize was a Mac Plus donated by Apple. When Kawasaki drew the winner’s name out of the box, he looked at the ticket and read, “Steve Jobs.” Just a joke.

Muggin’ Cross the USA
Are Macintosh user groups different from other user groups? Ellen Leanse calls the members “cutting-edge-type people. Quite au courant with different types of products. They have a certain outspokenness.”

The sociologist Kadushin hasn’t compiled his data yet but ventures some observations based on the New York group. “They attracted a group of yuppies, which was unusual. The tone of the meetings is less grubby, less esoteric [than an IBM PC group]. An incredible number of stupid questions are tolerated, and there’s a general desire to help people.”

That’s characteristic of the professionally oriented NYMUG, which is so tolerant of techno-nerds that some hacker types have amicably split to form a bulletin-board-based user group of their own. My large stack of newsletters from MUGs around the country shows a broader focus, but that aforementioned similarity of interests prevails. The offerings in these publications—mostly done in slick LaserWriter formats—show that almost all the groups are heavily into software disks (the San Diego MUG is up to Member Disk #137), free help lines (the Chicago-based The Rest of Us gives over twenty numbers to call for help on anything from spreadsheets to desktop publishing), rumor-mongering (often recirculating tidbits from other newsletters), and Andy Hertzfeld’s Servant. The spunky former Apple programmer is the number one celebrity in these publications, from Mad Mac News (Shenandoah, Virginia) to Mad Mac News (Madison, Wisconsin).

What comes through most of all is enthusiasm. Though these are not the giddy days of 1984, the excitement of the Mac and the power of the newest software offerings have maintained a thriving and active community. And I would venture that contrary to Dr. Kadushin’s simile, the impetus comes from something more salutary than a common malady. Remember, certain sages initially guessed that once the Mac’s bugs were worked out, its ease of use would obviate the need for the support of a user group. When I asked Ellen Leanse about that, she provided the following bit of evangelism: “When people are having fun, they like to share it.”

---

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Face it. You’re a job hopper. Constantly skipping from one kind of crisis to another.

With that in mind, we are pleased to announce a program that can change gears as fast as you do: Microsoft® Works. A one disk program which gracefully integrates the four fundamental tools you need at work:

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Finally a communications tool which lets you get stock quotes, make travel reservations, do research, and send reports across the country, right over the phone lines.
Microsoft Works lets you juggle all these jobs, move swiftly and easily between them, while transferring and combining their information as you please. Because you do all these jobs with one, easy to learn, totally integrated program.

Quick study. Quick change.

The first job is the easiest. Learning to use Microsoft Works. It's a snap. The overall program and each tool within runs Macintosh™ style. Which, as you probably know, is a natural, common sense, point-at-what-you-want system.

And Microsoft Works is seamlessly melded together. You can have all four tools on screen at once. Jump instantly from one to another. And later combine work done in each part of the program on a single printed page.

This easy exchange of data makes jobs go faster and easier. One practical example being mass mailings of form letters where you need to combine names from the database with text written in the word processor.

All in all, Microsoft Works is a superb solution for day to day, get-it-done problems. An inspiring display of convenience, efficiency, and utility.

And, of course, it's a product of Microsoft, the preeminent developer of programs for the Macintosh. Which is not a claim, it's a fact.

If you're in a business that won't let you stick to one thing, check out Microsoft Works. The program that can change jobs as fast as you do.
Macworld Phone Survey

We'd like to have your thoughts about Macworld and the Mac. What do you like? What don't you like? Which subjects intrigue you most? Any problems with the technology? With support?

Call us! Through February 14, 1987, your phone responses will be recorded, and in a future issue we'll let you know the results of this survey.

First, read the questions and decide on your answers. Then follow these directions.

Step-by-Step Example
Dial the phone number 800/345-3550. A computer will answer: "Please enter control number."

If you're using a push-button phone, enter the control number at the top of the answer section, then press the star (*).

Computer: "Enter Part I."

Look at your answer form and punch in your answer to Part I, then press the star.

Computer: "Enter Part II."

Repeat the procedure in Part I for Parts II through VII. Don't forget the star at the end of each part.

For processing purposes, wait for the computer to thank you, then hang up.

In case of error, press # and 1 and begin again, or press # and 0 for assistance.

If you're using a rotary-dial phone: Dial the phone number. Wait for the computer to ask for the control number twice; an operator will then come on the line to assist you.

(continues)
The Omnis 3 Plus Programmable Relational Database — a quantum leap in the development of business solutions on Macintosh.

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Reliable, expandable Macintosh business solutions are popping up in companies big and small, everywhere. Most are based on the Omnis 3 database.

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Why? Because Omnis is the most powerful tool available for developing textual/numeric, transaction intensive applications on a personal computer.

What exactly does “most powerful” mean? It means finding one of 100,000 records in an unbeatable .17 seconds. It means being able to grow from a single user to a 32 user system automatically, using any popular LAN. And being able to read files off all best selling programs, with full confidence in the security of your data.

It means an experienced Mac user can develop expandable, long term solutions in a very short amount of time. And they’ll be as easy to use as you’d expect on Macintosh.

For a demonstration disc, and a directory of applications already developed on Omnis 3, clip this coupon or call 1-800-843-8615.

(Inside California call 1-800-223-8050).

*According to a study by Ranage published in Infoworld 8/85, Omnis 3 outsells all other Macintosh databases combined.

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Macworld Phone Survey

Part I
A. What type of product information would you find most valuable in *Macworld*? (Enter one response)
- Product announcements
- Single-product evaluations
- Product comparisons
- How-to-use articles
- Other

Part II
B. Which application areas would you like to read about in *Macworld*? (Enter all that apply)
- Business
- Desktop publishing
- Education
- Engineering
- Games
- Graphics
- Music
- Programming
- Other
- Don't know

Part III
C. What do you primarily read *Macworld* reviews for? (Enter one response)
- New ways to use the Macintosh
- Product news
- Purchase information
- Other
- Don't know

D. Based on your experience, what is the most common problem with Macintosh software? (Enter one response)
- Compatibility
- Copy protection
- Documentation
- Purchase price
- Support
- Other
- No problem
- Don't know

Part IV
E. In which areas do you think Macintosh software is needed? (Enter all that apply)
- Architecture
- Business
- Children's programs
- Education
- Engineering/construction
- Law
- Medicine
- Other
- No additional areas needed
- No opinion

Part V
F. From what sources do you obtain Macintosh software? (Enter all that apply)
- Retail outlets
- Mail-order companies
- On-line bulletin boards or public domain
- Unauthorized copies
- Other
- Do not obtain

Part VI
G. What do you consider to be the most serious limitation of the Macintosh? (Enter one response)
- Closed architecture
- Internal memory
- Lack of color monitor
- Lack of software
- Speed
- Other
- No serious limitations
- Don't know

Part VII
H. Which hardware product has given you the most problems? (Enter one response)
- The Macintosh
- External 800K drive
- Internal hard disk drive
- External hard disk drive
- Memory upgrades
- LaserWriter
- Other printer
- Network hardware
- Other
- No problems
- No support problems
- No experience with dealers

I. Overall, how would you rate the quality of support from Apple dealers? (Enter one response)
- Excellent
- Good
- Fair
- Poor
- No experience with dealers

J. Where have you ever had a problem getting support? (Enter all that apply)
- Dealers
- Developers
- Service contractors
- Manufacturers
- In-house
- Other
- No support problems

We appreciate your input. Remember, we need it by February 14, 1987.
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"MindWrite?"
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If you make up your mind about MindWrite software without looking beyond the obvious conventional criteria, you’ll miss the point, too.

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Like no word processor before it, MindWrite focuses the power of the Macintosh on the creative part of the writing process.

MindWrite goes farther than any product since the Macintosh itself to simplify and speed up the process of turning nebulous notions into matchless manuscripts.

Unlike any other software—including any other that touts “integrated outlining”—MindWrite lets your finished piece evolve smoothly and naturally from your outline.

Because whether you like to work from a quick list of catchwords or a precisely detailed blueprint, you can move effortlessly between outline and draft at any time. It’s a simple matter of selecting a display option.

So if an effervescent phrase flashes off your fingertips, you’re word processing.

If you need to note three ideas for the ending, you’re outlining.

And if you think nothing can be this simple, you’re almost right.

Nothing else is this simple.

The more you rewrite, the more you’ll like MindWrite.

If you want to move a MindWrite paragraph, for example, just select it with the mouse and drag it to its new location.

If you want to make identical changes to several headings or paragraphs, just select them all at once (even if they’re separated by other text) and make them italic or bold or whatever.

Or drag them to a new location—where they’ll appear in the order you selected them.

Nothing else is this foolproof, either. MindWrite’s exclusive “accumulating clipboard” stores everything you’ve cut until you’re sure you won’t need it.

Numbered sections are automatically renumbered when you move them.

If you’re writing to fill a certain space, the word-count feature keeps you posted.

And time-and-date stamping lets you mark changed paragraphs, so it’s now much easier to review complex revisions. Speaking of which:

The longer you write, the more you’ll like MindWrite.

Now you can navigate through long or complex (or long and complex) documents faster than ever before.

No more tedious scrolling. A tap on the mouse-button shows the entire manuscript in outline form. Click on the chapter, section or sub-section you want and it opens. Work, click back to the outline, and move on.

Of course, you can view outline and text in separate windows, too. And have as many windows as you want.

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Now that software companies have discovered Mac's graphics interface, their products have become a lot more useful. Because now you can add pictures to your documents. And you know what they say about one picture.

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Programs like PageMaker™, GraphicWorks™ and ReadySetGo™ for desktop publishing. With ThunderScan you don't have to rely on your own artistic abilities or someone else's clip art disk. Instead, you can illustrate your words with just the right graphics (even one-of-a-kind items like your logo or your own portrait). Improving both the professional appearance and readability of your publications.

Use ThunderScan with Business Filevision®«dBASE® Mac or Filemaker® Plus to add pictures and photographs to your data, for more complete, more informative databases. It's perfect for research, real estate portfolios, personnel files — any time you're working with more than words or numbers.

For those who view Mac as a blank canvas, ThunderScan is an exciting new artistic tool. Not only can you create elegant works of art with ThunderScan's powerful image enhancement software, you can really get wild with SuperPaint and FullPaint. And that's just the start. ThunderScan can boost the performance of MacDraw™, MacDraft™, MacPaint™ — Mac-Anything! Plus, Thunderware's new optional $29 connector makes ThunderScan Mac Plus compatible without a wall plug. So if you want to make the best of Mac software even better, take a gander at ThunderScan. At just $229 there's no better way to give your software a goose.
San Francisco State's dean of creative arts, August Coppola, believes that the Macintosh can be used by artists in novel ways.

Creative Arts

August Coppola, dean of the creative arts department at San Francisco State University and brother of film director Francis Ford Coppola, is involved in a unique project.

His department is administering a program using the Macintosh to explore uncharted territories in art, design, music, dance, theatre, film, broadcasting, and the blending of all these. The various disciplines have joined with the Center for Experimental and Interdisciplinary Arts to work on projects involving choreography, animation, costume design and more.

Funded by a chancellor's grant and donations from Apple, Coppola has a computer lab filled with 13 Macs devoted to student and faculty projects.

Steve Wilson, who teaches conceptual design, also teaches his students to program their own applications on the Mac. They are becoming interested in programming the Mac. The faculty is generally even more afraid of computer technology, but agrees that it is a great tool for teaching. "The nature of artists is to push whatever they come up against," says Wilson, "and artists come up against limits quickly, no matter how good a program is."

Besides commercial applications such as MacDraw and MacPaint, some faculty members are using and developing courseware programs. Lecturer Derek Hunt of the theatre arts department is using Theatre Games, a program that simulates stage design and blocking on the Mac, to teach a beginning design course called Computers and the Performing Arts.

Elizabeth Larkam, former associate director of creative arts computing at San Francisco State and now dance instructor at Stanford, has been designing a tool for choreographing with the Mac. "It's possible for a person to imagine a solo or a duet," says Larkam. "But so far, the human mind has not evolved to accurately imagine more dancers simultaneously performing different steps in different areas of space." Choreographer's Sketchpad enables choreographers to see animated figures dancing in patterns through space. The emphasis of the program is to show spatial and temporal relationships among figures, rather than to depict specific body positions.

From developing their own programs to designing a modern ballet, the students enrolled in this lab are finding new possibilities for combining computers and fine arts. Says Coppola, "A computer shouldn't be there just to do what you think you want to get done. Sometimes it should show you options you hadn't thought of." —Elinor Craig

The Surge in Mac Accounting

You used to be able to count the good Macintosh accounting products on the fingers of one hand. Initial skepticism about the Mac's usefulness as a business computer should be put to rest, once and for all, by the flurry of high-end accounting software releases this year. Several well-known vendors are releasing new or updated products. Apple will probably join in as well with some well-timed promotions and special events.

Expect to see the following products debut in the first half of this year:

Great Plains Accounting Series: an overhauled version of the Great Plains HardDisk series of modules for the Macintosh. Comprising eight mod-
Your Mac has big ideas. But its small screen can sometimes hold you back. Hook up The Big Picture™ and get a huge desktop that's ideal for just about any application: desktop publishing, spreadsheets, engineering drawings, architectural renderings, musical compositions. And the Macintosh software that you're working with today already knows how to use The Big Picture's larger display.

More than just a full page. The Big Picture's 17" display actually gives you 4½ times more usable desktop than your regular Mac screen. See an entire page in PageMaker™ vertically or horizontally. Or with a slight reduction, see two entire pages—and still be able to read the text.

Big picture, small footprint. Your Mac snuggles up perfectly with The Big Picture, while providing easy access to the internal drive and programmer's switch. And the 17" by 21" footprint leaves you lots of workspace.

Easy Installation. Dealer installation is done in minutes with "clip on" connectors—no drilling or soldering. Your Mac stays portable too. Just disconnect The Big Picture to use the Mac's built-in screen.

The Ideal Display for your Mac. See your E-Machines dealer and get The Big Picture.
The Surge in Mac Accounting (continued)

The Mac Clipboard and Scrapbook are now more versatile thanks to new desk accessories from Solutions, Inc., of Montpellier, Vermont, developer of *Glue* and *Straight Talk*. *SmartScrap* allows you to open several Scrapbook files at once, rename them, and create new Scrapbook files. Portions of existing Scrapbook files can be copied into a new file, and you can display a table of contents with a small graphic depiction of each page in the file. Previously, only one Scrapbook file was accessible as a desk accessory within an application. *The Clipper* allows you to crop or resize Clipboard graphics to precise dimensions with true scaling capabilities while maintaining image proportion. You can also paste graphics into a document via a transparent window so that the surrounding material remains visible during placement, useful if your application doesn't let you view the contents of the Clipboard. — Stuart Silverstone

The Machine in the Garden

Even pulling weeds can be a pleasure for the gardener who knows that months of work will result in edible delights or botanical beauties. If you always wanted to garden but didn't know what to plant, you can take a shortcut via Ortho Information Services' recently released computerized garden guide.

Ortho's *Computerized Gardening* provides a plant selector, a planning calendar, and a plant encyclopedia. The plant selector lets you choose plants on the basis of features such as flower color or shade tolerance and the suitability of your geographical location. In addition, the package includes a 192-page, profusely illustrated book on gardening techniques, including soil management and pest control. For more information contact Ortho Information Services, 575 Market St. #3188, San Francisco, CA 94105, 415-894-5792.

New Clipboard and Scrapbook DAs

Free Fractals

Fractals have set off a small explosion among Macintosh programmers, resulting in a large and diverse collection of free programs that illustrate this intriguing mathematical concept. First conceived by Benoit Mandelbrot in 1975, *fractal geometry* is a noneuclidean form of geometry that defines shapes in fractional dimensions, such as 1.25 or 2.77. Computer graphics magicians, like those at Lucasfilm, use fractals to construct remark-

Computer Ware

Drew Munster thought a discount software store could succeed in Palo Alto, and he was right. More than two years after opening, his store is thriving. And Computer Ware has a unique distinction—it carries nothing but 700 Macintosh software programs and accessories, selling at mail-order prices.

Located 15 minutes from Apple's Cupertino headquarters, the store has a crowded user-group atmosphere. On any given day you're likely to see Macintosh evangelist Guy Kawasaki, Mac programmers such as Andy Hertzfeld, a multitude of Stanford faculty and students, or even *Macworld* editors. Apple vice-president of product development Jean-Louis Gassée makes a regular Saturday pilgrimage.

Computer Ware wasn't always exclusively a Mac store, but less than six months after it opened, when Mac products began accounting for a significant percentage of sales, all other machines were phased out.

The store has four Macs with hard disks loaded with software so that users can "try before they buy." Because of space limitations, products are ferried by moped from a nearby warehouse. Point-of-sale and inventory control are handled by a sophisticated program written by Munster.

Not content to be just a neighborhood computer store, Computer Ware is expanding into mail order and has established relationships with major corporate accounts. Like most die-hard Macintosh enthusiasts, the store's employees are evangelists for the Mac as well as the machine's most informed critics. You can reach Computer Ware at 415/323-7557.
The new PageMaker Portfolio gives you the ability to create professional looking newsletters on your Macintosh with PageMaker desktop publishing software. Even if you've never designed anything in your life.

You'll get disks containing seven collections of professionally designed newsletter templates, 21 in all, that need only your masthead, copy and graphics to be complete. Plus a 114-page workbook that teaches the basics of graphic design and gives you a set of tips for working with PageMaker, all for just $79.

Call toll free 1-800-33-ALDUS for order information, or see PageMaker Portfolio at your local Aldus dealer today. And start making your newsletters look more newsworthy.

Aldus Corporation, 411 First Ave. S., Suite 200, Seattle, WA 98104.

PageMaker Portfolio: Designs for Newsletters will be available soon for PC AT™ and compatible computers.

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Free Fractals (continued)

ably realistic landscapes, while others use them to create abstract images. Now you can do the same with your Macintosh.

Several programs allow you to explore fractal landscapes. With Jim Cathey's Fractal Contours, for example, you can draw imaginary scenes of mountains or foothills and surround them with water. Aside from the type of landscape, however, the only other choice Fractal Contours has to offer is the level of detail (resolution).

MacFractal, by Mark Zimmerman, gives you considerably more. You can, for example, vary your point of view, from directly overhead to head-on. You can also raise or lower sea level—turning a mountain range into an archipelago—or expose the ragged bottom contours of the computer's calculations. You can zoom in for a close view or back away for a distant shot, change the resolution, specify the landscape's basic building blocks, and individually shade them.

Most other available programs deal with fractals that are members of what's called the Mandelbrot set. Two of them, both called Mandelzoom (by Glenn R. Brown, the other by Robert P. Munafò), were inspired by A. K. Dewdney's "Computer Recreations" column in the August 1985 issue of Scientific American. Similar to microscopes, they can zoom in and out on the ever-changing details of the Mandelbrot set. Another program, Julia, by Richard Koch, explores the graphic relationship between the Mandelbrot set and the related Julia set and draws several familiar Julia set fractals, often called dragons, on command. But the best of the fractal programs is probably Mandelbrot, also by Richard Koch. This is partly because the program works almost entirely by point-and-click (which makes Mandelbrot easier to use than almost any other fractal program) and partly because Mandelbrot can produce stunning graphics. For knockout fractals, however, be prepared to tie up your Mac for a while—eight hours or more for large, high-resolution drawings.

Many of the programs described above have help files that not only show how the program works but also explain the concept of fractals in detail. All the programs are available from user groups, electronic bulletin boards, and commercial information utilities such as CompuServe. —Robert C. Eckhardt

Page Layout Software

If you create page layouts for newspapers or magazines, look into PageOne, a $150 program developed as an outgrowth of a master's thesis at Ohio University's School of Visual Communication. PageOne is intended for designing individual pages or spreads, rather than multipage documents with automatic text-flowing. It allows variable grid spacing (vertical and horizontal) on facing pages, in pica and point units. In measures convenient to a page designer, the program will size a picture—say, 45 pica wide by 50 grids deep—using a grid unit based on the type size (10-point over 11-point spacing, for example). The software also measures the length of a text file in grid units.

According to developer Chris Carr, former graphics director of Alabama's Birmingham Post Herald, "For most publications, pages have traditionally been drawn by hand on a reduced-size grid or 'dummy' sheet with hand-written instructions to the production department. This program makes that process faster and more precise, while allowing several different ideas to be tested."

MacPaint and MacDraw PICT documents that you import into PageOne can be automatically scaled or cropped to precise dimensions, or you can use gray blocks to show where pictures or graphics will appear. Actual fonts are displayed for headlines, captions, and text. The screen display is 25, 50, or 100 percent of actual size or can be reduced to fit. You can print your document scaled to fit on one page or full-size on tiled pages. For more information contact the Ohio University School of Visual Communications, Athens, OH 45701. —Stuart Silverstone

Mac Astrology

For those of us inclined toward the stars, Graphic Astrology produces astrological charts and compiles aspects and other cosmic data. Graphic Astrology is useful for people who already know how to interpret a chart but hate to compute the multitude of equations necessary for creating one. Accurate and easy to use, although hampered by a somewhat awkward interface, the program provides three reports: the
Create quality disk labels
Mix graphics with text
Grab application icons
Read disk directories
Serialize your labels
Easy alignment and printing using graphics interface
Use LaserFonts on LaserWriter™
Includes 54 labels

Version 2 -- Only $44.95*
Add $10.00 for version with color printing. Add $20.00 for version with both LaserWriter™ and color printing. Refills: 216 Smart Labels™—$18.00, 216 Laser Labels™—$22.00.

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

Ask your Apple® dealer, or call today for immediate delivery
1-800-752-4400
M-F 8:00 to 5:00 PST • Wash. & Alaska, call (509) 458-6312
VISA & Mastercard
Mac Astrology (continued)

chart itself, a data page with “aspectarian” and numerical values, and a brief interpretation of each planetary position. Advanced Graphic Astrology calculates natal charts, three types of progressions, and offers a choice of tropical or heliocentric astrology. The program also generates a planetary midpoint table.

Graphic Astrology is priced at $39.95, and the advanced version is $129.50. They’re available from Time Cycles Research, 27 Dimmock Rd., Waterford, CT 06385. — Otto Waldorf

Kaleidoscope

Pixel Craft of Dix Hills, New York, is developing a color graphics workstation for producing color separations ready for press. The Kaleidoscope system is currently based on a customized MS-DOS system but will be ported to the Mac soon, according to Kenneth Giordano, president of Pixel Craft. The key to the system is a program that allows you to specify either PMS colors or actual dot percentages for the four process colors (cyan, magenta, yellow, and black) used in color separations.

Macintosh graphics files can be ported into Kaleidoscope and images scanned into the system. The artist then traces the polygons of the illustration to create a vector representation of the image, and specifies the colors. The program also has an auto-tracing function. Kaleidoscope then automatically creates four files based on the four process colors. At this point you can send the files to a color separator to create final film and a color proof. Kaleidoscope provides 100 tone levels for each of the four colors, which adds up to 100 million possible colors. The workstation’s color monitor displays 32,000 colors, which are calibrated to match the actual colors of the pre-press proof.

Kaleidoscope also has a PostScript interpreter that will convert drawings into PostScript commands for halftones and for printing on PostScript printers, such as the LaserWriter or the Linotronic 300. PostScript allows you to specify 1 percent increments for dot screens, resulting in very accurate reproductions. Files of complex drawings are small, averaging 15K to 20K.

The real value of Kaleidoscope is that it replaces the tinting function performed by million-dollar Setex machines. Kaleidoscope’s other professional features include ramping (blending colors), both straight line and concentric; trap values (for bleeding color into black areas); and screen ruling up to 180 lines per inch.

The Kaleidoscope system greatly reduces the cost of preparing high quality four-color illustrations. Pixel Craft sells the Kaleidoscope workstations for around $50,000. The MS-DOS configuration includes a personal computer, a monochrome monitor, a color monitor, a scanner, and software. A Macintosh version will be based on Apple’s next generation Mac. For more information contact Pixel Craft at 26 Woods End Rd. N, Dix Hills, NY 11746.

TextEffects

An easy-to-use program from the United Kingdom lets you manipulate text using PostScript commands on the LaserWriter. TextEffects offers an array of PostScript effects including arch, drag, inverse star, radial, name, rainbow, shades, spiral, spokes, and star. The manual provides tips on using the program and approximate times for printing (a spiral can take from three to ten minutes). You select the desired font and point size as well as the diameter, if applicable. However, you’re limited to a maximum of 256 characters, and you can’t save TextEffects files as PostScript files for inclusion in documents. For more information contact MacQueen Ltd., Elliot House, 8-10 Hillside Crescent, Edinburgh, Scotland EH17 5EA, or call 031/558-3333.

PageMaker Portfolio

Aldus Corporation has introduced PageMaker Portfolio: Designs for Newsletters, the first in a series of template packages for its desktop publishing program, PageMaker. The 21 templates on two disks should provide much-needed assistance to graphic design novices in laying out multicolumn newsletters. The disk also includes a new desk accessory developed by Aldus—WYSIWYG (what you see is what you get)—that eliminates discrepancies between screen and printed versions of PageMaker documents. The $79 package includes a well-designed 114-page manual.

In addition, Aldus has released PageMaker Classroom, a set of introductory training (continues)
Ten thousand pages, take it or leave it.

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

Introducing Totem™

A rather revolutionary Bering 20 mb Bernoulli compact disk drive system for Macintosh computers.

And, the first truly portable 5¼" system. One that lets you tote around 10,000 pages of data on a sleek cartridge about the size of a piece of bread.

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

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

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

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

Totem is a trademark of Bering Industries, Inc. Macintosh is a registered trademark of Apple.
The World's Fastest PC

The Mac Plus is fast compared to an IBM PC, but not to powerful PCs like the Compaq DeskPro 386, which has a 16-MHz clock speed (the Mac Plus's speed is 8 MHz). But pit Levco's 16-MHz, 68020-based Prodigy 4 against the DeskPro 386, and the IBM compatible is left in the dust. According to Levco, its $7000 customized Mac outclassed the DeskPro 386 in a battery of tests.

A New View on Files

The Hierarchical File System (HFS) now used on the Mac lets you organize a hard disk or a series of files on a floppy much better than the earlier Macintosh File System (MFS)—but it can also make it difficult to find a missing file or to work on a group of files scattered across the disk. To ease those tasks, Los Angeles-based Software Research Technologies claims that its forthcoming MacTree will let you view a disk's logical arrangement of files and folders as a tree-shaped visual diagram instead of the flat view you normally see on the Macintosh desktop. Along with presenting that conceptual view, the $49.95 program promises to let you tag any file or group you want and then move, delete, or rename it. For more information contact Software Research Technologies at 2130 S. Vermont Ave., Los Angeles, CA 90007, 213/737-7663.

Tips by Subscription

One of the problems with computer books is that they're often outdated by the time they're published. An author may spend six months writing a book, and the publisher anywhere from three to six months getting it into bookstores. During that interval a lot of software development changes can take place.

Arthur Naiman, author of seven computer books, is coauthoring and publishing The Macintosh Bible, a 300-page, well-indexed compendium of tips, tricks, and shortcuts. To make sure it remains current, the publisher is including two free updates in the $21 price of the book. Each update contains new tips, revisions of existing ones, and a revised index.

Every year a fully revised edition will be published, as well as two more updates. This amounts to a subscription fee of $21 per year, which comes to just a few cents per tip. In addition, coauthor Dale Coleman has set up a bulletin-board system exclusively devoted to tips about the Macintosh. For more information contact Goldstein & Blair, Box 7655, Berkeley, CA 94707, 415/524-4000.

MacTree's tree-shaped representation of a disk's contents eliminates most problems that may crop up in keeping track of files and folders on a hard disk.

Insert Levco's Prodigy 4 board into your Mac and it outperforms even the most souped-up 386 machine.

WorksPlus Spell

Microsoft Works word processing module has many useful features, such as its drawing tool, but it lacks a built-in spelling checker, automatic hyphenation, and a glossary for abbreviations.
MegaScreen II's 19.5" monitor gives you a 526% bigger picture than your Macintosh™ computer, at a new lower price! And MegaScreen II is bigger, brighter, and features the highest resolution of any big screen on the market today.

Compatible with all standard Macintosh software, MegaScreen II lets you see double page spreads, spreadsheets, drawings, plans, scans, CAD layouts, circuits, diagrams, medical files, and just about everything you ever wanted to see larger, 526% larger.

MegaScreen II can be dealer-installed in just 15 minutes, features extra enhancements, user updates, and rock-solid reliability backed by the people who pioneered the first peripherals for the Macintosh.

Find out how you can double your productivity. Ask your local Apple Dealer for a demonstration, or give us a call.

Circle 235 on reader service card
WorksPlus Spell (continued)

Lundeen & Associates' WorksPlus Spell fills that gap with one simple installation procedure. Written by Tim Lundeen, one of the principal software engineers of Microsoft Works, the $59.95 WorksPlus Spell includes spell-checking, automatic hyphenation, and a glossary feature. The program is fully integrated with Works; when you install WorksPlus Spell, new menu options appear within existing menus. The program is fast: it can check more than one page per second, which Lundeen claims is about ten times faster than other Mac spelling checkers.

You can check a selection, changed paragraphs, or a whole document; you can also check documents interactively. The program displays a list of alternatives to each misspelling it finds, and double-clicking on one of these words inserts it into the document. In addition, you can add or remove entries from the 70,000-word dictionary.

WorksPlus Spell's hyphenation is automatic, but you can also hyphenate manually. The program lets you specify the minimum number of letters you want before and after the hyphen. For more information contact Lundeen & Associates at 800/233-6851 or 800/922-7587 in California.

Quality mass-marketed software priced under $10 is the charter of Mindscape's Thunder Mountain products, says Roger Buoy, company president.

Thunder Mountain

Mindscape, a leading publisher of entertainment software for the Mac, is introducing a new line of low-cost products under the Thunder Mountain label—a mixture of new and existing entertainment, educational, and productivity software. Each Thunder Mountain product will sell for $9.95. The first offering is a new action-graphics Rambo adventure, First Blood Part II.

According to Roger Buoy, president of Mindscape, people shouldn't have to pay $30 to $50 for this kind of software. So, Thunder Mountain seeks to bring the equivalent of low-cost paperbacks to the software industry by mass-marketing its products in bookstores, supermarkets, and drug stores. Thunder Mountain programs are available for the Commodore 64, Atari, IBM PC, and Apple II, as well as the Mac.

Scaling the Great Wall

If you think the Macintosh's icon-based interface and high-resolution screen ought to be a big hit in a country with a 5000-year tradition of pictographic writing, you share Apple's thinking about China.

To further brighten the picture, China is nurturing a fast-growing microcomputer development community and a small but expanding market for desktop business computers.

The two big problems of Chinese-language computing—the way to input a language with more than 30,000 characters and how to display them—have been solved largely through the use of high-resolution screens and multikeystroke systems that break each character into elements. Up to now, however, sales of personal computers have been dominated by character-oriented machines like the IBM PC and its compatibles, or by Apple II clones. Most Chinese programmers agree that to exploit the full power of their language, they need machines with more graphics capabilities.

Although it is available in the People's Republic of China, through an official distributor and informally through Hong Kong and Singapore, the Mac is still a rarity there. Consequently, Apple is encouraging the creation of Chinese-language software and supporting product education and training. Last October, for example, Apple sent a team of evangelists and programmers on a three-city tour of the mainland to hold a series of seminars on Mac programming.

Apple has also been showing potential software authors its willingness to support Chinese development, demonstrating a nearly completed international version of the Macintosh operating system that fully supports 16- by 16-pixel character cells, a variety of scripts, and easy message substitution for well-behaved existing applications.

According to information gleaned at these seminars, some Chinese software created on the mainland will be forthcoming to join products already developed in Taiwan, Canada, the United States, and Japan.

But until the Chinese government promulgates a copyright law (scheduled for this year), most new programs will continue to be custom jobs or academic projects, rather than off-the-shelf software written for any character set or language.

Steve Rosenthal

During a tour of China, Apple evangelists found the Chinese enamored of the Mac's graphics and simplicity.
SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Affinity Microsystems ... NCP
Tempo (power user’s macro utility) $69.
Alta Software ... NCP
Fontastic (create your own fonts) $27.
Ann Arbor ... NCP
FullPaint (open four documents at once) $55.
ATI ... CP
Teach Yourself Multilisp or Excel $39.

Batteries Included ... NCP
Corel (9 disk accessories) $27.
HandPak or TimeLink $29.
Thunder (50,000 word spelling checker) $29.

Borland International ... NCP
Sidekick w/PhoneLink $59.
Reflex (information management analysis) $59.
Turbo Pascal $65.

BPI Systems ... NCP
General Accounting (full-featured) $229.

BrainPower ... NCP
Think Fast (improves recall) $23.
StatView (statistical package) $59.
GraphiData (DA graphics organizer) $75.
HandPak (electronic circuit design) $125.
StatView 512+ (req. external drive, 512k) $129.

Broderbund ... CP
PrintShop (create cards and memos) $49.
Geometry (over 350 problems) $49.

CAMDE ... CP
Nutricalc (nutrition analysis) $49.
Nutricalc Plus $89.

Casady Company ... NCP
Fluent Fonts (two-disk set) $29.
Fluent Laser Fonts (Badoni, Calligraphic, Monterey, Prelude, Ritz, & Sans Serif) $49.

Central Point Software ... NCP
Copy II Mac (includes MacTools) $20.

Challenger Software ... NCP
Mac3D (3D graphics, CAD features) $129.

Chang Labs ... CP
Rags to Riches Ledger $29.
Rags to Riches Receivables (req. 512k) $29.
Rags to Riches Payables (req. 512k) $29.
Rags to Riches Three Pak $299.
Inventory Control $245.
Professional Billing $245.

Cortland ... CP
TopDesk (7 new disk accessories) $39.

Creighton Development ... NCP
MacSpell (spell checker, req. 512k) $55.

Cricket Software ... NCP
Statworks (statistical package) $79.
Cricket Graph (multiple windows) $129.
Cricket Draw (advanced draw capabilities) $175.

DataViz ... NCP
MacLink Plus (transfer Mac/IBM data) $159.

Desktop Graphics ... NCP
DrawArt (MacDraw artwork, req. 512k) $29.
DrawForms (requires MacDraw) $30.

Digital, etc. ... NCP
Macaccountant (integrated accounting) $99.
Turbo Macaccountant $275.
Dow Jones ... CP
Straight Talk (access News/Retrieval) $62.
Spreadsheet Link $65.

Dreams of the Phoenix ... NCP
Day Keeper Calendar $35.
Quick & Dirty Utilities Vol. 1 or Vol. 2 $35.
Twelve-C Financial Desk Accessory $35.
Phoenix 3D (3D graphics) $65.

Dual-Click Software ... NCP
WorldClass Font (one or Vol. Two) $29.
WorldClass Font (both volumes) $49.
Calculator Construction Set $39.

EDD Communications ... CP
Laserworks (requires 512k, Laserwriter) $229.

Electronic Arts ... CP
Deluxe Music Construction Set 2.0 $69.

Enabling Technologies ... NCP
Easy3D (create solid 3D objects) $79.

1st Byte ... CP
First Shapes (preschool learning tool) $32.
Speller Bee, KidTalk, or MathTalk $42.
Sincot talker (speech synthesis) $52.

Forethought ... NCP
FactFinder (free-form info organizer) $49.
FileMaker (custom forms & reports) $79.
FileMaker Plus (feature-packed database) $159.

Fortnum/Southern
MacInnooga Choo-Choo $21.
MacChemistry (CP) $69.

FWB Software ... NCP
MID (mid protected hard disk info) $29.
Hard Disk Partition (speeds up hard disk) $39.
Hard Disk Util (program backup) $39.

Great Wave Software ... NCP
KidsTime (educational, ages 3-8) $29.
LOCG (strategy game) $29.
ConcertWare (music composition) $29.
ConcertWare + MIDI $75.

Greene, Johnson ... CP
Spellsweil (spelling checker) $59.

Hayden Software ... CP
I Know It’s Here Somewhere (hardy little) $20.
Hayden:Speller for Word & MacWrite $27.
MusicWorks (songs for your Mac) $52.
DaVinci Building Blocks (NCP) $46.
Home Design (NCP) $49.
Score Improvement System for the SAT $59.
VideoWorks & MusicWorks Bundle $49.

Ideaform ... CP
MacLabeler (print disk labels) $29.

Imagine ... NCP
Smart Alarms (DA reminder system) $39.

Impulse ... NCP
Comic Strip Factory (create cartoons) $65.
Personal Computer Peripherals ... NCP

Interactive Design ... NCP
Paste-Ease (requires Paint program) $35.
MacDraft (new updated version, 512k) $129.

Kensington ... NCP
Graphic Accents (req. Paint program) $29.
Type Fonts for Text (16 fonts only) $29.
Type Fonts for Headlines (req. 512k) $42.

Layered ... CP
Notes ... For Excel $42.
Front Desk $75.

Legieoft/Nofo Press ... CP
WriteIt 2.0 (prepare your own will) $32.

Linguist’s Software ... NCP
Tech (1000 different symbols) $59.

FOREIGN LANGUAGE FONTS

MacCyrillic ... $39.
SuperFrench/German/Spanish ... $39.
MacHerodicycles, MacKana/Basic Kenji, MacSeminicCoptic/Divanegari, MacKorean, MacArabic, MacGreek, MacHebrew each $59.
SuperGreek New or Old Testament $79.
MacGreek/Hebrew Phonetics $89.

LaserGreek $79.
LaserFrench/German/Spanish $79.
LaserCyrillic $115.

Living Videotext ... NCP
ThinkTank (512k outline processor) $99.
More (outlines, windows, & tree charts) $159.

MacMemory ... NCP
MaxRam & MaxPrint (Rambdisk, spooler) $39.

Magnum ... NCP
Natural Sound Effects $27.
Natural Sound Cable & Editor Disk $69.
McPic - Volume 1 or Volume 2 $99.
The Slide Show Magician 1.3 (CP) $35.

Manhattan Graphics ... NCP
Desk Design (2 volume set) $37.

Microsoft
Flight Simulator (the Mac takes flight, CP) $39.
Learning Multilisp and Chart (2 disks, CP) $39.
Basic Interpreter 3.0 (CP) $59.
Chart 1.0 (42 chart styles, CP) $72.
Multiplan 1.1 (63 col. by 254 rows, CP) $111.
File 1.04 (flexible data manager, NCP) $111.
Word 1.05 (word processor, CP) $111.
Basic Compiler 1.0 (NCP) $125.
Fortran 2.2 (compiler, NCP) $169.
Works 1.0 (Integrated tool, NCP) $189.
Excel 1.03 (power spreadsheet, NCP) $225.

Miles Computing ... NCP
Mac the Ripper (req. Paint program) $27.

Mindscaping ... CP
The Luscher Profile (personality profile) $47.
The Perky Scores: SAT $47.

ComicWorks (create your own comics) $49.
GraphicWorks (newsletters, ads, posters) $49.

Monogram ... NCP
Forecast (tax planning) $41.
Dollars & Sense (home, small business) $81.

Nevina Microsystems ... NCP
Turbocharger (disk cache, req. 512k) $39.
New Canaan MicroCode ... NCP
MDCFinder (requires 512k) $20.
Mac Disk Catalog II (requires 512k) $32.

Odesta ... NCP
Helix (req. 512k, external drive) $105.
Double Helix (relational, custom menus) $299.

Palantir ... CP
MathFlash or WordPlay $26.

MacType (typing instruction) $26.
Inventory Control, GL, or AR each $69.
InTalk (communication to emulation, NCP) $79.

PBI Software ... NCP
Icon Switcher (customized icons) $14.
Icon Fun & Games or Business Libraries $14.

HFS Locater (DA organizer for HFS) $27.
Hard Disk Backup (supports MFS, HFS) $29.

Peachtree ... CP
Back to Basics GL, AR or AR each $99.

Personal Computer Peripherals ... NCP

HFS Backup $39.

ProVUE Development ... NCP
OverVUE 2.0 (power-packaged database) $149.
Becky Joseph uses her Mac to help power the Chula Vista Harley Owners Group. They meet on the first Wednesday of the month, 7 PM at South Coast Harley Davidson.

It takes a lot of planning to get 50 odd bikers and their families together for a Poker Run. (During a Poker Run you are handed playing cards at several checkpoints. By the time you get to the destination — a pub — you may have a royal flush.)

Becky uses Thunderscan to digitize Harley art into their newsletter, ReadySetGo! to put it together; and Excel to manage the group's database. And, in her spare time, she uses her Mac for analyzing Indonesian textiles. (She first found out about the Mac from the Apple dealer in Java).

Look, she deserves the prize. So what if the Chapter President "doesn't know a database from a bale of computer paper"?

And, what about you? Do you run your Mac full throttle? Your story could be worth five bones ($500) in free add-ons and software.

The Righteous Brothers (and Sisters).

Our latest contest winner is Becky Joseph, the one in the middle plugged into that lean mean micro machine.

Becky wrote to inform us that she'd consulted with her picturesque colleagues and "we all think I should get one of your prizes." We all tend to agree. Who are we to question the wisdom of the Chula Vista, CA Chapter of the Harley Owners Group? HOG is the largest motorcycle club in the world. Frankly, their powers of persuasion were just too obvious to ignore.

But do they use Macs?

Of course they use Macs. How could a motorcycle club ride their organizational beast without one?
**HARDWARE**

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods.

- **Apricorn** ... 1 year
  - Apricord Mac (Mac Plus parallel interface) 75.
- **Cambridge Automation** ... 90 days
  - MIDI Conductor 69.
- **Curtis Manufacturing** ... lifetime
  - Diamond (6 outlets) 29.
  - Emerald (6 outlets; 6 ft cord) 36.
  - Sapphire (3 outlets; EM/RFI filtered) 47.
  - Ruby (6 outlets; EM/RFI filtered; 5 ft cord) 55.
- **Dove Computer** ... 90 days
  - Memory Expansion Units
    - MacSnap 524 (512k to 1 Meg) 159.
    - MacSnap Plus 2 (Mac Plus to 2 Meg) 309.
  - MacSnap Plus 4 (Mac Plus to 4 Meg) 1549.
- **Ehman Engineering** ... 1 year
  - 800k External Disk Drive 225.
- **Ergotron** ... 1 year
  - MacTilt (includes external drive bracket) 75.
  - MacBuffer 512k 369.
  - MacBuffer 1024k 589.
- **Hayes** ... 2 years
  - Smartcom II (communications software) 89.
  - Smartmodem 1200 or 2400 240.
  - Smartmodem 1200 or 2400 package 240.
- **IOMEGA** ... 90 days
  - Bernoulli Box (dual 10 MB w/SCSI) 1695.
  - Bernoulli Box (dual 20 MB w/SCSI) 1995.
  - Bernoulli Box (dual 10 MB, AppleTalk) 2195.
- **Kensington** ... 1 year
  - AppleTalk Cables Clips or Connectors each 1.
- **Tellstar II** ... 90 days
  - MacSnap Plus 4 1549.
- **Thunderscan**
  - Western Automation
    - 31/2'' Disks (3 outlets; EM/RFI filtered) 90.
  - 31/2'' Disks (box of 10) 109.
  - 51/4'' Disks (box of 10) 109.
- **Tilt/Swivel**
  - 3 Button QuickStick 9.
- **Tsugita**
  - Personal Computer Peripherals
    - FastPort ("SCSI") 28.
    - Systems Control
      - Multi-color Transfer Ribbon 30.
      - Multi-user 35.
- **Uniware Ribbon**
  - ColorPack (Includes Colorpens) 175.
  - Underware Ribbon (Iron-on black transfer) 9.
- **Verbatim**
  - 31/2'' Disks (box of 10) 29.
  - 51/4'' Disks (box of 10) 29.
  - 1'' Disks (box of 10) 29.
- **Appendix**
  - Multi-User Disk (includes external drive bracket) 19.
  - Hemispheres, req. 512k 19.
  - AppleTalk Cable Clips or Connectors 28.
  - 31/2'' Disks (CP, the classic!) 9.
  - 31/2'' Disks (Mac Plus to 2 Meg) 31.
  - 31/2'' Disks (Mac Plus to 4 Meg) 31.
  - 51/4'' Disks (box of 10) 35.

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kers beat a path to

MacConnection Special of the Month
through March 31, 1987

GREENE, JOHNSON
Spellswell
Effective and easy to use spelling checker.
Checks capitalizations, hyphenations, homonyms and duplicate words like "the the". Includes 93,000 word user modifiable dictionary.
- Powerful stand-alone program
- Not copy-protected
- Requires 512k Mac
Spellswell 1.3: $49.

Telos Software ... CP
Business FileVision (512k, external drive) 199.

Think Educational ... CP
MacEdge II (math & reading) . 28.
Mind Over Mac (5 challenging games) . 28.

Think Technologies ... NCP
LightSpeed Pascal (includes debugger) . . 89.
LightSpeed C (top-rated C Compiler) . . 129.

TML Systems ... NCP
TML Source Code Library . . 59.
TML Pascal (compiler, req. 512k) . . 69.
TrueBasic ... NCP
True BASIC (fast, flexible & portable) . . 89.
TrueSTAT (statistics) . . 59.
Runtime (create stand-alone applications) . . 59.

Unicorn ... CP
Animal Kingdom (ages 6-12) . . 29.

Decomposed Decimal (math, ages 9 and up) . . 29.
Action (arcade style math game) . . 29.
Mac Robots (pre-school program) . . 29.
Math Wizard (math games, ages 5-10) . . 29.
A-Rama (reading, ages 8-5) . . 35.

William & Macias ... NCP
myDiskLabeler (design & print labels) . . 25.
myDiskLabeler w/Color (req. ImagingWright II) . . 34.
myDiskLabeler w/LaserWriter option . . 39.

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Accolade ... CP
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Activision ... CP
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Hacker (you're on your own!) . . 27.
Hacker II (braich Russian computer) . . 30.

Borrowed Time (murder mystery) . . 27.
Shanghai (Mah Jongg strategy) . . 27.
Alter Ego (male or female version) . . 36.
Addison-Wesley ... CP
Puppy Love (your dog will love it!) . . 15.

Ann Arbor Softworks ... CP
Grid Wars (3D graphic arcade) . . 22.

Artwork ... CP
Bridge 4.0 (sharpen your skills) . . 21.

Avalon Hill ... CP
MacPro Football (req. 512k) . . 32.

Blue Chip ... CP
Millionaire (stock market) . . 35.

Tycoon (commodities) . . 35.

Baron (real estate) . . 35.

Squire (personal finance, req. 512k) . . 35.

Broderbund Software ... CP
Lode Runner (over 150 levels) . . 24.

Ancient Art of War (military strategy) . . 27.

Toy Shop (create working models) . . 39.

Bulleseye ... CP
Ferrari Grand Prix (Formula One racing) . . 35.

Fokker TriPlane Flight Simulator . . 35.

Electronic Arts ... CP
Achorn (arcade strategy, req. 512k) . . 27.

Skyfox3 (3D graphics) . . 27.

Squire (personal finance, req. 512k) . . 35.

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Pinball Construction Set . . 27.

Epyx ... CP
Rogue (strategy dungeon classic!) . . 24.

Temple of Aspah (4 levels) . . 24.

Winter Games (Olympic events) . . 24.

Tayden Software ... CP
Perplexor (scrabble-type game) . . 24.

Sargon III (9 levels of chess) . . 27.

Infinity Software ... CP
Grand Slam (tennis, req. 512k) . . 28.

Infocom ... CP

Zork I, The Witness (standard) . . . . 27.

Zork II, Zork III, Sorcerer, Suspect, Mind Forever Voyaging (advanced) each . . 27.

Spellbreaker (expert) . . 29.

Invisiclue (hint booklets) . . 6.

MacroMind ... NCP
Maze Wars + (play via modem or network) . . 32.

Miles Computing ... CP
Fusiilade (arcade maze) . . 21.

MacAttack (3D tank simulation) . . 27.

Harrier Strike Mission (3D flight simulation) . . 27.

MacWarp (3D space simulation) . . 27.

Mindscape ... CP

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Moving Pictures

by Erfert Nielsen

Beck-Tech's

MacMovies lets you animate with ease

When French film pioneer Georges Méliès created special effects with stop-frame animation in 1900, audiences were filled with wonder. Actors disappeared and then magically reappeared elsewhere on the screen; people and objects were propelled through space—and no one knew how it was done. It's harder to impress today's technologically jaded audiences, but there is still something magical about watching animation on the Mac's screen. Recently I saw a short piece of animation that caught my eye: a scene from "Miami Vice" was running on the Mac, as if the Mac were hooked up to a TV. I assumed that the segment must have been recorded with a complex combination of animation software and hardware. I was wrong; the scene was produced with MacMovies, an animation program recently released by Beck-Tech.

MacMovies is a simple application that puts Macintosh movie-making into the hands of anyone familiar with MacPaint. Basically, MacMovies combines a series of MacPaint documents into an animated movie, treating each document as a single frame. The documents can originate in MacPaint or they can be saved as MacPaint files from other graphics programs, including 3-D graphics applications, object-oriented drawing programs such as MacDraw, or PostScript graphics programs such as Cricket Draw and Illustrator. Although simple, MacMovies has the potential to reward ambitious animators with impressive results. The "Miami Vice" scene, for example, was recorded from a VCR with the help of a MacVision video digitizer.

Use MacMovies to liven up a business presentation, to produce a self-running product demo, or simply to create movies for your own amusement. In the hands of professional animators, MacMovies could be used for animating storyboards, depicting a logo in motion, animating a pie chart or an idea for a TV commercial. The ability to capture full frames from video sources could conceivably allow the Macintosh to emulate sophisticated animation systems that cost tens of thousands of dollars.

The program does more than just string MacPaint files together. MacMovies records only the differences between one frame and the next, compressing the data and allowing the movie to occupy less disk space than the original MacPaint images. In addition, the program lets you vary a movie's playback speed, run it forward or backward, stop the action, or chain several animations together into a longer presentation. A MacMovies animation can be as long as disk space permits.

Anatomy of an Animator

The MacMovies program consists of four modules: Preview, FMComp, Projector, and MacMovies (see Figure 1). The modules themselves are small, occupying from 3K to 5K of memory apiece, but you'll need a System file and MacPaint or a similar program to create the graphics for your movies. It's possible to create and run movies on a 512K Mac, but long movies may require more memory for playback. And while you can run MacMovies on a single-drive system, the manufacturer recommends a second drive or a hard disk. (None of the modules are copy-protected, making for easy installation on a hard disk.)

Like any good movie director, you'll want to preview your raw footage and edit it before printing the final cut. Once you've created a series of graphic images, you should look at them with the Preview module. Preview sequentially displays each frame of an animation-to-be, allowing you to see that frames are in the proper order, make sure the transitions from frame to frame are smooth, and return to MacPaint to make adjustments if necessary.

When you're satisfied with the appearance of each frame, it's time to compile them into a movie with FMComp. In FMComp you set a movie's default speed and specify whether the movie will switch directions when played, automatically reversing from the last frame back to the first. The program asks you to give your movie a title and to select the first MacPaint frame in the series to record. FMComp then creates a movie, reading one frame after another and compressing the data. The degree to which FMComp compresses graphics files varies, depending on the complexity of an image and how much an image changes from one frame to another; one sample animation I created compressed the original MacPaint files from 102K to 46K, while another went from...
58K to 36K. When FMComp is through, the finished movie appears in the form of a film-reel icon.

**MacMovies** provides two ways to play back animations. Projector plays a single movie at the speed and direction set in FMComp, while the MacMovies module lets you string together several movies, offering such options as the number of times each animation repeats, the speed at which each is played, and whether or not a movie switches direction. (Unfortunately, both modules are represented by identical projector icons, which could prove confusing to beginning moviemakers.) When a movie is running, both Projector and MacMovies allow you to vary the playback speed by pressing the Mac's number keys. The keys increase animation speed in increments of 1/30 second: the 1 key displays each frame for 1/30 second (for an animation speed of 30 frames per second), while the 9 key displays each frame for 9/30 second. You can also use the space bar or the mouse button to single-step through an animation.

**To the Drawing Board**

Using MacMovies to compile and play back an animation is easy enough; the tricky part is creating the MacPaint documents that are the raw material of a movie. Although MacMovies reads MacPaint files, you'll be better off generating artwork in a program such as Ann Arbor Softworks' FullPaint or Silicon Beach Software's SuperPaint, both of which can save files as MacPaint documents. These two graphics programs are superior to MacPaint for a number of reasons. Most importantly, they allow you to use the entire screen as a drawing area. (MacPaint confines you to a small area called the drawing window.) This full-screen drawing capability is important to MacMovies animators, since the program makes use of the entire Mac screen. In addition, FullPaint and SuperPaint provide tools that let you slant, distort, or rotate a selected area; these options can be a valuable aid to animators. (If you already own MacPaint, you can purchase T/Maker Graphics' ClickArt Effects, an add-on package that provides these graphics editing tools.) Adobe Systems' Illustrator lets you trace images from a scanner or video digitizer and treat them with PostScript special effects.

Once you've drawn the first frame of an animation, you're faced with a new challenge: how do you smoothly blend the current image with the next frame of the animation? A traditional storyboard is a series of sketches showing the major events in a TV or movie scene. Animated storyboards are similar, roughing out a scene's basic action in the form of a "pencil test," or animated sketch, which can be used to preview the sequence. MacMovies provides an inexpensive means of creating and evaluating animated sequences. Rather than having to sketch each frame, with MacMovies you can produce animation by manipulating objects in a 3-D graphics program or by using a video digitizer to take pictures of a model or record images from a VCR or optical disk player. Because the images are recorded as MacPaint documents, they are easy to edit. The program's ability to stop the action and show a sequence frame-by-frame comes in handy when you're viewing an animation and deciding which portions to edit.

MacMovies can also function as a quick-and-dirty film editing lab. For example, you can add titles or create scrolling credits for a presentation. In addition, you can use MacPaint or 3-D graphics software to create special effects: zoom in on an object, tumble it across the screen, or even make it explode. You can also move or delete blocks of an animation simply by rearranging MacPaint documents, instead of having to cut and splice segments of film.

This storyboard shows highlights from a TV commercial for Memorex floppy disks, produced by the DDB Needham Worldwide ad agency of San Francisco. The sequence was captured from a VCR by means of a MacVision video digitizer. (This particular ad was not produced with the aid of MacMovies, but is used here as a storyboard example.) An ad director could look at a storyboard like this one, suggest changes, and view the changes before shooting the actual commercial.
movie? Unlike Spinnaker Software’s VideoWorks, a Macintosh animation program that works with individual animated elements called sprites (see "A Moving Pixel Show,” Macworld, November 1985), MacMovies deals with entire frames—characters, objects, background, and all. It’s up to the animator to come up with a method of altering an image over a series of frames. The simplest technique is to draw the first frame, then select Save and name the document (Frame01, for example). Next, alter the drawing slightly, choose Save As, and name the second picture Frame02. Repeat this procedure until you have a series of MacPaint documents that can be chained together to produce an animated sequence.

Transitional Techniques

Before the days of computers, animators drew cels, or animation elements, on transparent sheets of celluloid. That way, the artist could place one sheet on top of another and modify an image in relation to the previous one. MacPaint doesn’t provide such a feature, so MacMovies makers are forced to improvise. One effective (if less than elegant) method is to draw an image with MacPaint or another graphics program, save the drawing, then trace the image on the screen with a felt-tip pen. Draw the next image with the graphics program, select Save As and trace it in turn, and so on. Primitive, but it works.

A more sophisticated method involves using SuperPaint’s two layers in a similar fashion. SuperPaint is made up of two subprograms, each of which occupies a “layer” on the screen (see Reviews, Macworld, November 1986). To create documents to be animated, draw an object in the Paint layer and copy it to the Draw layer, thereby setting up two overlapping, transparent images. Then select the object in the Paint layer and move or distort it; the original object shows through underneath, allowing you to measure the change precisely from one frame to the next. To make sure that the object in the Draw layer won’t show up when you save the document, enter the Draw layer and place a white rectangle over the object. Save the document in MacPaint format and repeat the procedure as often as necessary. Complicated, but elegant. (By the way, both SuperPaint and FullPaint let you move selected areas in increments of one pixel, allowing great precision in moving an area smoothly from one frame to the next.)

3-D Movies and TV Revisited

To fully automate not only the movement of an object but the lighting of a scene as well, use Easy3D. Enabling Technologies’ three-dimensional graphics program, with Easy3D, you can shrink, enlarge, or rotate an object by a specified amount, make the scene lighter or darker, and save the results as a MacPaint file (see Figure 2). The frames can be further modified in MacPaint if you wish. This is a foolproof way to create smooth, precisely controlled animations.

The most involved, but perhaps the most rewarding MacMovies animation technique involves using a video digitizer such as MacVision to capture images from a VCR that has a freeze-frame option. Connect the digitizer to the VCR and the Mac, scan an image, save the file, record the next frame, and so on. Not all VCRs have good enough freeze-frame capabilities for this task, so be prepared to experiment. This method also works with some optical disk players.

Cut...

Although ease of use is certainly one of MacMovies’ main selling points, the program’s simplicity can be a hindrance as well. For certain types of animation, a frame-by-frame treatment is cumbersome compared to the object-oriented approach of sprites. If an element is in the wrong position on the screen, for example, editing dozens of MacPaint screens to correct the problem can be tedious, especially if the element moves across a background. MacMovies is well suited for animations made up of full-screen images; data compression and smooth playback make it a good choice for this type of presentation.

On the other hand, many people will appreciate MacMovies’ automation of the animation process. VideoWorks, with its built-in graphics program, multiple sprites, and sound capabilities, is appropriate for some animation applications. But while VideoWorks is more sophisticated than MacMovies, it is also more difficult to learn and use. It’s up to you to decide which approach better suits your needs.

MacMovies is a likable application. It’s simple, it’s not copy protected, and at $99, it’s affordable. MacMovies animations run smoothly, and with impressive speed. Like all programs, this one has its quirks (for example, you must duplicate the first frame of a movie and install it as the last frame unless the movie’s direction will be reversed), but a thorough reading of the manual and a few experiments should set you right. The manual could be better organized, but it’s adequate.

In some ways, MacMovies animation is reminiscent of the early days of cinema. The screen displays black-and-white images (Méliès hand-tinted his films; perhaps Apple will provide a workable alternative), transitions from scene to scene are accompanied by a title screen, and the soundtrack must be provided by an external source. But as the early cinema did, MacMovies represents a new approach to communication. The key contributions of creative individuals have allowed the motion picture industry to evolve rapidly; the same is bound to happen with Macintosh animation. Think of yourself as a pioneer in the field.

See Where to Buy for product details.
AppleShare—Multifaceted Networking

Apple's file server redefines the language of network communications and paves the way for a new generation of products

by David Usbijima

Few of us work in isolation. Although we may envy artists and craftspeople who forge their works in remote studios or writers who construct their stories at seaside retreats, most of us work and share information with others in an office. Phone calls, memos, and meetings comprise a daily ritual that is vital to the success of most businesses. But despite the much-heralded arrival of computer networks, few such products to date have actually enhanced communication between people.

With the introduction of AppleShare, software that lets Macintosh users on an AppleTalk network share and exchange files, Apple brings to market a file server that is both extremely transparent and rich in features, so a work group can tailor a network's operation to its own unique work style.

The Information Web

An AppleShare installation contains two types of machines: an AppleShare server, which consists of a dedicated Mac with a hard disk running the AppleShare server software; and the individual Macs acting as workstations, all connected to the AppleTalk cable. (IBM PCs equipped with AppleTalk boards from either Apple or Tangent Technologies can also act as workstations when combined with Tangent 'Technologies' recently announced software.) The server (or servers—there may be more than one on a single network) acts as the focal point for the storage of shared or private information (see "The Network Mapped").

Users access the AppleShare server much as they would a locally attached hard disk, with one important difference. Unlike a local disk, whose documents and applications (hereafter called files) are accessible only to the owner of that disk, an AppleShare server stores files that are accessible to other network users as well.

The degree to which other users can access an individual's files depends on the rights, called access privileges, the individual assigns to a folder or file.

One feature that elevates AppleShare above other network products is its unique method of allowing shared access to the information stored on the server. AppleShare divides the responsibility for assigning access privileges between the network manager, dubbed the administrator, and all the other network users.

The settings imposed by the administrator, in conjunction with those imposed by the users, delineate not only who accesses information but also how the information is accessed.

Priming the Network Engine

To install AppleShare on a network, the network administrator installs the server software on a dedicated Macintosh Plus with an attached hard-disk drive. While the server software requires a megabyte of memory and the 128K ROM, the workstation software

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will run on a 512K, 512K Enhanced, or Mac Plus. Each network user must run the Workstation Installer, which updates the user's System file and Finder to versions 3.2 and 5.4, respectively. The installation software also adds a new Chooser (version 3.0) and the Access Privileges desk accessory.

The AppleShare server software transforms a Macintosh Plus with a hard disk drive (either a SCSI drive or an Apple HD-20) into a dedicated file server. The primary objection to AppleShare may come from those who can't afford to dedicate a machine as the server. Once the administrator installs the server software, the Mac and the hard disk cannot be used as a workstation.

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The Network Mapped
The AppleShare server (highlighted), a dedicated Mac with one or more hard disks, is accessible to any user on the network. Users on different AppleTalk networks can access each other's network server if a bridge, like the Hayes InterBridge, connects the two nets.

Logging On to a Server
Users access the AppleShare server from a workstation with the Chooser desk accessory just as they select the LaserWriter for printing (see "Logging On"). If multiple AppleTalk networks are connected via a bridge, such as the Hayes InterBridge, users must choose a zone. After selecting a server, log on by typing your user name and password. Those not registered as users can log on as guests, with limited access rights.

After the server verifies your name and password, you mount volumes by choosing from a list of volume names. Each user can mount up to nine AppleShare volumes at a time. Because the server maintains a list

However, while you lose the use of one Mac, you gain a high-performance network engine that efficiently manages the information stored on the hard disk. The server manages a database of users and files, responds to users' requests for files, and otherwise maintains the server's disk space.

Also, because the server program doesn't use any of the memory reserved for an application— it runs in the System heap—the server can concurrently run programs written specifically for AppleShare, such as electronic mail software, printer spoolers, and database programs. As this article went to press, Think Technologies was working on a version of Inbox that will run together with the server software on a dedicated Mac. The coresident software will appear as the active application while the AppleShare program runs in the background.
A Network in Transition

From the time Apple first introduced AppleTalk, the company has proclaimed Macintosh networks as the communication solution for work groups. To the dismay of AppleTalk advocates, little has been forthcoming from Apple beyond the cabling scheme and a path to the LaserWriter. Although Apple did not announce network products in 1986, it shipped over 200,000 connector kits, though many of these simply connected Macs to LaserWriters. But while network products from Apple were slow in coming, the network-development group was busy finalizing the upper layers of the AppleTalk protocol, which define the electronic ground rules by which network participants can share files.

During Apple’s networking hiatus, companies like Infosphere, Centram Systems, Think Technologies, General Computer, and 3Com have driven the network software market by releasing products like MacServe, TOPS, InBox, HyperNet, and the 3Server3. Such products have allowed network users to do more than just print to the LaserWriter.

One problem that grew out of Apple’s silence in the network arena is that each manufacturer, lacking an official file-sharing protocol from Apple, developed its own rules for letting network participants share files. This meant that application developers who wanted to develop multiuser software had to provide different versions for each of the various network software products. For example, Blyth Software’s Omnis 3 Plus database comes in several versions; the one you choose depends on the network software you’re running. Odesta sidestepped this issue by providing its own network file system in addition to its MultiUser Helix database.

The onus to provide a network-filing protocol standard was on Apple. With the arrival of AppleShare, and especially with the finalized AppleTalk Filing Protocol, manufacturers of network software can now resolve the confusion in the network applications market.

Logging On

Select the AppleShare server you want with the Chooser. Once you type your name and password, the volume you select appears on the desktop just like a local floppy or hard disk. Each server can have up to seven SCSI drives and two diskport drives attached; in this example, the server FX/20 has two volumes: JumpShot and SlamDunk. If you want the volume mounted automatically when you start the Mac, check the box next to the volume name.
of users and their associated privileges, you can only mount those volumes to which you have access.

Once mounted, a server volume appears on the user's desktop just as a local floppy disk or hard disk volume would. You can directly open, save, or print documents from an application or drag icons from the Finder. Applications run on the server just as they would on a local disk, with multiple users unable to run the same application simultaneously. As with other disk and file servers, judicious use of server-resident applications improves network performance. In fact, because the AppleShare file server was not intended to replace a local disk, Apple recommends that users always run from a System Folder that resides on the local floppy or hard disk.

In most respects, the server volume behaves exactly like a local volume. The only time you'll notice a difference is when you attempt to open or save to a folder for which you don't have the proper access rights.

Granting Access Privileges

Much of AppleShare's power lies in its multi-faceted yet transparent approach to file security. AppleShare gives the creator, or owner, of a folder or file the right to control how others access, read, modify, or even see it. Owners can assign rights, called access privileges, to documents, folders, or entire disks (volumes) that they own. Communication between network members depends on the way individuals set up their access privileges.

The privileges for all volumes, folders, and files can be viewed or set from the Access Privileges desk accessory or the Get Privileges command in the File menu (see "Setting Privileges"). The owner alone can change the privileges; others can only view their rights.

An owner can grant three types of privileges:

- **See Folders**—lets other users see folders but not the files contained within a particular folder.
- **See Files**—lets others see, open, and copy, but not modify, the files within a designated folder.
- **Make Changes**—lets others modify the files as well as add or delete files from a folder.

Owners assign these privileges to themselves, other members of a group, or everyone, including nonregistered users.

By selectively granting access, network users set up folders that guarantee individual privacy while allowing group members to share files. While the permutations are numerous, a few folder types define the key elements of an AppleShare system (see "Access Building Blocks"). For example, in addition to creating a private folder that no one else can open, a user can create a group work-folder that allows only group members to see, open, and modify folders and files. When two or more group members vie for the same document from a shared work-folder, only the first person who opens the document has access to it; the others are locked out. Alternatively, if users are not granted the right to change the folder's contents, many users can be looking at the same document simultaneously.

### Setting Privileges

Users set access privileges with either the Access Privileges desk accessory or the Get Privileges command in the File menu. With the settings shown, the owner sees both folders and documents; group members can see and change documents, but can't see folders; and those outside the group can neither see folders nor change documents.
To control who sees a folder's contents, you can create two special types of folders: the drop box and the bulletin board. The drop box works something like a corner mailbox, by allowing users to add files to a folder without letting them see files it currently contains. Although users can drop off files, only the folder's owner can see or open them. The antithesis of the drop box is the bulletin board, a folder where users can see the contents but not change them. Only those authorized to make changes can post files or messages in the folder.

Controlling who sees files or folders is a powerful way of controlling access to the file server (see "Three Views of a Disk"). After all, you can't change what you can't see. In terms of the Hierarchical File System (HFS), different users see the file structure differently, depending on the access rights they have. If you think of the hierarchy as an inverted tree and the folders as branches, restricting access to a particular branch, or folder, prevents certain users from climbing further down the hierarchy. Therefore, different users may get different views of the same tree.

**Administrating the Network**

The network administrator is the person responsible for registering new users, assigning users to groups, and backing up the server information. Most administrative tasks are handled by a program called

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**Access Building Blocks**

Four common types of folders are shown here. Those you own appear on the desktop with the darkened tab, while those you can open but don't own appear without the darkened tab. Assigning all rights to a folder gives everyone the right to open and change that folder and its contents. Users can put files in drop boxes, but they can't see the folder's contents. Group work folders let members share files; nonmembers see the gray folder.

**Three Views of a Disk**

Three users see the same volume differently, depending on each one's access rights. The administrator can open shared and personal folders but cannot open other users' private folders. Similarly, users can only access shared folders and their own personal folders. Note that in this example only the administrator can open the Admin DropBox folder and that Larry, who is not a member of the designer's group, cannot open the Designers-Work folder.
Network Servers Compared

Until recently, sharing information really meant sharing disk space. Products like Infosphere's MacServe and 3Com's EtherMac allow network users to share disk space. However, these products, termed disk servers, require that the Mac (rather than the server) keep track of files on the disk, adding to the workstation's processing overhead and congesting the network with unnecessary traffic.

Disk servers generally require that the disk be partitioned into separate areas for each user. In order to prevent others from accessing a file, you must make the entire partition private, thereby locking others out. If more than one user will be writing to a file, you must purchase special multiuser software.

In order to mount a single partition, the server must send that partition's directory, called the volume parameter block, to the workstation. As more users mount and access multiple partitions, the disk server's performance degrades. Furthermore, because the server doesn't manage the users' Desktop files, the other networked Macs do not immediately reflect the changes made to one user's desktop.

File servers, like AppleShare, Centram's TOPS or Reach Technologies' Keeper Plus, on the other hand, manage all the files stored on the server's disk. When a workstation opens a file, it makes a request to the server, which in turn handles the logistics of finding and opening the file; the server then simply sends the requested information to the user. With this method the server can track not only the files open at any one time but also who is working on a particular file.

Using a disk server is like leasing storage space in a warehouse, then filling it with all your belongings. Whenever you need to retrieve an item from storage, you must get it yourself. A file server, on the other hand, acts like a personal storage service. Whenever you want to store or retrieve an item, you simply call up a dispatcher who sends someone out to pick up or deliver the requested item. The storage service handles all the organization, tracking, and delivery.

While disk servers currently hold a prominent share of the network market, as disk-server manufacturers begin producing file-serving software, file servers will become the dominant product. 3Com will release its Macintosh file-server software, 3Plus for the 3Server3 in the first half of 1987. Infosphere has also been working on a new version of MacServe, which would incorporate the AppleTalk Filing Protocol.

New developments in network products will further alter the AppleTalk landscape. Reach Technologies is incorporating the AppleTalk Filing Protocol into a new version of the Keeper. Centram plans to maintain compatibility with AppleShare so that TOPS and AppleShare can coexist on the network. Tangent Technologies has announced PC software for accessing AppleShare files and a program that will let a PC AT act as the AppleShare server. Novell, a major supplier of network software for PC networks, is also reported to be working on a file server for the Mac.

AppleShare Admin, which the administrator runs on the server machine. The administrator can log on to the server from any Mac on the network and, like any other user, can create private folders and files that no one else can access. Since the administrator generally owns a volume, he or she can assign the access rights to that volume. However, the administrator can't change the access rights of any folder or file created by another user. Most importantly, the administrator cannot override the access privileges set by a folder's owner to see or enter the owner's files.

Before running the Admin program on the server, the administrator must shut down the AppleShare server program. Because discontinuing file service can cause a user to lose data, AppleShare forewarns all users by indicating the number of minutes until shutdown; the administrator can specify a time from 0 minutes to just over 6 days. Once the server shuts down, the administrator runs the Admin program from the AppleShare Administrator floppy disk.

The primary function of the Admin program is to allow the administrator to enter and delete users and passwords as well as to create and delete groups. The administrator can assign individuals to groups and see a list of users and groups. The Admin program also lets the administrator create two types of volume or server
reports, which list the contents of the server or volume along with ownership information and access privileges.

One feature lacking in the Admin program is a command to back up the server's contents. While you can back up to floppies or another hard disk by dragging folders from the desktop, the lack of an automated or even manual backup command is an annoying weakness in an otherwise well-thought-out design. At press time, reports indicated that at least one company was working on a backup program for the file server.

**To Share or Not**

AppleShare takes a major step in advancing the state of intranet communication. Because Apple didn't assume that all users would use AppleShare in the same way—some may use the server as personal storage, others may use it as a shared workspace—a knowledgeable administrator can set up an intranet file system that reflects the way people work, rather than one that conflicts with personal work styles.

Setting up the folder hierarchy does require careful planning. In fact, the extensive array of access privileges could be somewhat overwhelming to the network novice. But an administrator who understands how people and groups communicate can use AppleShare to create a powerful shared file system.

As mentioned earlier, AppleShare's heaviest criticism will come from those who can't afford to dedicate a Mac as the file server. If the network is used infrequently, it may make sense to purchase a product that lets Mac act as both server and workstation. However, the performance of a workstation that doubles as a server generally suffers in both categories (see "A Network Divided," *Macworld*, October 1986). Because the version I tested was still in a preliminary stage, I cannot quote performance figures. But, as more people use the server and the network, the performance gains will outweigh the cost of the dedicated hardware and software. Furthermore, because AppleShare was written with development software that produces 68020-compatible code, installing the product on a next-generation Mac could boost the network's performance tremendously, a crucial factor for heavily traveled networks.

Perhaps even more significant than the AppleShare file server itself are the effects the network system software will have on future applications. For the first time, developers will have a common network file system to which they can link their software to produce powerful network applications. (Monogram's *Business Sense*, a networked accounting package, is one of the first AppleShare-compatible products to be announced.) Add to this Apple's implementation of an independent network processor that both off-loads processing from the workstations and coordinates the efforts of network users. All this can only lead to software that will enhance communications between people.

See Where to Buy for product details.
The Latest Word

by Eric Alderman

A preview of Microsoft's powerful new word processing program

The two years since the initial release of Microsoft Word for the Macintosh have been long and frustrating ones for users, who've had nothing more than a minor maintenance release (version 1.05) to keep them happy. However, most of them will forgive and forget when they upgrade to version 3.0. Created from scratch, this release has several new features, an improved user interface, and significantly better performance.

New features such as style sheets, a spelling checker, outlining, hyphenation, and index and table-of-contents generation make the program nearly equivalent to the IBM PC version. Word 3.0 also adds some unique features like a two-page preview, a limited ability to place lines and boxes in the text, a math typesetting function for creating complex equations, and the ability to insert PostScript code into a document.

Outlining Your Options

In Word 3.0, your text appears in either Document View (the normal editing screen) or Outline View, or you can display the text in both forms simultaneously in a window pane. The outline function collapses your document to show only the major headings (see Figure 1). You then expand the headings individually or collectively to see subheadings beneath them—or the entire text. You can also move a heading, along with related subheadings and text, to another part of the document. These capabilities let you more easily organize the hierarchical structure of your document.

Although there are many excellent outline-processing programs for the Mac, including desk accessories like Acta and Voila, unquestionably, an outlining function within a word processor makes the most sense.

Word's outlining function is not as simple to use or intuitive as are dedicated outliners (such as Living Videotext's More or ThinkTank 512), or MindWork Software's MindWrite, the first word processing program to include a built-in outlining capability. With these programs, you expand and collapse headings by double-clicking the mouse button. In Word 3.0, you must...
select the desired heading and then click on one of a row of icons at the top of the screen, or you can use the numeric keypad. With other outline programs you can reposition a heading (with accompanying subheadings and text) by clicking and dragging. In *Word* 3.0, though, you must either cut and paste or use the numeric keypad to move single headings one line at a time.

Another problem with *Word*’s outline function is its inability to import outlines created with *More*, *ThinkTank*, and *Ready* (a memory-resident outline processor for the PC from Living Videotext). This failing is especially surprising considering that these products share the same format and together comprise the majority of the current outline-processor market. Users must choose between *Word*’s clumsy outliner and outlines imported from another program, without the advantage of a link to *Word*’s style sheets.
The Complete Wordsmith

Another feature of Word 3.0 that's sure to be appreciated is the long-overdue spelling checker. It comes with a dictionary of over 80,000 words, but users also create and modify their own dictionaries. The spelling checker is somewhat intelligent; it capitalizes suggested alternatives for misspelled words that were capitalized previously and catches common typographical errors, such as reversed or repeated letters. You can also direct it to ignore words in all caps, to avoid problems with acronyms.

It often takes several mouse clicks to perform what should be one action (for example, to add a word to the supplementary dictionary User 1), although this may change before the product is actually released. Also, several common words (including shouldn't and bookstore) are not in the dictionary.

To smooth out choppy right margins, Word 3.0 automatically hyphenates words for end-of-line breaks. The program uses an algorithm to determine the position of each hyphen, in combination with a list of exceptions to the algorithm.

Two more functions round out Word 3.0 as a full-featured word processing program: indexing and table-of-contents generating. Entries for both functions can be identified by codes embedded in the text, which are given the Hidden print attribute (you see them on screen but not on paper). To streamline the process, you can enter these codes in a glossary and put the glossary entry in your custom Work menu.

Alternatively, you build a table of contents from entries that have already been identified as outline headings. In this case, you needn't use the hidden codes, since the headings have already been assigned appropriate levels.

Streamlining the Process

Word's improved user interface gives you much more control over your work.

For example, the program supports keyboard commands better than any other Macintosh application I have seen. Many of these commands require the numeric keypad (or the Mac Plus keyboard), however, which is frustrating if you don't have one. The numeric keypad is designed to emulate the traditional layout of the numeric keypad on the PC: for example, the keys 2, 4, 6, and 8 move the insertion point one character at a time. The abundance of keyboard commands is a boon to professional typists and anyone allergic to the mouse—you can use it as little or as much as you like.

Word 3.0 provides greater flexibility for working with large documents. By specifying the same file name in the Page Setup dialog box for several files, you can generate an index and table of contents for more than one file. And because Word lets you specify the starting page number, footnote number, and line number for each document, you can treat multiple files as one complete document.

Graphics, Text, and Numbers

If your documents routinely require graphics, tables, or mathematical formulas, Word 3.0 can lend a hand. The program provides two new options for mixing graphics with text, but they don't measure up to Microsoft Works' methods. Word treats each graphic image as a single character so that it resides on the same line as normal text (see Figure 2). This is useful for placing a small graphic symbol in a line of text. If the graphic is taller than the other characters on the line, those characters align with the bottom of the image. The new Side-by-Side paragraph format lets you place a graphic image next to a block of text. Unfortunately, the paragraphs appear below each other rather than side-by-side on the screen—until you select Page Preview. This means you must depend on trial and error to determine when your text has reached the bottom of the graphic.

Word 3.0 includes several new functions for working with tabular information. Pressing the Option key when you're highlighting a single column in a table lets you use the Cut or Copy command to reposition it. Or you can add the highlighted numbers with the Calculate command and transfer the results to the Clipboard. Then position the insertion point wherever you choose, and paste in the sum. Word also has a new type of tab stop that places a vertical bar on each line in the specified position, a feature similar to one in Excel that
File Conversion

Because of the large volume of documents produced with word processing software, users frequently share documents on disk. A powerful word processor should minimize the stumbling blocks of such an arrangement by reading and writing a generous selection of file formats so that users can share documents while using different word processing tools. The file conversion functions in Word 3.0 are a dramatic improvement over those in Word 1.05. You can now import and export files in the following formats:

- DCA. IBM's format, sometimes referred to as Revisable-Form Text, has been embraced by most word processing programs on the PC. The availability of DCA on Mac Word means that document compatibility will be much less of a problem than it has been. The advent of network systems capable of connecting Macs and PCs has made the ability to handle this format crucial.
- PC Word. In Word 1.05, PC Word files had to be translated into Mac Word format via the separate program Word Convert. Word 3.0 performs this conversion internally and recognizes and brings across any style-sheet information used in the PC Word file.
- MacWrite. Word 1.05 took forever to convert MacWrite files while they were being retrieved. Furthermore, Word was invariably left in a brain-damaged state wherein every action took about five minutes to complete. Word 3.0 should retrieve MacWrite files better than Word 1.05 did, although this feature was not completely implemented in the version 1 used. Unlike Word 1.05, the new version lets you export files to the MacWrite format.
- Microsoft Works. This format allows documents to be loaded into Works' word processing module.
- Rich Text Format. This format facilitates the transfer of documents between disparate systems. It lets you transfer not only text and basic print attributes such as boldface and underline, but also font, size, and style information, as well as graphics.
- Text. Word 3.0 exports text-only files with line breaks, in addition to the normal text-only format. A file with line breaks can be uploaded to bulletin boards and mail services such as MCI Mail.

lets you set off a table with borders.

Word 3.0 can insert special codes within your text for building complex mathematical formulas. Functions such as integrals, brackets, fractions, and radicals are represented by one-letter commands with options. Show Paragraph mode displays the formula codes, while Hide Paragraphs mode shows the formula in final form. Although the functions are not as complete as those of dedicated formula-building programs such as MacEqn or Tech, this is a convenient feature.

Switcher version 5.1 performs a neat trick with Word 3.0 known as Quick Switch. It allows you to link a selection you've pasted into a Word document with the original data in Excel, MacPaint, or MacDraw. After changing numbers in Excel, or graphic images in MacPaint or MacDraw, you press one or two keys to automatically update the pasted selection in Word. If the pasted data contains numbers formatted with special print attributes, the numbers retain these attributes when the selection is updated. Graphic images will also retain their position on the page. Because it resembles Jazz's Hot View, which dynamically updates pasted information, this feature has been dubbed "Warm View."

Page Preview and Setup

Who knows how much paper and time we've all wasted printing documents that turn out all wrong? Word's Preview function works like Excel's, which displays on screen a zoomed-back image of each page as it will appear when printed. Best of all, Word lets you preview facing pages. The magnifying-glass icon lets you zoom in on a portion of a page. In addition, you can move backward and forward through a document, change margin widths, scroll directly to a page, and print individual previewed pages by choosing Print.

To save time, you can limit the display to one page by clicking on an icon at the left of the screen (see Figure 3). Page Preview is the only way you can view multicolumn documents as they will look when printed; however, you can't edit in Page Preview mode.

Several changes have also been made in Word's Page Setup dialog box. The Set Default button redefines the default settings for all documents, and these settings stay in place until they're changed again. Because you're not restricted to preset choices, you can specify precise paper measurements and tab stops.

The Paragraph Formats menu contains a new setting called Border, which lets you insert simple lines and boxes within text. You can use the Box option to set off a paragraph—as the paragraph expands or contracts, so does the box—although you have little control over the spacing between the box and the text within it. The Bar option lets you place a vertical rule along the left edge of the paragraph, a good way to mark paragraphs that have been revised. Finally, you can designate a rule to precede or follow a paragraph. With each of these functions, you can specify a thin or thick line, a double line, or a shadow.
A Program with Style

For years, style sheets have been one of the most useful features in Microsoft Word for the IBM PC. Now, Word 3.0 brings style sheets to the Macintosh, providing a powerful tool for creating, structuring, and reformatting documents.

Word's style sheets let you decide exactly how the different parts of your document will look. Instead of formatting text directly, as you would with MacWrite, Word 1.05, or most other word processing programs, you establish the format for each section of the document. Then you apply that format to the text.

For example, you might set up the following formats for your document:
- Titles that are centered, boldfaced, italicized, and in 24-point type;
- Subtitles that are centered, boldfaced, italicized, in 18-point type, and followed by one blank line;
- Section titles that are left-aligned, boldfaced, in 12-point type, always followed by one blank line, and never separated from the first paragraph of the section;
- Body text that is right-justified, in 12-point type, double spaced, and preceded by one blank line.

Each collection of character- and paragraph-format settings is considered a style, and all these styles together form a style sheet. Although a style sheet is usually created for a specific document, it can be used for several. Style sheets are stored on disk with a specific document but can easily be transferred to other documents.

Once you've created a document that uses the collection of styles you established, the real power of style sheets becomes evident. Since no formatting was done within the document, you can easily change it just by modifying your style settings. For example, if you decide that body text really shouldn't be right-justified, you can simply reset the body-text style, and all the body text will instantly be reformatted. Or you might want

Figure 3
Page Preview shows up to two formatted pages at a time. Use the icons on the left side of the screen to change margins, page breaks, header/footer positions, and number of pages displayed.

A Line Numbering option places numbers at a specified distance from the left edge of the text to identify the lines on the page. These numbers appear on the screen when you use Page Preview and on the printed output. Line numbering is a feature used mainly in law offices, but it is also useful in other situations.

Merging and Repagination
The Print Merge function has also been given a minor face-lift in Word 3.0. First, you can merge to a document as well as directly to the printer. In this case, the merge output (usually form letters) is routed, one copy per page, into a new document that you can examine and edit before printing. Second, you can limit the records (usually names and addresses) that will be used in a merge operation by specifying
the first two lines that follow section titles to be in a font that's one size larger. Changing a particular section-title style affects all the text that has been entered under that section title. Imagine how your own word processor would perform these tasks. While it might be able to do so, each setting would probably require painstaking manual reformating, no matter what program you now use.

Those familiar with style sheets on the PC version of Word will notice some differences in the way they're implemented on the Macintosh version. With PC Word, you must define styles in a special Gallery window, and your text is not visible. With the Macintosh version, you have the option of either creating the style in the Define Styles dialog box, or first formatting the text *directly* and then creating a style based on the formatted text. Two important improvements over PC Word styles have been made in Mac Word 3.0: you can base one style on another, and you can specify a different style to follow the one you're defining.

Having the ability to base one style on another makes reformatting a document even easier once it has been "styled." You can start with a body-text style, for example, and then build on that by setting up the indented-quotation style as "Body Text + Indent: Left 1 inch, Right 1 inch." In this way, the indented-quotation style is linked to the body-text style—it assumes all the characteristics of the body text, except for the specified differences. When you change one style, all the styles that are based on it also change.

The ability to specify that one style follow another is useful for documents whose sections always conform to a certain order. For example, if a section title is always followed by the first paragraph of body text for that section, you would specify a section-title para-
a body-text paragraph. When you type the section title and press Return, the next paragraph is automatically styled for body text.

You can also chain styles together, one after the other. For example, you could have a title style, followed by a subtitle style, followed by a section-title style, followed by a body-text style. Simply selecting the style for the first line sets up the entire format for the beginning of your document.

Once you understand the power of style sheets, you'll wonder how you ever got along without them. It's much more sensible for the word processing program to keep track of your document's various formats than for you to format each section manually. You know these various sections are related—so why shouldn't your word processor know, too?

starting and ending record numbers.

Another improvement in the program is the repagination process, which is not only much faster but also more intelligent. Before it spends time reformating, Word checks each page for revisions, skipping pages that have not changed.

One of the most frustrating aspects of this upgrade is its failure to eliminate repagination altogether. Unfortunately, Microsoft decided to separate the formatting process from the editing process, and that's what Page Preview is all about. It's reasonable to opt for editing speed over dynamic screen update, but for those of us accustomed to word processing programs (like MacWrite) that always show the correct page breaks, it's still annoying.

Word has defined a special style for inserting PostScript code directly into a document, which lets you do a lot more with the LaserWriter from within Word. For example, previously you may have used a page-layout program just to perform a simple task like surrounding your page with a box. With Word 3.0 you can insert a small PostScript program to do this instead.

The Final Word
Word 3.0's abundance of features and improved performance make it the most powerful word processing program available for the Macintosh. With its style sheets, outlining facility, spell-checker, and other high-end features, Word 3.0 is best suited for larger, more complicated documents, such as books, manuals, contracts, newsletters, and reports, which often require extensive formatting. Although Word 3.0 may not be the best program for creating simple memos and letters (especially considering its $395 price), the user interface has been sufficiently modified to make it less obstructive for the casual user. In spite of the program's strengths, it has some disappointing drawbacks, such as its cumbersome outliner and its inflexibility in juxtaposing graphics and text. Nevertheless, Word 3.0 is a vast improvement over the previous version. I give the program my vote for upgrade of the year—or should I say the last two years?

See Where to Buy for product details.
The sun did not shine. It was too wet to play.
So we sat in the house all that cold, cold, wet day.
I saw there with Sally. We sat there we two.
And I said, "How I wish we had

SOMETHING
to do!

—From The Cat in the Hat, Dr. Seuss*
Kids' Stuff

Free and easy ideas for children's games and projects

by Carol Johnson

If winter weather's got you scouting for new sources of indoor entertainment for your preschoolers or older kids, don't overlook your Macintosh. As you probably already know if you have one around the house, children love computers--particularly the Mac, with its happy face/sad face operating style and graphics abilities.

While Macintosh programs for children remain fairly limited in number (see "KidsTime," Macworld, September 1986), you can create scores of puzzles, games, and rainy-day activities with MacPaint and a little imagination. If you have some display fonts, disks of clip art, or a color printing utility, so much the better.

To get you started, here are half a dozen ideas for games you can make for your preschoolers. For older kids there are a similar number of answers to that perennial whine, "There's nothing to do!"

The Littlest Hackers

You don't need a kindergarten diploma to hack on a Mac. Pounding on the keyboard with MacWrite can start as early as nine months of age, but be sure to put the mouse out of reach. Use the Caps Lock key and a big bold font like 24-point Geneva Bold. Or try one of the pictorial fonts, Cairo or Taliesin (see "Free Clip Art"). Babies get a bang out of the images in Cairo, and a verbal one- or two-year-old can name many of the pictures.

Count Me In

Three-year-olds will like counting with you on a MacPaint screen. Put a few 72-point dogs, babies, cars, or some other favorite from the Cairo font on the screen, and as your child points to each object and counts, print the number underneath the object. Double-click with the eraser, pick a new object, and do it again.

Four-year-olds are coordinated enough to use the mouse, albeit under adult supervision. Prepare a MacPaint document with three different counting exercises (see Figure 1). Put sets of objects on the screen with a row of large numbers beneath each set. Your child then counts the objects, selects the correct number, and puts it in the circle next to the objects. Little ones find the selection rectangle easier to use than the lasso. Print out the finished page, and your child can color it in.

Six of One

Sorting games are an intellectual step up for your sophisticated preschooler. Draw two boxes at the top of the screen; label them "Big" and "Little" (see Figure 2). Choose a Cairo picture and print one copy in 24-point and one in 48-point, then make eight or nine copies of each. Ask your child to put all the big pictures in the Big box and all the small ones in the Little box.

Try displaying a selection of Cairo images for your child to sort into things with wheels, things you can eat, things that grow, and so on. Or make multiple copies of an image, modify or shade all but two of the copies, and ask your child to find the two that are exactly alike.

The variations are endless.

Learning your ABZs

The Mac can't be beat for familiarizing a preschooler with letters and words. Pick a recognizable object and put it on the screen. Ask your child to say the name, and then print the name in large caps (Geneva bold is a good choice, as it's made out of simple, straight lines). Say the names of the letters. Have your child trace the letter shapes with a finger on the screen. Older kids can trace letters with the mouse or, with your help, find the letters on the keyboard and print the word.
Tell Me a Story

Many children are natural storytellers, and all enjoy being a story's major charac­ter. Have your child dictate a story, or write one yourself especially for your child. It's best to work in Paint because its fonts are larger than MacWrite's. And of course, you can liberally illustrate the story. If you have an ImageWriter II, a printing utility like ColorPrint can help you produce professional-looking full-color picture books. If the time and effort required for elaborate full-color stories seem daunting, use outline drawings and have your child color the results with crayons or felt-tip pens.

If you are using a presentation program at work, such as Slide Show Magician, why not bring it home and make a talking storybook or bedtime story?

It's Elementary, My Dear

The following batch of projects is aimed at the school-age brigade. Some activities require parental participation; kids can do some by themselves. For more ideas, children's activity books are a good source of inspiration.

Amaze Your Friends

The first idea comes from Macworld's June 1986 Open Window. Philip Chilcole, of Modesto, California, suggested making MacPaint-enhanced snapshots of mazes from the Apple Guided Tour disk's Amazing program. Just print out the results and hand your kid a pencil. Amazing's easiest puzzles are fine for five-year-olds. The hardest are challenging for adults.

Honk If You Like Stickers

Another creative parent-generated idea comes from Xochiquetzalzin Villicana de Cronkhite, of Culver City, California. Xochilt ("so-chi ll") and her 13-year-old daughter Erendira print 1-by-3-inch stickers on pin-feed label stock. The hardest part, they say, is making a template so that the images fit on the labels. To solve that problem they plan to get an ImageWriter II and use Silicon Press to print labels effortlessly and in color.

Large paper- or office-supply stores stock a big selection of labels: round, fluo-
Free Clip Art

The two pictorial fonts Cairo (top) and Taliesin provide a rich source of images for creative fun. Once you install them in a system disk with the Font D/A Mover, you can access them directly in MacWrite or another word processor simply by using the Font menu. This ability makes it easy for you to create games that combine words or numbers and pictures.

Cairo used to be distributed by Apple as part of the Mac system disk. Currently, the only way to get hold of the font is to unearth one of those old systems.

Taliesin still comes with MacDraw. Although it's primarily an architectural font, kids like many of its characters—especially the cat, dog, flower, airplane, and assorted trees. Both fonts are especially handy (and good-looking) if you print the characters in sizes larger than the native 18-point.

If neither of these pictorial solutions suits you, perhaps a disk of clip art would be more to your liking. Most clip-art disks cost from $15 to $40; "Art to Go" in the December issue of Macworld describes more than one hundred collections.
Navigating the Mail-Order Channel

An inside look at the business of buying by mail

by Nancy E. Dunn

Many mail-order companies offer tempting prices for Mac programs and hardware, but it's not just the prospect of saving a few dollars that leads more and more consumers to do business with perfect strangers. Mail-order suppliers, with warehouses in low-rent locations that would never work for a computer store, can afford to stock a wider variety of products than many computer retailers can crowd into their limited display space. And then, of course, there's convenience, the same factor that has caused the recent boom in frozen food sales, which exceeds even the wildest dreams of the people who introduced the TV dinner to Americans in the fifties.

In fact, InfoCorp analyst William Higgs predicts that by 1990 consumers and businesses will purchase 30 percent of all software from mail-order companies.

The prospects have not always looked so promising to people in the business of selling computer products by mail. According to the half-dozen mail-order suppliers I talked with, most people harbor an innate distrust of the business, as if they are afraid it's the most recent incarnation of the snake-oil salesman. Joe Bonazzo, president of Programs Plus of Connecticut, recalls, "Five years ago, in the infancy of personal computers, people were slow to come to mail-order sup-
In those days, few people knew much about personal computers; they needed the personal attention and hand-holding a local dealer could provide. Since then, resistance to mail-order sales has waned as buyers have become better informed.

But the recent well-publicized troubles with Northeastern Software of Shelton, Connecticut, have shaken the faith of some. "Northeastern gives the whole mail-order industry a black eye," says Pete Sattler, president of Tussey Computer Products of State­line, Pennsylvania. "When a mail-order company advertises very low prices and then provides poor cus­tomer service, it makes people wary of doing business with any mail-order company."

A Bad Apple

Northeastern had racked up an unprecedented number of customer complaints at Macworld and at the local Better Business Bureau in Connecticut before filing for protection from creditors under Chapter 11 of the bankruptcy code on October 29, 1986. "Generally people only talk about the companies they've had a bad experience with," says George Voltz, who keeps in touch with Mac user groups all over the country for the Boston Computer Society. "Northeastern is about the only one I've ever heard anything bad about."

Most people complained of goods ordered and paid for but never received and of refund checks that were refused, delayed, or even returned by the bank. At press time, the company was still nominally in operation (though only the Muzak answered when I called), but it was under investigation by the U.S. Postal Inspection Service and the Connecticut Department of Consumer Protection.

Mail-order industry insiders speculate that North­eastern's troubles stem from the pricebuster approach the company took. But Sattler of Tussey looks at it this way: "If I'm on an airplane and find coffee stains on the fold-down tray, it scares me because I figure they might be sloppy about the mechanical maintenance too. The same thing goes for Northeastern; if they couldn't manage their inventory properly or provide adequate customer service, I venture to guess that they had no idea whether or not they were even making money."

Service is the name of the game, and each com­pany tempts a potential customer's touch-tone finger in a different way: from PC Network's electronic bulletin board for members, replete with public-domain software and a hefty 500-page catalog, to Tussey's largely successful attempt to ship nearly everything the day after the order is placed, to Icon Review's product screening and value-added catalog, to The Savings Zone's personal attention, hands-on Mac expertise, and electronic bulletin board. Mac Con­nection, probably the most-praised outfit of the bunch, offers a $2-per-order shipping fee, a 120-day warranty, and Club Marlow, a new express buying service that gives members a number to expedite ordering, shipping, and tracking.

Of Back Orders and Vaporware

At all the companies mentioned in this article, the sales force works with computers to check inventory while entering a customer's order. This is meant to avoid unexpected stock shortages, which leave cus­tomers wondering when products will arrive. Never­theless, the most common customer service call is "Where is the widget and program I ordered?" Joe Bonazzo advises buyers to "get in line" for a back­ordered product if it's a hot-selling item: "Unreleased products might be sold out through back orders; a lot of products in this industry are in short supply. Small companies that are undercapitalized can't produce the quantities we need, so maybe we'll order 30 LoDown drives at a time and get only two." Experienced mail­order consumer Dennis Embry suggests looking around for the shortest line, though. For example, when he learned a mail-order source had a long wait­ing list for Mirror Technology's hard disk, he called the manufacturer, who filled his order right away. "The mail-order company was in line, but I wasn't," Embry says. "It's like going to a supermarket—there are many lines."

Vaporware—products that have been publicized but not released—poses a different problem. Mail­order businesses prepare ads two or more months in advance and often work on catalogs even earlier. "We try to anticipate what products will be available, but it's not always possible," says Icon Review's Marilyn Jessup. "It's also hard to predict what's going to hap­pen with a promotion, so even if a product is released in time, with 350,000 catalogs out there, demand might exceed supply."
Preparing for Smooth Sailing

Most complaints about mail-order fit into the category of unpleasant surprise—an unexpected shipping delay, the wrong product version, unanticipated costs. Then there's the irritating irony of spending time to unravel a snafu in a process that you expected to be convenient. Avoid surprises by informing yourself and by taking a few precautions. This list of tips comes mainly from the experts—mail-order executives who'd prefer to prevent problems rather than correct them.

• Know your equipment—how much memory and which version of ROM your Mac contains, and which model your printer, modem, and other devices are. Know which version of system software you have, and make a point of asking about hardware and software compatibility while placing your order.
• Know what version of software you want and what it does. Some mail-order houses have well-informed Mac users handling telephone orders, but you can't count on them to know everything about all the products. So do some research before you order pricier items. Though mail-order suppliers may agree to accept the return of a piece of software that doesn't do quite what you had expected, they can't be held responsible for the hyperbole or omissions in manufacturer's advertisements.
• Read the fine print in the mail-order company's ads and catalogs.
• Before placing a big order with a company you've never tried, assess its service record by calling the local Better Business Bureau. The BBB keeps track of customers' complaints. Joe Bonazzo, head of Programs Plus in Connecticut, says the telling sign is whether the BBB shows outstanding unresolved complaints. Any mail-order company concerned about its customers and image checks regularly with the BBB to monitor complaints and take care of them.
• Don't prepay unless you're familiar with the dealer; instead, use a credit card—and ask when your card will be charged. Or ask for COD.
• Other questions to ask when you call: Does this product come with everything I need to operate it (cables or adapters, for example)? Are all the goods in stock now? When do you expect to ship them? When should I expect to receive them? What is your return policy? How many returns have you had on this product? Refund policy? What about warranties and service? What is the customer service phone number and address?
• Don't rush yourself—you could save money. Dennis Embry, who has bought more than $7000 worth of gear and programs from ten different mail-order companies, rarely has a problem, though he, too, was caught in the Northeastern net. He has good words for the manufacturers he ordered directly from and for the five other Mac firms he's dealt with: Vision Technologies, Mac Connection, Icon Review, Tussey, and The Savings Zone. He attributes his good record, in part,
San Francisco lawyer Cary Klafter purchases software by mail because of the savings. Retail stores, he says, don’t provide enough service to justify the additional markup. The trade-off? Sometimes waiting for the program to arrive. But he says, “I’ve never had occasion to need a program the same day.”

Professor Philip H. Dreyer compared ads for mail-order houses before choosing Northeastern. Dreyer, a first-time mail orderer, is wary after receiving a partial order and no refund: “It’s going to take me a long time to place another order by mail.”

A Matter of Timing
When you get the product might not matter—it’s something you consider worth waiting for—but if you’ve already paid for it, the frustration mounts. Programs Plus does not charge credit cards until the products are shipped, nor does Tuszey or Mac Connection. In fact, Mac Connection president David Hall said the company had to customize its order-processing software to avoid charging credit-card customers right away.

Icon Review has not yet found a way to customize its software, but according to marketing manager Marilyn Jessup, the company is looking into how to delay credit card charges for products that aren’t shipped immediately. PC Network now charges the cards right away; president Steve Dukker says his organization previously processed too many exotic special orders that were later denied credit authorization.

Time is of the essence when it comes to taking orders, too. The sales operations of each company polled all have a system for displaying the number of incoming calls on hold and for handling overflow. The amount of time people have to wait varies with the time, day of the week, season—and company. Mac Connection recently launched a program to answer after only one ring; at Programs Plus you might wait on hold for as long as two minutes. Joe Bonazzo says, “Calls come in bursts; it’s as if everyone in the country picked up the phone at once.” The peak period varies due to companies’ different time zones, and the preholiday buying season is almost always busy. Steve Dukker of PC Network suggests calling on Friday evening when “the phones go to sleep.”

Even the best-laid plans of the most well-intentioned and well-managed companies may go astray. David Hall related how in the early days Mac Connection’s computer system crashed—twice. And last November when The Savings Zone started to back up its Macintosh file server to a streaming-tape drive for the first time, the hard disk was reinitialized instead, destroying all the company’s data. During an interview, Dennis Wilkins, one of the company’s founders, apologized to any customers whose orders were fouled up at the time.

In Case of Trouble
If, despite good intentions and your careful preparation (see “Preparing for Smooth Sailing”), your order hits a snag, start by trying to straighten it out with the company’s customer service reps; the firms have a lot to gain by solving your problem.

If that doesn’t work, however, you’re not on your own (see “Getting Satisfaction”). Mail-order sales are governed by rules of the Federal Trade Commission (FTC), U.S. postal laws, and various state laws.

Because the mail-order section of federal law was written before the popularization of toll-free telemarketing, legal protection differs somewhat depending upon how you place your order. If you order through the mail, the seller must ship your order within 30 days of receiving it, unless the advertisement clearly states it’ll take longer. If the seller anticipates a delay, you must be notified before the promised ship date and given the chance to cancel the order or accept a later shipping date. Even if you agree to a delay, you may cancel the order any time before the product has been shipped. A refund must be mailed within seven business days if you cancel an order paid by check or money order. If you cancel an order paid by credit card, the seller must credit your account within one billing cycle following the receipt of your request.

With a telephone credit card purchase, the seller’s duty to deliver promptly is not spelled out. And, of course, you can’t appeal to the U.S. postal inspectors to help you collect if you run into a problem. But buying with a credit card offers an advantage that people holding tickets for seats on airlines that suddenly go bankrupt have come to appreciate: even if the airline—or mail-order company—goes out of business, if you haven’t received the goods you’ve charged to your card, you can probably arrange to remove the charge from your account.
Getting Satisfaction

If you have trouble that exceeds the bounds of simple human error and don't feel the company has been cooperative in attempting to resolve the problem, alert one or more of these organizations for aid:

- The U.S. Postal Service. If you order by mail, contact your local postmaster for the name and address of the appropriate postal inspector in charge.
- Your state or local consumer-protection office. If you don't know how to find the agencies, contact a local legislator's office for assistance. State and local laws vary tremendously, but some states, such as Connecticut, have strong laws that give consumer-protection agencies enough enforcement power to put a company out of commission.
- The consumer-protection agencies in the merchant's home state.
- The Better Business Bureau closest to the mail-order company.
- The editor or publisher of the magazine, book, or newspaper that carried the advertisement. At Macworld we can't investigate every complaint about advertisers. But if a pattern of consumer abuse emerges, we alert our readers; for example, we responded to the letter about Northeastern in our October 1986 issue. The magazine can go as far as rejecting advertisements from a company whose business practices seem dubious, as Macworld finally did in the case of Northeastern (see Jerry Borrell's editorial "No-Ware Land," Macworld, February 1986).
- The Federal Trade Commission, Washington, DC 20580. The FTC doesn't help solve individual problems, but it keeps track of complaints to find a pattern of questionable practices that might bear investigation and restraints.

The problem of nonreceipt of merchandise, typical of the complaints Macworld received about Northeastern Software, may be handled differently by different credit card companies, but how you begin an effort to recover your money is the same. Call the customer service number on your credit card statement to learn where to send a request to remove a charge from your account; ask what you need to include in the letter. Visa and MasterCard return the charge to the merchant's bank, so in the case of Northeastern, instead of having a long line of individuals waiting along with software distrubutors who are owed big bucks, Northeastern's bank takes on the task of collecting the refunds. American Express issues temporary chargebacks while its customer service representatives investigate your complaint. If you have paid the amount on your statement, perhaps to avoid finance charges, you may have to wait a longer time for a credit to show up on your statement. And, though a spokesperson said Visa's rules are interpreted to give the consumer the benefit of the doubt, write promptly if the mail-order company doesn't issue a refund you're entitled to. Visa wants to hear from you within 120 days of the transaction; MasterCard, within 60 days of the mailing of the statement that lists the disputed item.

The Ripple Effect

To avoid even the possibility of having to engage in such tedious follow-up, some people may return to the waiting arms of the local computer dealer. In fact, some who routinely order software by mail won't cross the line to order hardware long distance. Art Kleiner, an editor of that by-mail compendium The Whole Earth Catalog, vows not to order computers by mail, though he does send away for software, peripherals, and upgrade boards. Derek Van Atta, an owner of a respected Mac-only retail outlet in Silicon Valley, says, "Sixty to seventy percent of the time, if price is not a major factor, you're better off going to the local computer store, cracking open a manual, and sitting down for an hour to try out a product to make sure it's what you want." Probably about what you'd expect a retailer to say. But Van Atta's ComputerWare store has a healthy sideline in mail order. "If there's a good dealer nearby, it's worth paying a little—and sometimes even a lot more," he says, "but if it comes down to ordering from a good company like Mac Connection or going to a local Businessland or ComputerLand, it would be Mac Connection—no contest."

Ironically, Northeastern's woes may do some good for the other leading firms. Says Mac Connection's David Hall, "I think we may be seeing a counter ripple effect. People may decide that it's better to avoid the homemade-looking ads and pay a little more to prevent the frustrations."
Hands-On Digitizing

A guide to getting the picture with video and scanning digitizers
Macintosh digitizing is like a kind of photography, but instead of rendering light waves into information on a piece of film, the digitizer converts visual information to a form that can be stored on a floppy disk. The digitizer can be an electronic aperture through which you bring three-dimensional reality into the digital world of the computer. Or you can use it as a means to transfer two-dimensional images created in other mediums—pen and ink, photography, paints—to the computer for editing and manipulation.

Digitizers open up a world of graphic possibilities for artists, designers, desktop publishers, animators—anyone who works with images. Like using a camera, however, operating many Mac digitizers requires technique. Unlike most Mac procedures, which are so fully automated that they can be performed virtually with the click of a mouse, digitizing remains something of an art.

The Basics

Mac digitizers come in two forms: video and scanner. Video digitizers work with a video camera or some other video source, such as a VCR or a disk player. They transform incoming video signals into digital data, then pass it along to the Mac, which displays it as a bit-mapped image. Video digitizers currently on
the market include Koala's MacVision and New Image's Magic. Though Mac video digitizers differ, their basic functions are much the same. Because it is the most widely used video digitizer for the Macintosh, the examples in this article apply to the MacVision system.

Scanner digitizers are available from Thunderware, Abaton, Microtek, Datacopy, Dest, and others (see "What's New in Scanners"). These systems contain precision optical devices that scan a piece of paper, sensing its light and dark areas. Most scanner digitizers are self-contained peripherals. Using one is a simple, mechanical process—like feeding a photocopier, except that the duplicate appears on the Mac's screen.

ThunderScan, from Thunderware, is an interesting exception. This system takes advantage of the ImageWriter printer mechanism to offer a low-cost digitizing alternative. The ThunderScan optical scanning assembly fits into the ImageWriter in the holder designed for the ribbon cassette (see Figure 1). To digitize an image, you insert your original in the ImageWriter's platen. The ThunderScan software moves the print head back and forth and rolls your original through the printer as the optical assembly reads the image off the page.

Although ThunderScan has lower resolution than most other page scanners, its ten-to-one price advantage has made it the most popular Mac digitizer. Because of this—and because using the other models requires little instruction—ThunderScan is the only scanning digitizer I'll be discussing.

**MacVision: Equipment**

Like all video digitizers, MacVision requires a video source—in most cases a standard color or black-and-white camera (see Figure 2). The video connector on MacVision is the RCA phono type, but most cameras for home use are equipped with special 10- or 14-pin connectors and derive power from the VCR. Therefore, you must either operate the camera with a VCR and connect MacVision to the video output of the recorder or purchase a video-camera power supply. The supply serves two purposes: it provides power to the camera, and it separates the audio and video signals from the multipin connector, routing them to individual cables. You connect the cable marked video to MacVision.

The camera you use greatly influences the sharpness of your digitized pictures. Contrary to what you may think, a costly color camera doesn't produce better pictures than a cheap black-and-white one, since even inexpensive black-and-white cameras have better video resolution than color cameras. Video resolution is often expressed as the number of horizontal lines that make up the screen image; most black-and-white cameras have a horizontal resolution of about 300 lines, whereas color cameras have a horizontal resolution of no more than 250 lines. In addition, black-and-white cameras don't generate a color information signal, which can reduce picture sharpness.

Prices for black-and-white cameras start at about $200. If you want to use a color camera for digitizing, concentrate on getting one with a high resolution rating. Features such as automatic focus and stereo sound have nothing to do with image resolution but add a great deal to price. The size of the image pickup device used in the camera and the quality of the lens are also important. The image pickup should be at least 1/2 inch—1/8 inch is even better.

In general, the smallest area most video-camera zoom lenses can focus on is 5 by 7 inches. If you plan to digitize smaller objects, you need a set of close-up lenses. Available at photography stores, these lenses screw onto the front of your regular lens. They come in sets of three or four magnifications, and you can combine lenses to further increase the magnification. Close-up lenses can focus on objects as small as about 3 inches square. To digitize pictures or objects smaller than that—stamps or coins, for instance—you need a macro lens.

Since MacVision takes from 5 to 25 seconds to scan a single image, a tripod is necessary to steady the camera during the exposure. Invest in one that's large enough to hold the weight of a video camera.

For digitizing pictures, drawings, or other flat media, use a copy stand to ensure even lighting across your subject. A copy stand is nothing more than a small table with a lamp on either side that swivels for adjustment. Some professional copy stands have a built-in camera mount, but a tripod works as long as you can get the camera in close enough.

For best results position the camera directly above the picture. If the camera is at an angle to the artwork, the image may be distorted. Place the lamps on either side of the art at 45-degree angles, making sure that an equal amount of light from each lamp falls
What's New in Scanners

High-resolution scanners are starting to make their presence felt in the Mac market, and no less than six companies are selling both image and optical character-recognition (OCR) scanners. Most of the scanners use a paper-feed roller mechanism to scan the page, though a few are flatbed-type scanners, which work like a copier—a sheet of paper is placed on a glass plate, and the imaging hardware reads the page from top to bottom. Many of the scanners read images at resolutions from 75 to 300 dots per inch (dpi), and almost all allow up to 16 levels of gray, which augment the contrast level of the scanned image.

The most important consideration in purchasing a scanner is the software that manipulates the scanned image. Many scanners scale images and scan halftones (printed photos) and line art (drawings). They should also be able to store image data in a number of formats, including MacPaint, PICT, PostScript, and PageMaker. Keep in mind that since the data for a complex, full-page image scanned at 300 dpi can take up more than 1 megabyte, you'll require a mass storage device to store the scanned images.

Microtek

Microtek International was the first developer of a high-resolution page-feed scanner for the Macintosh, introducing the MSP300 officially in late 1985. A full 300-dpi scanner, the MSP300 includes software that performs all the basic functions outlined previously and can save an image file in a compressed format. One noteworthy feature is the ability to edit an image on the screen at 300 dpi. Microtek is also reportedly working on software that permits OCR scanning of printed documents. While Microtek has been selling the scanner directly and through a limited number of dealers, it has also been a supplier for at least three other companies—Abaton Technology, AST Research, and Knowledge Engineering—that have developed their own software and are marketing the scanner under a different name.

Abaton markets the Microtek scanner under the name Scan 300, and has been selling the product since August 1985. Abaton's software performs the same functions as the Microtek software and allows a wide range of image manipulation, including cut-and-paste operations, rotation, and the ability to store image files in MacPaint, PageMaker, and PostScript formats. Abaton is also working on OCR software for the Scan 300. At press time Abaton was planning to incorporate a Ricoh scanner into its product line.

Bill Bates of Knowledge Engineering also sells the Microtek scanner under the MSP300 name, but with his own LaserScan software. The software has excellent imaging capabilities and makes a good fit for people who use Knowledge Engineering's JustText page composition software.

AST Research plans to sell the Microtek scanner under the name TurboScan. At present, the AST software is similar to the Microtek software, though the company plans to include many of the additional features offered by the Abaton software. AST is also interested in providing OCR software in the near future for its scanner.

Datapacy

Datapacy from Mountain View, California, offers two scanners for the Mac, the Jetreader and the Model 730. The Jetreader is a paper-feed scanner that comes with a sheet feeder that holds up to ten sheets of paper. The scanner includes MacImage software that stores an entire page of graphics with a maximum resolution of 300 dpi. The Model 730 is a flatbed scanner and performs both OCR and image scanning via its WIPS integrated text and graphics software.

Princeton Graphics

Princeton Graphics, which made its name with high-quality monitors, has entered the scanner market with the LSP300, a paper-feed scanner that feeds up to five pages automatically. What's interesting about the LSP300 is that it was originally intended to be an IBM PC scanner; a company named New Image Technology convinced Princeton Graphics that the Mac provided a large potential market for its product. As a result, the LSP300 will be offered with a board and software developed by New Image that will allow it to interface with the Mac. It looks like New Image will probably market the Mac version of the scanner, though Princeton Graphics might offer the scanner without an interface board. —Rick LePage
MacVision: Exposure

The toughest part of using the MacVision digitizer is setting the brightness and contrast levels. The MacVision software displays an adjustment gauge; you rotate the brightness and contrast knobs on the MacVision unit until the wavy line is spread evenly across the gauge. It's important to remember that the gauge provides only a rough estimate of the contrast and brightness settings. You must fine-tune the picture for each new scan.

Color pictures, especially from magazines or books, are usually low in contrast. Even if the gauge registers a perfect balance of contrast and brightness, the image may appear dull and grainy on the Mac screen. During scanning, slowly rotate the brightness and contrast knobs on MacVision until the picture improves. The contrast and brightness controls work together, so you have to adjust them alternately.

You can determine "base" brightness and contrast settings by using a gray-scale card, available at most photography and graphic arts stores. The scale shows a series of tones from black to white. Place the card in front of the camera so that the black strip is on top. Select the Adjust command and turn the brightness and contrast controls until the line appears as an even stair step. Replace the card with the image you want digitized and touch up the controls as needed.

Once the image has been successfully scanned, you can save it to disk or select only a portion to cut and paste into a document. The MacVision software

Figure 3
Digitize two-dimensional originals by placing them on a copy stand or a table. Aiming the lights at 45-degree angles to the table minimizes glare and spreads the light evenly across the original.
works as a desk accessory, so it can be used with any application that supports them.

**Special Effects with MoreVision**

Included with MacVision is MoreVision, a stand-alone program that greatly extends the usefulness of the digitizer. You can choose from a variety of effects: Threshold, Thick & Thin, Dither, Patterns, Zebra, Contour, Trace Edge, and Random. Most of the variations produce wild, impressionistic special effects, but some are useful (see Figure 5).

When experimenting with the various MoreVision effects, you have to change the contrast and brightness settings. In general, boost both contrast and brightness when you use the Zebra, Contour, and Trace Edge commands. I've found that decreasing the contrast and brightness settings yields the best results when using the Threshold, Dither, and Random effects.

**Rolling Thunder**

ThunderScan doesn't require that you set up a camera or lights, so it's fundamentally easier to use than MacVision. But getting a good scan isn't always simple. The process is time-consuming, being limited by the speed of the ImageWriter print head: It takes approximately 20 minutes to scan a full 8-by-10-inch document. And problems aren't always apparent until well into the digitizing process, which forces you to make more than one scan to get a picture. Learning to use ThunderScan right the first time will save you time and frustration.

ThunderScan scans its way through an image line by line. Because the scanner uses the edge of the paper as a guide to tell it when to start reading each line of the image, you can improve your scanning accuracy by using the ½-inch-wide white sensing tape supplied with the ThunderScan unit. As the manual explains, you apply the tape around the left edge of the platen. What the manual doesn't say is that it's important to make sure that the edge of the tape exactly matches the edge of the platen. A variance of even ½ inch can decrease the quality of the scan, because it can throw off the line-by-line alignment by one or two pixels. Periodically inspect the tape and replace it if it's peeling or soiled.

The ThunderScan optical assembly projects two pinpoint beams of red light that are reflected by the paper and sensed by a photodetector. The photodetector, however, is also sensitive to the infrared content of an incandescent lamp and to visible light. To avoid mis-scanning, turn off or deflect any bright lights around the ImageWriter when ThunderScan is in use.

The size, weight, thickness, and coating of the paper on which your original is mounted or printed have an important effect on the quality of the digitized image. Obviously, you can't scan anything too large to fit in the ImageWriter. If the original is too big, reduce it to a more manageable size using a photocopier machine capable of reduction. Or you can take a black-and-white photo of the original and make an 8-by-10-inch print (untextured matte paper works best). By the same token, small pieces of paper don't feed smoothly through the printer mechanism. Mount artwork smaller than about 5 inches square on a larger piece of paper, or make a copy of the original and scan the copy.

If your original skews to one side during scanning, the paper may be too thick or too thin to feed properly through the ImageWriter. Solve this problem by making a copy on plain bond paper and digitizing the copy. Use the same procedure for originals printed on glossy or slick paper, which can slip through the platen and cause uneven scanning. Originals that can't be photocopied successfully should be taped to the back of a sheet of overhead transparency acetate. Then digitize the image through the clear plastic film.

**The ThunderScan Exposure**

A number of factors contribute to the quality of a ThunderScanned image. For example, ThunderScan has trouble reproducing vertical lines—they often come out jagged. If your original has many vertical lines, feed it through the ImageWriter sideways, if possible.
ThunderScan works best with the bidirectional configuration option turned off and edge sensing turned on. If the original image is small enough, enlarge it to scan, then reduce it to print. You can obtain better-than-average results by scanning at 200 percent and printing the result at 50 percent. The final printed image ends up with the same dimensions as the original (see Figure 6).

Unless the image to be digitized is very small, you should always do a sample scan to test the software settings and printer alignment. Choose an area within the image and scan about 10 to 20 lines. If the image looks good, roll back to the start and begin scanning.

ThunderScan includes a feature called grey map that enables you to control the relative or overall tonal values within an image. As long as the gray-map option is turned on, you can make contrast, brightness, and gray-map filter changes any time after scanning is complete. You can transform dark gray into light gray or black into white, and so forth. Always keep the

*Figure 5*
Interpretations of the photograph at left created using MoreVision's Threshold, Trace Edge, Custom, and Thick and Thin utilities (moving clockwise from upper to lower left). Try using these utilities to create interesting effects. For example, you can build up a posterization by making a variety of exposures using Trace Edge, filling in the images with MacPaint patterns, and then stacking the exposures in MacDraw (MacPaint images are transparent in MacDraw).
ThunderScan file that contains the gray-map information until you are sure the scan is exactly as you want it. You can't make changes once the gray-map information is gone.

**Sizing**

Digitized images are treated by the Macintosh as *MacPaint* pictures, so you can cut and paste them into any application that accepts bit-mapped graphics. However, avoid resizing images after pasting them into a document, because stretching or shrinking a digitized picture creates gross distortion. If an image must be of a specific size, digitize it to the proper dimensions in the first place.

You can check the sizing of a MacVision image by using the Coordinates program, included in *Accessory Pak 1* from Silicon Beach Software, or any similar desk accessory. To adjust the size of a MacVision image, use the camera's zoom lens or move the camera in or out. If the dimensions provided by your sizing desk accessory are in pixels, divide by 72 to convert to inches.

**The Art of the Digitizer**

Mastering a Macintosh digitizer requires willingness to experiment. Once you have conquered the basics, try different lighting or camera placement techniques; a slight variation can make a big difference. Keep notes so you can duplicate your results.

A small assortment of photographic accessories can turn you into a special effects wizard. When using MacVision, for example, you can attach colored filters to the video camera to alter the rendition of the tones in the digitized image. Adding a red filter accentuates the reds in the original while reducing the brightness of greens. You can achieve similar results by placing colored gels in front of the image when using ThunderScan.

Other ideas: Try moving the camera or its subject when digitizing with MacVision. Or make several scans of an image with different contrast and brightness settings and then superimpose them. With a program like *MacTracks or Tempo*, you can use *MacPaint* or another drawing program to "trace" a digitized image. Use the program's drawing tools to create a completely new picture.

If you're considering buying a digitizer, be aware that ThunderScan and MacVision have their own strengths and weaknesses. (For a comparison of ThunderScan and Mac video digitizers, see "Pictures to Pixels," *Macworld*, April 1985.) In the end, a choice between digitizers comes down to personal taste and the applications you have in mind. □

See *Where to Buy* for product details.

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*Figure 6*

Smoothing an old snooty. Gable's complexion was improved by ThunderScanning the image at right at a 200 percent enlargement and then reducing it by 50 percent for printing. This technique multiplies ThunderScan's resolution by a factor of four. However, it limits the size of the image you can scan to a half page, and the maximum printed output to a quarter page.
Apple Pulls a Fast One

**HD-20SC**

20-megabyte hard disk. **Pros:** Uses fast SCSI interface; relatively easy to daisy-chain; has Apple logo; stacks under Mac. **Cons:** Noisy; somewhat smaller capacity than most 20-megabyte drives; expensive. **List price:** $1299. **Requires:** Mac Plus or 512K Mac with SCSI adapter.

You won't believe you've been using a hard disk drive if you switch from Apple's original Hard Disk 20 (attached to the disk port) to its HD-20SC. Because it attaches to a SCSI port, the new model is much faster. Like the other SCSI hard disk drives available for the Mac, the HD-20SC significantly enhances your system's performance, especially if you use more documents and applications than fit on one or two 800K floppy disks.

The HD-20SC nominally has a 20MB capacity, but it actually gives you somewhat less. The unit tested had 19,111 bytes, a full megabyte or two less than most other drives in its class, though still plenty for most individuals and some small local area networks.

The unit's styling typifies the new look in Apple hardware, matching the Apple IIGS and presumably the next Mac. The beige plastic cabinet looks fine with a Mac Plus; a platinum gray version is also available. The HD-20SC's sleek lines make it look lower-slung than its actual 3-inch height. The cabinet is the same width as a Mac Plus and just an inch deeper, so you can place the drive conveniently under the Mac.

The HD-20SC attaches to a Mac Plus SCSI port with a supplied two-piece cable. The product does not work with a 512K Mac unless a SCSI port adapter has been installed. The drive works on any voltage from 85 to 270 VAC, 47 to 64 Hz. The HD-20SC is noisier than some other drives, specifically the Hard Disk 20, but less noisy than the AST 4000. Apple plans to install a quieter fan than the one in the test unit, so listen to the model you intend to buy before making a decision.

The SCSI port was designed to allow easy chaining of several SCSI disk drives or other devices to the Mac. Each chained device must have a unique priority number. Changing the priority number is a complicated procedure with most SCSI devices; you must open the cabinet and move jumpers on a circuit board. By contrast, the priority number on an HD-20SC appears in a small window on the back of the cabinet. To change the priority number you simply poke a straightened paper clip into a hole below that small window.

Apple avoids another potential complication by using an external terminator that can be detached from the rest of the cable. You remove the terminator if the drive is in the middle of a chain. With most other SCSI devices you must open the cabinet and pry small parts off a circuit board in order to remove termination.

When starting applications and opening documents, the HD-20SC operates at about the same speed as other SCSI drives (see "SCSI Performance"). Because these activities are typical of the things you normally do with a disk drive, they provide a better measure of drive performance than raw read, write, and seek speeds. The raw read, write, and seek times for the unit I tested were slightly faster than the average hard disk.

It's easy to forget where you put one file in the dozens of folders on a hard disk. Apple's hard disk drives now come with the Find File desk accessory, which searches the disk for files whose names match your specification. Find File lets you go on working while it continues search-

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**SCSI Performance**

The HD-20SC disk drive starts Excel and opens a 300K Excel worksheet in about the same time as most other SCSI disks, all of which are faster than a disk-port Hard Disk 20 or a floppy disk. In everyday use, a one-second difference is inconsequential.
Apple Computer's HD-20SC

Lose Those IRS Blues

MacInTax 1985/1986 version


There's a problem with reviewing tax preparation programs that only software reviewers and tax software publishers know about—timing. Because the IRS doesn't provide publishers with all the information they need until late in the preceding year, most products aren't completed until January; just in time for doing your taxes, but not in time to include them in a review. Accordingly, we decided to review this product based on the 1985 version in time for the 1986 tax-preparation season, and to include information about the 1986 version.

SoftView's MacInTax is intelligently designed, easy-to-use software that does what it purports to—intuitively. You gather all your tax return information (receipts, W-2 forms, and the like), plug the relevant numbers into the program, and print out a finished tax return. Context-sensitive instructions are available for all forms. Because all the MacInTax forms look like the federal and California state versions (see "MacInTax 1040 Form"), you can easily navigate through the form, filling in your tax data as you go. With other programs the correlation between form and data entry sections isn't always as clear.

Data entry is quick and easy. You move from field to field using the Tab or Return key; back up using Shift-Tab or Shift-Return, and move to other parts of a form with the scroll bars. There's also a Menu command, with a * key equivalent, that lets you jump to any line on the active form. You can display instructions for the current line or section by double-clicking that line or section's text or by pressing a * key combination.

By double-clicking on a particular amount box on the form, you can create a worksheet for entering the underlying details for that amount. For instance, instead of entering your total wages on a 1040, you can double-click on the total wages box. Then a...
The new version will also have an import interface so you can paste numbers from any program that can export a text file. This means you can use MacInTax with your favorite accounting or personal-financial program, substantially reducing the amount of information you must enter manually. The program will include a way to transfer information directly for Dollars & Sense users, one of the more popular Mac personal-finance packages. Unlike the current version, 1986's MacInTax will be HFS compatible.

Although the documentation is less than outstanding, and the noncritical error-handling a bit weak at times, MacInTax does taxes the way they should be done—quickly, easily, and simply. Writing the check is tough enough—every effort to reduce the aggravation of tax preparation is welcome, as far as I'm concerned. I use MacInTax, and quite frankly, I can't imagine springtime with the IRS without it.

—Steve Mann

See Where to Buy for product details.

## A Beautiful Duet

### MIDI Mac Sequencer 2.5

**MIDI music sequencer.** Pros: Multiple sequences can be rearranged easily; imports and exports to other music programs in SMUS format; "generates" sequences for arpeggio effects. Cons: No access to raw MIDI data. List price: $250. Requires: 512K, MIDI interface with cables, MIDI synthesizer. Copy protection: Not copiable; two retrievable hard disk installs.

### Deluxe Music Construction Set 2.0

**Music display/playback.** Pros: Flexible editing abilities; excellent music printing with Adobe's Sonata laser font; imports and exports to other music programs in SMUS format; sophisticated internal voice editor. Cons: Music printing and display limited to eight staves. List price: $99.95. Requires: 128K. Copy protection: Key disk.

Several music design and printing programs are available for the Mac, but exchanging files between programs can be a problem. Fortunately, SMUS (simple music information format) is being developed as a new standard data structure for music applications, to allow music files to be shared in the same way as text and graphics. As more music programs are introduced, musicians will be able to choose software they like, yet share their music with people who prefer other programs.

New versions of Opcode's MIDI Mac Sequencer and Electronic Arts' Deluxe Music Construction Set are the first programs that can directly exchange files using the SMUS format. MIDI Mac Sequencer uses a musical instrument digital interface (MIDI) to sequence compositions and has excellent arranging capabilities. Deluxe Music Construction Set is an integrated notation/player program that prints music effectively. Both programs are well developed, although they do not provide the most advanced features available.

### MIDI Mac Sequencer

Opcode's MIDI Mac Sequencer directly imports and exports files in Deluxe Music Construction Set, Mark of the Unicorn's Professional Composer, and SMUS format. Instead of having to set a composition from beginning to end, musicians can assemble and reassemble blocks of music freely with Sequencer. This permits a modular rather than a linear approach. The program's song files hold up to 26 different pieces of music, each of which can be a complete song or a segment of a larger piece. You enter music in any of three ways: play it on a MIDI keyboard in real time; precisely note it in step time; or build it in an intriguing generated mode. In generated mode you can play music backward or forward, generate notes randomly, and create stunning arpeggio effects.

The main screen is topped by the Status bar, which displays and controls global parameters, such as tempo. The Sequence window gives access to the 26 sequence slots. After you select a slot and a record mode, a window appears that reveals the details of that sequence, and the Control window pops up, reflecting the record mode selected.

A sequence is built up from tracks, each of which is assigned to any of the 16 standard MIDI channels. The tracks can be of different lengths, and different loop lengths can be defined. Recording a few sequences will show you the power of Sequencer's arranging ability.

Since each sequence can be initiated from the Mac keyboard, you can try differ-
When played through an external speaker, voices are acceptable, they improve greatly.

MIDI Mac Sequencer has one significant weakness—it does not permit access to the actual recorded MIDI data. The parameters of a note cannot be changed except by rerecording a portion of the track it is on. Sequencer's forte is its flexibility in building a piece, not fine-tuning a particular sound.

Deluxe Music Construction Set
Deluxe Music Construction Set (DMCS) can display and play music using its internal voices or external synthesizers. Its outstanding feature is its ability to print music. DMCS can use the new PostScript music font from Adobe, called Sonata, which provides excellent symbols.

You enter music into a Score window, select notes and rhythms from a Note palette, and place them with the mouse. The Score Setup window controls the overall design of your score (see "Golden Slumbers"). Text entry is simple and flexible; music can be imported and exported in SMUS format (though lyrics and text are left behind).

Using a MIDI synthesizer to play music is as simple as assigning an internal voice to a staff. The Sounds menu operates similarly whether it is set for Mac sounds or MIDI transmission. Although the internal voices are acceptable, they improve greatly when played through an external speaker, and new ones can be made with DMCS's powerful—though complicated—voice editor.

Is It a Take?
Both programs have limitations. MIDI Mac Sequencer is straightforward and extremely flexible, but it keeps you a level removed from the raw data. DMCS can lay out attractive scores, but it has an eight-staff limit, so don't try to print a symphony. Nevertheless, DMCS is a bargain for the price.—David Barnett

See Where to Buy for product details.

A Pair of Digitizing Tablets

Macintizer
Digitizing tablet. Pros: Easy to set up and use; no system configuration required; uses stylus or four-button puck; on-line mouse. Cons: Single-button stylus increases wear and tear on tablet surface; button placement on puck requires two-handed operation for digitizing. List price: $399. Requires: 128K.

MacTablet 3.0
Digitizing tablet. Pros: Two-button stylus; work area can be set to three sizes; accurate to within .005 inch. Cons: Requires configuration; digitizer must be connected to printer or modem port. List price: $499. Requires: 128K.

If you want to trace a drawing and capture the results in MacPaint, MacDraw, or some other graphics program, the Mac's trusty mouse is not the ideal input device. A digitizing tablet makes it easier to trace an image, and a stylus is a more natural drawing tool. If graphics software allows you to calibrate the tablet, you can have an exact correspondence between the cursor location and your working position as you draw or trace.

Under mouse control, the cursor doesn't move unless you slide the mouse across a continuous surface. Digitizers, however, use a pencil-like stylus or a puck to position the cursor, which is represented on screen by cross hairs. The cursor stops moving when the stylus or puck is lifted off the digitizing tablet, but wherever the device touches down, the cursor follows.

Digitizing tablets are available in sizes ranging from about 4 by 4 inches to the dimensions of a professional drafting table. Professional tablets are accurate to within .001 inch; larger units often have the digitizing puck mounted on a mechanical drafting arm to ensure accurate movement.

Macintizer
GTCO's tablet measures 15½ by 18 inches and tapers from ¾ inch in the front to about ¼ inch at the back. The top third of the tablet is reserved for storing your keyboard—making it easily accessible to the digitizing tablet.

Macintizer has no special system requirements. All the tablet connectors are on the back edge, so the tablet takes up very little vertical space above your work surface. You can attach either a stylus or a four-button puck, and a separate port is provided for connecting the mouse (see "Four-Button Puck"). Moving the puck or stylus off the digitizing area activates the mouse, while moving the stylus or puck back to the digitizer puts you in tablet mode again.

Macintizer requires practically no configuration. To set up the tablet, select the Control Panel from the Apple menu, then set Mouse Tracking to "0" and Double-Click Speed to "Slow." Switch off the Mac, plug in the Macintizer power supply, connect the cables, turn on the Mac, and you're up and running.

The stylus is a one-button device that you click by pressing it against the tablet. When you stop pressing, a spring "un-clicks" the switch. To drag, press down, move the stylus, and relax the pressure.
GTCo's puck is a professional four-button device with a large viewing window and clearly visible cross hairs. It's effective when very accurate tracings are required.

One of the two work areas is the same size as the Mac's screen, and the other is about 30 percent larger. Drawings traced from the larger area are reduced to 60 percent, but you can make full-size tracings by using the "same-size" work area. Each work area has a selection box on the tablet's surface. To switch work areas, click the stylus (or press one of the puck buttons) over a selection box.

MacTablet

Summagraphics' MacTablet has a 12 by 12 work area. An adjustable bracket lets you tilt the tablet toward you. A smaller version (6 by 9) is also available, and the four-button puck works with either tablet.

MacTablet must be configured or installed before it can be used, but the procedure is straightforward. After the hardware is set up and connected, insert the MacTablet disk and double-click its icon to bring up the installation program. A dialog box leads you through a set of options (port, disk type, and units). The next dialog box asks you for a destination volume; then you click Install. Since the tablet is installed as a desk accessory, you must access it from the Apple menu—a problem with

Graphics programs such as ColorPaint and OmniPaint that don't display the Apple menu.

At press time, several problems were apparent. ImageWriter Driver version 2.3 is incompatible with MacTablet software. A 128K Macintosh system may crash (non-destructively) if MacTablet is started and stopped more than twice. If you use the Finder 5.0 or 5.1 with MacTablet, you may crash your system and corrupt your disks.

The product does not work on the Macintosh XL, but the tablet is compatible with some hard disks.

The excellent stylus has two switches: one inside it that clicks when the stylus is pressed against the tablet, and another that is activated by a button on the side of the stylus. The finger button works just like the internal switch but without pressure against the tablet (see "Two-Switch Stylus"), which makes tracing or drawing a "light touch" operation. The stylus is MacTablet's strongest feature; you can draw lightly over the drawing you're tracing without making an imprint on it.

Three work-area scale sizes are available: 0.5:1, 1:1, and 1.6:1 (the relation is tablet area:screen). Scaling allows you to enlarge or reduce images to fit your screen. In addition, you can drag the work area, or viewport, around on the tablet. This feature allows you to tape a drawing to the tablet and then move the work area under the image for tracing; the alternative is to tape the drawing over a fixed work area. To scale or move the tablet's work area, pull down the Apple menu, click MacTablet, and make the changes to the dialog box.

Making the Choice

Both digitizing tablets give architects, artists, and other graphics professionals greater control for drawing and tracing and a more natural drawing tool than the mouse. If you are looking for a "plug and play" product, Macintizer will suit you. MacTablet has an excellent stylus and a slight edge in versatility, but several steps are required to start or stop the tablet, and you must be sure that your current hardware and system software are compatible with it.—Ken D. Schmeupe

See Where to Buy for product details.

Taking Your Plus to the Max

One + One


MaxPlus


To quote a great author, "RAM is like Chinese food: no matter how much you get, a half hour later you want more." You may find yourself hungry for more RAM if you're trying to set up a RAM disk (a program that uses part of the extra memory as an electronic disk drive) or cache system to enhance speed, run an application that requires more memory, or combine several programs with Switcher. MacMemory's MaxPlus and Leovo's One + One feed your hungry Mac Plus one more megabyte of RAM. Both products come bundled with piezoelectric fans. The MaxPlus also includes a print spooler and a RAM disk. The issues to
consider with these upgrades are simple: how easy are they to install, and once properly installed, do they work?

**Installation**

Both companies expressed the belief that owners could install the upgrades themselves. But unless you are technically minded or have opened your Mac before, you may want to have the dealer install the upgrade. With that warning in mind, here are some of the problems I had installing the boards.

The installation instructions in the MaxPlus documentation do not clearly explain the process of disassembling and reassembling the Mac, whereas the Levco documentation covers the entire process more completely. Neither company includes the necessary tools for opening the Mac. Both offer a special screwdriver separately but not the splitter needed to separate the back cover. Don't be surprised if it takes a while to work the cover off with a ruler.

Once inside, beware: neither manual provides an illustration that shows the dangerous areas inside the Mac. The documentation mentions that you shouldn't touch the back of the monitor. Take that advice seriously, unless you want to truly feel the power of the Macintosh Plus.

You may also find that it takes a delicate touch to maneuver the power/video cable and fasten the jumper clips (little clamping fishhooks that might as well have been designed for a neurosurgeon) off and on, respectively. I had some difficulty fitting the Levco-enhanced motherboard back into its place. The MaxPlus was smaller and slid neatly into place.

The last area of concern is by far the most important: check the power supply level. More memory generally consumes more power, and you may need to readjust the voltage control. If you don't adjust the power supply level when called for, you can expect random system crashes. (If a dealer installs the upgrade, ask to have the voltage control checked.) To measure the control correctly, you must use a digital multimeter.

Some owners reported out-of-the-box failure problems with the MaxPlus, but MacMemory replaces defective boards promptly. One report traced an internal disk drive failure to the mounting of the MaxPlus fan directly to the drive (the One + One has a velcro arrangement that isolates the fan's vibrations).

Given proper installation, both upgrades worked with no problem, even with RAM-intensive programs such as OverVue. The piezoelectric fan that both companies used produced a quiet, low-pitched hum that was quite tolerable. (For reference, it was quieter than Apple's HD 20.)

**Bonus Software**

MacMemory includes two bonus programs with the MaxPlus. MaxRAM and MaxPrint. The MaxRAM RAM disk meets the standards set by Tony Nelson's RAMStart. You can set the program to automatically create the RAM disk and load in a chosen set of programs and documents. The documentation is very clear. MaxPrint is an ImageWriter print spooler (a program that releases your Mac from the task of printing before the document has actually been printed. Installed as a desk accessory, MaxPrint uses available space either on a RAM disk or on any hard or floppy disk. Like most spoolers, MaxPrint requires a certain amount of time to build the spooled file (between 25 and 50 percent of the normal printing time). The program allows you to choose a RAM drive to store the spooler file, which is convenient for short files, or lets you choose a floppy or hard disk for longer files; you can also cancel printing. One nice feature of the program is that it estimates how many pages can be spooled on any given drive.

The main problem with both One + One and MaxPlus is proper installation. Otherwise, both products seem well designed and functional, and the fans are quiet. I must admit, two megs go a long way toward forestalling those memory cravings. — Ben Calica

See *Where to Buy* for product details.

### Below the Mark

#### SpellCheck 2.3

**Spelling checker.** Pros: Low price; includes total and unique word counters; works on a 128K Mac. Cons: Clumsy correction method; inadequate dictionary; doesn't show words in context; no suggested spellings; no access to dictionary; doesn't recognize apostrophes. **List price:** $25. **Requires:** 128K. **Copy protection:** None.

In the beginning, it was simple. If you wanted a spelling checker, you bought Hayden Speller. But now, with more than a dozen spelling checkers available, the choice is not so clear-cut. Wolverine Software's SpellCheck is a no-frills, inexpensive checker, but more complete programs are available for just a few dollars more.

#### Keep Your Dictionary Handy

SpellCheck's main dictionary contains only 18,217 words, compared to *Mac Lightning's* 31,000 or Spellwell's 60,000 entries. Many words are omitted: you won't find "station," "yellow," "globe," "anger," or even such commonly used but often misspelled words as "restaurant," "vacuum," and "disparity." Users can add their own frequently used words, but are limited to only 1500 additions. It's difficult to remove words you've accidentally added, and you have no access to the main dictionary. Apparently, the ideal SpellCheck user is a good speller but an inaccurate typist, with a very limited vocabulary.

Not only is the dictionary incomplete, but the program doesn't offer any correctly spelled guesses. You will probably spend a
great deal of time looking up words in a nonelectronic dictionary. Also, since SpellCheck displays only the suspect word, there's no way to tell if it's correct in context.

In one test document of 668 unique words, SpellCheck flagged 191 suspects, about two-thirds of which were actually correct, for example, the program highlighted all words with apostrophes. SpellCheck's knowledge of plurals, past tenses, and modifiers is also limited.

Whereas most spelling checkers correct misspelled words while the program is running, SpellCheck copies misspelled words to the Clipboard, uncorrected. To make corrections you must quit the program, open your word processor, show the Clipboard, look up any words you're not sure of in a regular dictionary, and then use your word processor's search-and-replace function. Unless both the word processor and document are on the same disk, that means a lot of switching.

Some flaws that would be considered only minor irritations in a better-implemented program are likely to increase your frustration with SpellCheck. The program won't let you interrupt the checking process once it's under way.

As a $5 shareware program, SpellCheck might be useful for someone who doesn't do enough word processing to warrant anything more expensive. But at $25, it's no bargain compared to programs like Spelling Champion or Spellswell that cost only $15 to $35 more.—Shel Horowitz

See Where to Buy for product details.

## Silicon Castle Magic

### Dark Castle

**Arcade adventure game.** Pros: Great graphics, sound, animation, and design. Cons: None. List price: $49.95 Requires: 512K. Copy protection: None.

The grim silhouette of the Dark Castle appears before you, illumined by crashing bolts of lightning. A pipe organ blares out the first few bars of a composition familiar to devotees of grade-B horror films. With a creak and a crash the drawbridge falls open, and you find yourself in the center of this massive edifice, standing in the emptiness of the Great Hall. There is no way out except to brave the terrors of the castle and topple the Black Knight from his throne.

### The Great Hall and Beyond

Four doorways lead from the Great Hall, and you must pass through all of them to discover the means of escape from the castle (see "The Great Hall"). You select the door of your choice by typing a number from 1 to 4. For example, typing 1 lands you in either the Trouble or the Fireball room. Here you are assaulted by an assortment of plague-ridden rats and bats, crossbow-wielding robots, and the Black Knight's Henchmen. If you manage to survive the perils of the rooms and gather the objects necessary to continue, you will return to the Great Hall. Other doors take you through rooms where eventually you may acquire fireballs and the magic shield. Nothing prevents you from going through the doors in any order, but you must learn the correct way—an audience with the Black Knight if you lack a key, a shield, fireballs, and elixirs can prove very short-lived.

### Life in the Castle Perilous

Once inside the Dark Castle you move your character by single-stroke keyboard commands, which consist of Up, Down, Left, Right, Duck, Jump, and Acti-
vate. The default key settings for these functions are set up for a right-handed player but are easily reassigned. The mouse is used to aim and throw rocks or fireballs. It will take a while to adjust to the controls no matter how you configure the keys. *Dark Castle* grants you three lives; expect to lose all of them frequently as a novice.

*Dark Castle* is at its core a shoot-'em-up, duck-'n'-run type of game, but one so finely crafted it deserves a new classification that reflects its fast-paced action as well as its superb animation, graphics, and sound. The game has a humorous aspect as well. If you play often enough, you begin to notice references to popular video games. I especially liked the graffiti on some of the walls and the way the Black Knight repels invaders—he sits on his throne quaffing ale and hurling the lethal empty tankards at his would-be assassins.

*Dark Castle* provides the highest-quality graphics and sound of any Macintosh game available. Its action is fast and furious, its scripting sublime. I highly recommend *Dark Castle* to any soul brave enough to explore the dark and light of electronic action adventure.—Ken Goebner

See Where to Buy for product details.

### Modern Memories

**MacMemories Series 1.0**

**Clip art.** Pros: Artistically rendered. Cons: Average size too large for newsletters. List price: $30 per disk; set of 5 disks $130; set of 13 disks $140; set of 18 disks $450; catalog $5. Requires: 128K. Copy protection: None.

If you put together a newsletter in the olden days, before desktop publishing, you'll remember using books of public domain illustrations, or *clip art.* These pictures, often reproductions of nineteenth-century drawings and engravings, could be pasted into a publication to provide decorative touches. Now state-of-the-art publishers can add old-fashioned art to their publications with the *MacMemories Series* from ImageWorld.

The *MacMemories Series* consists of 13 disks of digitized illustrations culled from turn-of-the-century books, advertisements, encyclopedias, and other sources. Each disk presents a different theme: art nouveau, children, decorations and dingbats, professions, animals, nostalgia, seasons and holidays, silhouettes, borders, tools and machines, plants, transportation, and the wild West. The Catalogue disk includes additional images that represent each category.

### Bigger Isn't Always Better

Each *MacMemories* disk contains 30 to 50 images that can be modified in *MacPaint* and pasted into a document created with a word processing or page-make-up program. Many of the illustrations are larger than the *MacPaint* window, which makes copying and pasting a problem. Several programs can help. Ann Arbor Softworks' FullPaint lets you copy and paste images as large as 8 by 10 inches. *MacPaint* desk accessories such as MacroMind's *Art Grabber* + or *EnterSet's QuickPaint* also let you copy images larger than *MacPaint*’s drawing window. You can use another auxiliary paint program, Silicon Beach's *Paint Cutter,* to flip, invert, or rotate a large drawing.

While the copy-and-paste dilemma is easily solved, illustration size is another potential problem: most of the images are at least 3 inches long, and many are too large to be practical as decorative elements. Fortunately, graphics reduced in *PageMaker,* *MacDraw,* or various word processors retain their proportions and look crisp when printed on the *LaserWriter.*

The *MacMemories Series* offers reproductions of antique drawings and engravings in a variety of styles. The sample shown here is from the Memory Lane disk. *Paint* images. But *MacMemories* adds a new twist to computer clip art by reproducing classic illustrations. Although many other Mac clip-art disks contain skillfully rendered images, their distributors can't boast artists such as Aubrey Beardsley or Frederic Remington. Of course, if you have access to a video digitizer and have the time to scan images and clean them up in *MacPaint,* you can create your own library of noncopyrighted images. But most people don't have these luxuries and must resort to canned artwork. Since a word is only worth 1/1000 of a picture, I'll dispense with the former and refer you to "Memory Lane," which shows a sample image. If you're looking for old-fashioned illustrations, the *MacMemories Series* provides a miscellany of high-quality artwork.—Erfert Nielson

See Where to Buy for product details.
**Typing Tutors**

**Typing Made Easy 1.0**

**Typing tutor** Pros: No temptation to look at keyboard; positive reinforcements are liberal; menus shortcuts; teacher/administrative report generation. (Dvorak version available in April 1987.) Cons: Copy protection may restrict classroom usage. List price: $59.95. Requires: 128K. Copy protection: Not copyable.

**Typing Intrigue 1.0**


If your snail-paced typing holds back your computer productivity, you might consider two typing tutors: QED Information Sciences' "Typing Made Easy" and Forethought's "Typing Intrigue." "Typing Made Easy" is straightforward, professional typing tutor for everyone from the eighth grade up—teaches new skills sequentially, reinforces old skills, and carefully measures your progress. "Typing Intrigue," designed for home use, takes more casual approach; for ages 12 and up, this program substitutes workouts and a typing-exercise game for lessons. Unlike the other typing tutors for the Mac ("Typing Tutor III", MacType, and MasterType), "Typing Made Easy" and "Typing Intrigue" provide interactive practice drills that give individualized attention to your typing trouble spots.

**Typing Made Easy**

This program has an excellent instructional design characterized by six self-explanatory menu options—File, Lesson, Progress, Game, Teacher, and Help. The eight lessons, starting with home-row keys and ending with practice paragraph drills, include short tutorials followed by finger-placement exercises and typing drills. Each lesson concludes with a test, requiring 25 words per minute (wpm) with 80 percent accuracy to pass. You can choose to review a lesson or skip ahead.

"Typing Made Easy" makes you keep your eyes on the screen, not the keyboard. Practice text, which is too long to memorize at a glance, is displayed without a cursor marking your place—as in real life. Your typing is not displayed until a drill is complete, removing the temptation to backtrack and make corrections.

At the end of each drill, the program displays the results, with errors highlighted, along with your speed, accuracy, and adjusted wpm scores. The program grades your typing word by word. "Typing Made Easy" tracks your personal trouble spots and customizes drills to give you more practice on weak keys. The Progress menu allows you to view—or print—a detailed analysis of your typing. Column graphs report your speed and accuracy by finger and letter. A keyboard map shows your weak keys. The program even allows teachers to monitor students' progress when the program is used in a classroom (see "At a Glance").

"Typing Made Easy" includes a break from "straight" typing exercises—an alphabet maze game that reinforces finger placement and improves speed and accuracy. There are time-saving features, too. Signing in creates an icon with your name on it; clicking on that icon restarts the program exactly where you left off. 96-key shortcuts let you choose a lesson, view progress, start drills, play the game, or quit. Warm-up exercises that do not affect your cumulative statistics allow you to limber up before re-entrering a lesson.

QED has clearly done its homework collecting information from typing teachers and students. The manual is complete, clearly written, brief, and practically unnecessary.

**Typing Intrigue**

This program uses incentives—clues to a mystery—to awaken your interest in learning to type. The mystery to solve: Who stole Lord and Lady Southby's gold bathtub from Quidsmore Castle? To find out who did the dirty work, you earn points by typing and exchange them for clues.

"Typing Intrigue" includes a series of tutorial typing exercises, The Basics, that enable you to practice finger placement and simple drills. The Basics menu also includes instructions, a typing test and a key-

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**At a Glance**

"Typing Made Easy" features a teacher/administrative system for reviewing students' progress.
board map. Beeping for errors is mandatory in some typing tutors, but Typing Intrigue lets you turn off the wrong-key beep.

The feature I like best is a points-earning game in which falling raindrops (you control their speed and quantity) contain letters. If you fail to type the correct letters, the raindrops accumulate and flood you out. With seven levels of difficulty and six key ranges, the game builds rhythm and correct finger placement.

The Workout is a set of typing drills featuring unusual combinations of real words. As in Typing Made Easy, the words are varied to increase practice on weak keys. However, because it has a place marker and presents words one short line at a time, the program makes it easier to cheat and look at the keyboard. In addition, typed characters are displayed immediately, affecting speed because you tend to glance over to see how well you’ve done.

To calculate your typing accuracy, Typing Intrigue checks each line that you type, character by character, against the originally displayed text. Some errors—for example, typing an extra space or skipping a letter—put you out of sync with the original text. This causes the remainder of the line to be highlighted as wrong—even if it was typed correctly after the point where you made your error. I also disliked the clumsy work-around technique recommended in the manual. Progress reports spare you details and simply report speed, accuracy, and the number of clue points accumulated.

Unlike Typing Made Easy, which sets no limit on the number of students, only six students can use Typing Intrigue. Another limitation is that students enrolled cannot be deleted. There are no shortcuts; each time you must enter the program via a slow and repetitious music graphics introduction.

However, Typing Intrigue does have a certain appeal; if you are a fan of the Nancy Drew or Hardy Boys mysteries, this program could be the one for you.

Conclusion

Typing Made Easy’s straightforward ease of use, word-by-word error-checking, fine instructional design, and detailed record-keeping make this program superior to Typing Intrigue. In fact, the program is suitable for office, classroom, and home use. Typing Intrigue has paid a little too much attention to cleverness and not enough to teaching typing. The Workouts aren’t intense enough to keep your eyes on the screen and off your hands—the key to learning touch-typing. The character-by-character error-checking can give misleading and inaccurate results; the six-user limit restricts the program’s usefulness. For those with a serious need for typing skills, Typing Made Easy is the better choice.

−Nancy Reel

See Where to Buy for product details.

A Flowchart Drafting Tool

MacFlow 1.02


If you are involved in systems design and are using advanced professional flowcharting systems like Anatool or Design (see Reviews, Macworld, January 1987 and February 1987), you should keep a copy of MacFlow in a glass box on the wall that says “Break in Case of Emergency!” MacFlow by Mainstay Software is a design aid for producing flowcharts; it’s fast and simple to use. It lacks some of the documenting features (for example, data dictionaries and diagram parent-child hierarchies) of complete professional systems, but if you want to get a diagram done between 3:30 p.m. and the Federal Express pick-up, MacFlow is your best alternative. The large diagram shown (see “Quick and Dirty”) took about five minutes, with no previous user experience and while the MacFlow manual was lost behind a file cabinet. This is at least six times faster than making a typical MacDraw version of the same picture and several times faster than using either of the more elaborate flowchart systems.

Flexible Templates

MacFlow provides a selection of standard flowchart symbols, as shown in ‘Quick and Dirty.” You select and drag the symbols onto the drawing area and size, label, and connect them with arrowhead connectors or straight lines.

Several features make MacFlow superior to a simple drawing program. The flowchart symbols are easily sized, either horizontally or vertically, to accommodate a variety of labeling styles. The connectors and the text labels on the connectors “follow” the flowchart symbols in diagrams. When you move the symbols around on the screen to change your diagram’s structure, MacFlow adjusts the connectors and labels accordingly.

Individual symbols in a flowchart expand to more detail with a Zoom function that lets you see a diagram in a child window referred to the parent symbol. This is a simple but useful implementation of the hierarchical concepts that give MacFlow the extensive structural capabilities of the advanced systems mentioned earlier.
Reviews

These sizing and symbol-linking features alone would make MacFlow a useful product for diagramming systems ideas, but Mainstay has included several other beneficial touches. For example, the White Pen option in MacFlow's Pen menu lets you place labels in invisible boxes anywhere in the diagram. Furthermore, you can link these labels to symbols with invisible connectors for clear documentation. When, for example, you drag a decision diamond to a new place in the diagram, any linked labels automatically move with the diamond. Different pen widths and shades of gray "ink" also make it possible to label groups of symbols in a diagram (for example, all procedure calls in a program flowchart).

The Layout menu also offers some valuable visual aids. Grid aligns symbols for a crisp, professional appearance. Portrait mode allows you to print the flowchart vertically (as opposed to Landscape, which prints it horizontally). The Shadow All feature lets you shadow symbols to dramatize particular sections of a chart.

This Is Art, Not Literature

If you get the impression that MacFlow is a strong visual tool for designing a flowchart, you have the essence of the program. MacFlow does not have any features comparable to the Data Dictionary in Anatooll or the program-text-into-graphics capability of Design. In fact, if you routinely document large, complicated systems, you will ultimately need the power of a complete professional package. But if you produce flowcharts only occasionally, or work with smaller problems, MacFlow will serve your needs. You might want to keep a MacFlow disk handy when you find yourself planning or programming in crunch mode. Like a fire extinguisher it will handle the inevitable emergency situation.

—Charles Seiter

See Where to Buy for product details.

Measuring Tools

Sizer and Adjacency 1.7

CAD-like desk accessory for MacDraw (version 1.7 or 1.9). Pros: Adds measuring and sizing functions and the ability to abut and align MacDraw objects compatible with Switcher. Cons: Requires sending your MacDraw disk to manufacturer for installation; sometimes leaves afterimage on screen until screen is scrolled or refreshed, doesn't measure length of sloped lines. List price: $69. Requires: 128K. Copy protection: None.

If you ever need to create MacDraw objects that are accurately sized and aligned, the aptly named Sizer and Adjacency desk accessory is an inexpensive and welcome upgrade to Apple's object-oriented software.

While Timothy Johnson, architecture professor at MIT, first developed Sizer and Adjacency to accurately draw building floor plans, elevations, and construction details, other professionals—such as interior designers, engineers, publication layout designers, and news artists—have found the program indispensable for measuring MacDraw documents.

Not only do the desk accessories improve MacDraw's performance, but they increase the size of MacDraw by only 12K. The sizer feature displays an object's exact dimensions and allows you to resize an object; the adjacency feature controls the location of an object so that it can be aligned edge-to-edge with a second object. Used in conjunction with MacDraw's Align Objects feature, Sizer and Adjacency gives you drafting capabilities. Since Align Objects only aligns vertically along the top or bottom of selected objects, aligning the bottom of one object with the top of a lower object requires painstaking adjustments with the mouse. Turning on the grid helps you align objects, but limits the location of objects to a coarse grid spacing. Sizer and Adjacency lets you align abutted objects with a one-keystroke command.

Sizer and Adjacency displays the horizontal and vertical dimensions of an object one hundred times more accurately than originally possible with MacDraw. You change an object's size by changing the displayed dimensions. By allowing you to switch measurement units, from inches to centimeters, for example, Sizer and Adjacency also functions as a conversion calculator. In addition to inch and centimeter scales, the program also includes architectural scales for drafting, where 1/4 inch in a drawing represents 1 foot and 0 inches. For page layout, you can simulate picas and points by selecting 12 major and 6 minor divisions on the custom ruler.

A major weakness of the sizing feature, compared with other CAD packages, is that it will not measure the length of diagonal lines. Those lengths must be calculated from a line's vertical and horizontal projection—which you could do automatically with a macro program like Tempo.

A Graphing Tool

By setting MacDraw's ruler so that, say, one inch equals a million dollars, Sizer and Adjacency provides you with a powerful tool for automatic sizing of statistical graphs. Furthermore, you can bypass graphing software and update simple data graphs already formatted in MacDraw by resizing the graphic elements. This eliminates the problem of having to customize the graphs with fill patterns and line weights each time you update the data. By
making two bar segments exactly adjacent (see "Sizing and Stacking a Graph"), you can create stacked bar charts, and then group an entire graph and automatically enlarge or reduce it to fit pica and point column sizes in page layouts. This sizing feature is absent even in more expensive and sophisticated layout packages.

A big advantage of the Sizer and Adjacency alignment and keyboard-sizing features is its ability to create an accurate drawing in the Reduce to Fit format. This allows you to visualize and create a drawing without constantly zooming in to size and position objects and then zooming back to view the overall layout.

Since any object's displayed dimensions can be copied to the Clipboard, you can paste the numbers into a spreadsheet for calculations or directly into the MacDraw document for dimension line labels. Such coordination between software tools is especially efficient, since Sizer and Adjacency is compatible with Switcher.

To obtain Sizer and Adjacency you must send Johnson & Johnson your MacDraw disk. Although you cannot use Apple's Font/DA Mover to install the program yourself, any backup copy you make of your MacDraw disk will include the two desk accessories, since the program is not copy protected.

Sizer and Adjacency is a deceptively simple tool that provides a variety of features unavailable in some higher-priced, more sophisticated packages. While it cannot match all the features found in dedicated graphing or CAD software, Sizer and Adjacency provides many of their capabilities at a far lower cost. And it retains MacDraw's screen-redrawing speed and many versatile features for working with measured graphic documents.

Sizer and Adjacency is an essential upgrade for any MacDraw user. Even if your graphic needs do not include graphs and drafting, you will surely discover timesaving applications for this package's basic sizing and aligning features. — Stuart Silverstone

See Where to Buy for product details.

## English-Teacher-on-a-Disk

### MacProof 2.0

**Spelling, punctuation, usage, and style checker.** Pros: Very good manual that explains style and usage; network version available for classroom work. Cons: Awkward, noninteractive procedures make editing tedious and time-consuming; often flags correct usage as possible error.

**List price:** $195. Requires: MB: 512K for network version. **Copy protection:** N.

After the checking's completed, MacProof’s four review menus help you check for trouble spots: Mechanics (spelling, punctuation, capitalization, double words); Usage (sexist, racist, confused, vague, overworked, discouraged words); Style (nominalizations, "be" verbs); and Structure (paragraph flow, syntax). With the first three menus, you can choose to see either a list of possible errors or the entire document with all potential errors and questionable usages highlighted. From the Structure menu you can select "abridgment," to display or highlight the first and last sentence in each paragraph, or you can choose "expansion," to list and number the sentences or highlight the first word of each sentence.

Unfortunately, MacProof goes no further than pointing out possible problems. And because you can’t view different types
Reviews

of errors simultaneously or make corrections from within the program, using even a few of MacProof's options can take a great deal of time. You must print your document with one type of error highlighted, quit MacProof, start your word processor, make changes, and then return to MacProof to check for other problems. Not letting you edit text directly is the program's most serious flaw. MacProof runs more efficiently under Switcher (make sure to Configure Then Install for 650K) but would be even better as a desk accessory that you could access from within your word processor. At press time, ALPS was working on a new version that would be interactive with MacWrite.

MacProof's reliance on its dictionary means that often the "problems" it flags aren't really errors at all-just usages that might, in some contexts, be wrong, misleading, or improper. When MacProof searches for confused words, for example, it highlights all instances of there/their/they're, to/for/too, and other words frequently substituted for each other. When looking for sexist words, MacProof will highlight "girls," and explain that the term is sexist if applied to adult women. In many cases, though, your usage may be perfectly valid.

No Substitute Teacher

If you have a reasonably good grasp of the English language, the ambiguities resulting from MacProof's maybe-it's-wrong-maybe-it's-not approach should not be a problem. You can use MacProof to catch typos and oversights, and you probably won't be distracted by the high percentage of correct words the program flags as questionable. However, if you're among those with shaky writing skills-the group MacProof is aimed at-you're likely to find the program more confusing than helpful. MacProof's manual tries to resolve these difficulties by providing clear examples of each type of error and explaining why they're wrong. But even so, when struggling with our own work, many of us need more guidance than "something may be wrong with this; figure it out for yourself."

As hard as it tries, this on-disk teacher is still no substitute for the real thing.
-Cynthia Harriman

See Where to Buy for product details.

You can construct picture calendars with one picture and one month per page and plain calendars with either one or two months per page. Within these constraints, CalendarMaker offers many design options. You can set Sunday or Monday as the beginning of the week, place the date in either the lower left or lower right corner of the date box, insert an icon in the opposite corner, and enter text. The program lets you assign a font, a font size from 1 to 127, and a style for each text element (names of the months, days of the week, dates, and text entered into the date boxes).

Each date box displays text of up to 255 characters centered between the date and the icon. Text and icons stay with their assigned dates, making it easy to create new calendars from old ones. Day entries (as opposed to date entries) must, of course, be shifted by hand. CalendarMaker imports calendar data from SideKick for the Mac, Battery Pack, Calendar 1.1 (by Mosaic Codes), and More, and inserts the data automatically into the appropriate date boxes.

Next to the number in the date box, you can place an icon from the program's selection of 24 stock icons representing holidays, special events, reminders, and so on. Using the IconMover application that comes with the program, you can edit any of the icons within the program or replace them all with icons you create. Swtiching between CalendarMaker and IconMover is relatively easy, since each program has a Go To command which bypasses the Desktop and goes directly to the other program.

Picture Calendars

To create a picture calendar, you assign a paint document to each month. The entire paint document is displayed on the left side of the program window; you must drag a small frame over the portion of the document you want to see on the calendar. When printed, each picture is centered at the top of the calendar page and surrounded by a patterned border. You can select one of six stock patterns for the border (four of these, however, are rather unsightly), leave the border blank, or edit a pattern. You can use the same patterns and options for blank spaces.

While the most immediately appealing aspect of CalendarMaker is its ability to make picture calendars, the ease with which it makes full-page calendars is prob-

Make a Date with CalendarMaker

CalendarMaker 2.1

Calendar construction set. Pros: Three calendar styles, high-quality LaserWriter output; date boxes can contain both pictures and text, accepts data from More, SideKick, and others. Cons: No full-page preview option; calendars cannot be titled; picture calendars must use paint-format pictures. List price: $30. Requires: 512K. Copy protection: None.

Every fall I have the same problem: finding the ideal calendar for the coming year. In answer to this universal dilemma, GE Software has published CalendarMaker. The program's intuitive design lets you create a calendar with far less time and effort than MacPaint and MacDraw require.

Making an Entry

Each word you enter in your own MacProof dictionary must be tagged with a part of speech and appropriately placed in the "Usage" or "Spelling" category. These classifications are the key to MacProof's system of checking for trouble spots.
Making a Calendar
With CalendarMaker, you can add pictures to date boxes by dragging icons onto the dates. Doing so replaces the dates with reduced-size icons. To enter text, click on a date and type. Dates containing text are circled.

ably more useful in the long run. This capability is especially useful for any business or organization, from little-league baseball to hospital volunteers, that regularly posts or mails calendar-style schedules (or would like to).

When you print your picture or full-page calendar on the LaserWriter, text formatted in laser fonts prints at full resolution, resulting in output of impressive quality. Since CalendarMaker lets you save the file in draw format, you can enlarge or reduce the calendar in MacDraw or PageMaker and then print it on the LaserWriter with no loss of print quality (except for the picture or icons in a picture calendar). To print the calendar in color, you must export it as a paint file into another application, such as ColorPrint. The company plans to incorporate color in the next revision.

Despite the program's high quality, there's room for improvement. While you can preview how icon, date, and text fit into an individual date box, for example, there is no way to preview a whole page, or an entire calendar, before printing it. Nor is there any way to title your calendars according to their purpose or topic. Thus, if you want to make two different calendars, you have to add titles with a graphics or page-layout program in order to distinguish the two. Additionally, you cannot use draw-format documents for the illustrations in picture calendars; the manual could be clearer and better organized; and there is a bug or two in the Select Printing Pattern dialog box.

But these are minor quibbles in light of the program's diversity of use and low price. Even more appealing is the fact that CalendarMaker is distributed under CE Software's MacHonor system. This means that you can find a copy of the program in most user group software libraries and on many noncommercial electronic bulletin boards and commercial information services. After you try it out, you can send $30 to CE Software to obtain a disk with the latest version of CalendarMaker, Icon-Mover (which is not available from the aforementioned sources), and a collection of icon files, plus the printed manual for both programs.—Robert C. Eckhardt

See Where to Buy for product details.

Blue-Book Replacement

TimeLink 1.0

While the paperless desk or office is a fading dream, Batteries Included seems committed to the idea that if you can put it in your computer, you can get it off your desk. For starters, they'd replace your appointment calendar with TimeLink. Developed by Softtek International and sold as a time-management system, it's billed also as a diary, a project manager, and a log for consultants with hourly billing requirements. TimeLink does a bit more, though, than just tell you when, what, and with whom. It calculates things like how long it will take to complete a project; which years are leap years; and how much you spent on carfare last month.

Linking Up with TimeLink
TimeLink displays calendar information via four pull-down screens: Day, Week, Month, and Year. A grid of vertical months and horizontal days, the Year screen shows key letters for days with appointments, boldface squares for weekends, and check-board squares for nonexistent days (like April 31). If all screens are activated, you "unpeel" your appointments by clicking on a day in the yearly calendar and zero in by closing the screens regrettively.

On an update screen you enter the date and time of your appointments; an optional seven-letter "key" that allows for sorting; and text (up to 241 characters). You can skip the time entry, but you must specify either a key or text. Furthermore, the key field is a significant feature in a multi-user setting: individual entries can be keyed by name, and only those entries are displayed or printed when you select that key.

TimeLink has some oddities, though. First, if you press Return instead of Tab when you enter data on the Update screen, the cursor won't advance. If you then press Tab, that "hidden" Return will cause the entry to overrun the grids when displayed. TimeLink allows entry and display of up to a full page of appointments on the daily screen—not an unreasonable limit. Of the other three, only the weekly screen gives you an inkling that multiple appointments exist (see "The Weekly Screen"). It does this by displaying an arrow to the right of those days with more than three appointment entries. While the text entry box allows only 241 characters (sufficient for most notes), it doesn't tell you when that limit is reached. Only when you've posted your entry do you discover that the program has truncated the additional text or schedule information.

TimeLink allows you to calculate the time between any two dates (from 1904 to 2039), giving you the time in calendar years, calendar months, days, hours, and minutes, plus the total number of days and partial days. You can add or subtract any
amount of time from a date, and dates can be in either European or American format. Any number with square brackets can be scanned and added up within any time range by the Sum Numeric Fields function, and you can enter a field name for each number (such as "[expense = $18.95]") so that the totals are not just meaningless digits. Printing is a straightforward task. Besides screen dumps, Timelink prints entries within any range of dates. The result is a titled reportlike printout, with days, times, and text listed for the selected range.

Close, but No Cigar
Overall, Timelink is simple to use. The manual guides the novice through interface basics. The program's ability to sum numeric fields is helpful for tracking expenses and revenue. (However, unlike a true time-billing package, Timelink can't adequately calculate or annotate income and expenses, since it can only add fields with the same name.)

Although Timelink does more than just give you basic appointment information, I don't think most people would find carrying around a three-ring binder full of Timelink printouts an acceptable substitute for a portable appointment book. Timelink is for those who want frequent schedule changes, who require minimal time-billing information, or who can benefit from the query and sort capabilities that computer programs offer. –Michael Miley

See Where to Buy for product details.

The Cutting Edge

The Surgeon 1.1

Medical game simulation. Pros: Fast paced, reasonably accurate simulation; good illustrations. Cons: Beginning of the game becomes boring after the first few times. List price: $60 Requires: 512K Copy protection: None.

I doubt that many TV viewers have watched the surgical exploits of Ben Casey or St. Elsewhere's Mark Craig without once wishing they were holding the scalpel. ISM's game The Surgeon lets you do just that, as you perform an actual operation.

The game begins (all too predictably, it turns out) by presenting you with a patient complaining of lower-back pain. You're shown an X-ray of the spine or an ultrasound examination of the abdomen (a picture made with high-frequency sound waves); sometimes you have to request the ultrasound yourself. Based on what you see, you must decide what to do next: observe (do nothing), prescribe painkillers, or operate. Most of the time, the tests will show that the patient has an aortic aneurysm, a ballooning of the major artery in the abdomen. Unless you operate to repair it, the patient may die. But if there is no aneurysm, and you decide to operate anyway, the surgery itself could kill the patient. Since your options are limited, this part of the game becomes boring by the fourth time through.

Once you decide to "go in," the fun begins. At the top left of the screen (see "The Operating Theater") is a patient monitor, showing real-time EKG, blood pressure, and elapsed time. Below are twenty-four icons representing the tools of your trade, including surgical instruments, sponges, drapes, sutures, clamps, medications, and of course, the surgeon's hand. You activate a tool by clicking on its icon, and you use it by clicking or dragging in the operating field on the right. Choosing a tool from one of the menus brings up a dialog box but doesn't select the tool.

The operation consists of a well-defined series of steps that begins with scrubbing yourself and preparing the patient's skin with antiseptic solution. During surgery, any of several potentially fatal complications may arise. If you fail to recognize or treat them properly, the patient will die, sending him to the morgue and you back to the doctor's office. And since there's no way to save a game in progress, you find yourself going through all the early steps again and again.

The Surgeon comes with a 14-page manual and a sheet that details the steps in a successful operation. The printed documentation doesn't say much about how to actually use the game on the Mac and suffers from a few errors in grammar and labeling ("spleen" instead of "spine"). Also, the $60 price tag is a bit high for a game that you'll probably only play a few times. Although I dispute the authors' contention that the game would be valuable to medical students, it might prove educational and challenging to nonmedical personnel. –Franklin Tessler, M.D.

See Where to Buy for product details.
To those of you who, for one reason or another, have not yet joined the ranks of our satisfied users we introduce MacLightning version 2.0. Now there can be no excuse!

When MacLightning made its debut early this year it was the only “interactive” spelling checker for the Macintosh. Thanks to Merriam Webster’s Ninth New Collegiate Dictionary, a 45,000-word Thesaurus and a long list of upgrades, it still is.

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Quick Tips

Answers to your questions

by Lon Poole

In October I suggested a way to print envelopes on an ImageWriter. Several readers wrote to suggest alternatives. Allan Hull of Boulder, Colorado, copies the address from his word processor into MacDraw and uses its rulers and grid to position the address. Robert D. Reynolds of Tempe, Arizona, copies the address and pastes it into a standard envelope document he has set up. After printing the envelope, he closes the envelope document, taking care not to save the changes, because pasting the address is a temporary change.

Neil Pierson of Allegan, Michigan, disagrees with my opinion that return addresses are hard to print using an ImageWriter, particularly with MacWrite. He picks the Landscape orientation in the Page Setup dialog box and feeds the envelope into the ImageWriter sideways. His envelope document has a left margin at 1 inch and a tab marker at 4 inches. He puts 18 blank lines at the top of the document, above the return address. The address goes six lines below the return address, and each line begins with a tab. When he's ready to print, he inserts an envelope lengthwise linking up the top of the envelope with the right edge of the ImageWriter's middle rubber roller. He rolls back the envelope so that its edge is just past the pressure rollers under the platen. He does this because the ImageWriter advances the paper before it begins printing.

You can get the same effect without tabs by setting the left margin at 4 inches, and with Microsoft Word version 1.05 you can use Page Setup from the File menu to set special page margins. For example, the following margins work when you insert the envelope lengthwise at the red line on the ImageWriter's paper bail: Top 6.25 inches, Left 4 inches, Bottom 0.5 inches, Right 1 inch. Because most envelopes are thicker than a sheet of paper, it's a good idea to adjust the thickness control lever, which is hidden underneath the cover on the extreme right.

Traveling Mac

Q I plan to fly across the country and would like to take my Macintosh and ImageWriter along. Are there any precautions I should take in passing them (and my disks) through airport security? Are the conditions in the cargo hold satisfactory, or should I hand-carry the system on the plane?

Peter Wentzel
New York, New York

Q I am moving to Australia and need some information about using my U.S.-built Macintosh system. I have a Mac upgraded to a Mac Plus, a 400K external drive, and an ImageWriter I. I'm also considering the purchase of a 20-megabyte hard disk. Will the equipment work in a 220-volt, 50-hertz environment?

E. Thomas Balzer
Alexandria, Virginia

Q I am an being assigned to Israel and would like to take my Mac Plus and ImageWriter II with me. I know the Mac Plus is 50/60-Hz compatible, but the ImageWriter and the LaserWriter are not. Could you recommend something?

David Gutbolic
Yonkers, New York

A The U.S.-model Macintosh Plus, Macintosh 512K, and ImageWriter I are all designed to operate at 107 to 132 volts AC, at a frequency of 50 to 60 Hz (cycles per second). In Australia, Israel, and other countries with 220- or 240-volt power, you can operate a Mac and an ImageWriter with a 220- to 110-volt (a "two-to-one") step-down transformer. For the Mac alone, the transformer must be rated at 60 watts (60 VA) or higher. For the Mac and ImageWriter I together, the rating must be 240 watts (240 VA) or higher. Expect to pay about $60 for a good-quality, grounded (3-prong plug) isolation transformer. Do not use a cheap voltage converter; it will ruin your computer equipment.

The U.S.-model ImageWriter II and LaserWriter require 60-Hz current, so you probably won't be able to use either of them overseas, where most electricity is 50 Hz. Get a used ImageWriter I, or buy a local ImageWriter II or LaserWriter after you arrive.

The Apple Hard Disk 20 and HD-20SC both operate on 85 to 270 volts at 47 to 64 Hz. These drives adjust automatically to the voltage, so instead of a step-down transformer, all you need is an adapter plug to match the local wall socket. Most domestic third-party hard disk drives, however, work only on 120 VAC, 60 Hz. There are exceptions; check with the manufacturer or a dealer. The power requirements are always printed on the back of the device. Upon request, Personal Computer Peripherals Corporation will configure either the SCSI or the serial version of MacBottom to work with 220 volts. The AST-2000 also works with 110 or 220 volts, at 50 or 60 Hz.

Devices that don't have power plugs—such as the mouse, the keyboard, and external floppy disk drives—derive their power from the Mac. Therefore, they work anywhere it works.

By the way, you may encounter some difficulty should your "foreign" computer (continues)
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We can’t list all of SearchLink’s more than 800 databases, but just to give you an idea, here are some of the databases available under the topic “COMPUTER.”*

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- Enhanced Video Option $1995.00
- RASCAL™ Color Development System $ 250.00
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How To/Quick Tips
need repairs abroad, since Apple dealers generally only service equipment designed for their country. Also, your Apple warranty or AppleCare service contract is valid only in the country of purchase. For warranty repairs or AppleCare service, you must return the malfunctioning equipment to the country where you bought it. Therefore, be sure you break in new equipment thoroughly before exporting it so that any problems can be corrected on the warranty's home turf before you leave.

A Mac is too big to fit under most airplane seats. It fits in the overhead bin on some planes, or you may be able to put it in the coat closet. If you decide to check your Mac, put it in its original shipping carton or in a special, expensive hard-shell case— and be prepared to pay an extra baggage charge.

Your disks will probably survive the X rays used to inspect checked and carry-on baggage, but to be safe, put them in a lead-lined pouch (available at photography stores). Have your hard disk drive inspected by hand.

In order to bring your Macintosh system into a foreign country, you may have to fork over a stiff security deposit. To avoid ponying up the deposit, buy a carnet from the U.S. Council for International Business, which has offices in New York, Los Angeles, San Francisco, and Schaumburg, Illinois. Canadian travelers should apply to the Canadian Chamber of Commerce, Commerce House, 1080 Beaver Hall Hill, Montreal, Quebec H2Z 1T2.

And to transport your 16-bit high-tech Macintosh into a country outside the “free world,” you’ll need a special license from the U.S. Department of Commerce. Allow four months to get the license. For more details on carnets, licenses, customs, insurance, and baggage handling, see “The Macintosh Passport” in the November 1985 Macworld.

If you’re going to be overseas for a long time, you may want to buy equipment there. Be aware, though, that the keyboard and software are set up for the local language. I’d recommend taking your own U.S. keyboard and System Tools disk instead of the ones that come with... (continues)
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How To/Quick Tips

the local Mac. Also, expect to pay considerably more for hardware and software overseas.

Q  Underlined Blank Spaces
When I use MacWrite or Microsoft Word version 1.05, I can't extend the underline style to cover an entire line—it underlines only the text. How can I underline the whole line, including the blank space?

Virginia Hays
Mountain View, California

A You can get underlined blank spaces by pressing the space bar instead of Tab. However, tabs are better than spaces for lining up columnar text, such as a table. With spaces alone it's hard to line up columns, and the alignment is ruined if you change the font or font size.

Why not use bold or italics instead of underline? Underlined text is a fossil of the Early Pleistocene Typewriter period, when only typesetters had access to italics and boldface. You'll notice that typeset documents rarely contain underlined text, because underlined text is generally considered harder to read. They use bold for headings and italics for emphasis, special terms, and book titles.

If you want a rule below a line of text—for example, after a table head—type a separate line of underscore characters (Shift-hyphen). Better yet, in Microsoft Word, use the Tabs command from the Format menu to create a right-aligned tab with an underscore leader (see "The Ruling Principle"). This method creates a solid rule, and you can change its length by dragging the tab marker in the formatting ruler. For more tips about Word, see "Insights on Microsoft Word" in this issue.
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More people use our Microsoft® BASIC than any other language on the Macintosh. Why? Because it's a powerful language that's simple and easy to use. But now there's a new, more advanced version available.

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Experienced programmers will like the easy access to the Macintosh ROMs—over 140 routines available through the toolbox. And there's advanced support for the Mac's sound and graphics, as well as the new hierarchical file system. There's even support for the Apple LaserWriter.

Lastly, we've added a new runtime interpreter to the package. So now you can share your finished programs without extra cost or hassle.

When you look at all that the Microsoft BASIC Interpreter has to offer, the choice is clear. Even the price is easy to handle. Only $99 for the most popular language on the Macintosh.

If you're ready to stretch your programming muscles, give us a call at (800) 426-9400. In Washington State and Alaska, (206) 882-8088. In Canada, call (416) 673-7638. We'll give you the name of your nearest Microsoft dealer.
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Project Billing is a time billing package designed for ad agencies, graphic designers, architects and engineers. This package will track all aspects of your project billing including budgets for time and expense, actual costs and billed out amounts for both employee and expenses, and project profitability. It will also automatically mark-up expenses, and provide productivity reports by employee or project, plus print your client bills in a variety of formats.

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paper and have been careful to avoid any binding of the paper feeding into the printers.

Gary Lehman
Muskogee, Oklahoma

As pin-feed paper threads through an ImageWriter, it may buckle slightly as the perforation goes through the pinch roller (also called the paper bail), resulting in a flattened line. The glitch occurs about 1 inch from the top of the page on an ImageWriter II. The paper-feed path is different on an ImageWriter I, so the glitch occurs about ½ inch from the top of the page. Nothing prints that close to the top unless you choose the No Breaks Between Pages option in the Page Setup dialog box or start the paper unusually low, with the perforation below the pinch roller.

To avoid the squashed type, try a different weight of paper or switch to single-sheet paper (use the cut-sheet feeder on your ImageWriter II). It may also help to apply light, even tension to pin-feed paper coming out of the printer. Try pulling gently or attaching a light weight, such as a clothespin or a binder clip, to the exiting paper.

Audio Digitizer

When I owned an Atari 800, I read an article in the July 1983 issue of Antic that explained how to construct a circuit for connecting a microphone to the computer's built-in analog-to-digital (A/D) converter, thereby digitizing speech for later manipulation and playback under software control. It must be possible to do this with the Mac since it contains A/D converters, two of which are situated in the mouse port. I am looking for a simple program, written in Microsoft BASIC, that would allow me to use my Mac for the same type of application.

Kyle Harrison
Cypress, Texas

The Berkeley Macintosh Users Group (BMUG, 1442A Walnut St. #62, Berkeley, CA 94709, 415/849-9114) sells an A/D kit called MacRecorder for $50. It includes the parts and instructions for constructing a voice digitizer and the software that turns a digitizer-equipped Mac into a $2000 tape recorder. The software, which is written in FORTH, lets you record sounds, save them on disk, play them back, and edit them as you would edit text in MacWrite. The whole schmear is described in the Fall 1985 BMUG Newsletter.

Aldus PageMaker Help

Tip: Those who use Aldus’s PageMaker with a hard disk will be glad to know they needn’t have the PageMaker master disk always on hand to access its help files. The help files can be accessed directly from the hard disk. Here’s how:

1. Use the Finder to copy the Help Folder from the master disk to the System Folder on the hard disk.
2. Create a small document with any application (MacWrite, Microsoft Word, whatever) and save it with the name Helpstuff in the System Folder on the hard disk. Be sure you save it in the System Folder, not in the Help Folder!
3. When you choose Help in PageMaker, (continues)

Break the BASIC speed limit.

BASIC programmers be warned: You could be breaking records before you know it. Microsoft’s new BASIC Compiler for the Apple* Macintosh® gives your programs the raw speed of compiled code. And faster performance is just the beginning.

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Microsoft® BASIC Compiler for the Macintosh
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Microsoft® BASIC Compiler for the Macintosh is a version of the Absoft BASIC Compiler, licensed from Absoft Corporation, Rochester Hills, Michigan.
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Circle 647 on reader service card
PC MacBridge weds Macintoshes and IBM PCs for a complete office network

For too long, Macintoshes and PCs have been feuding like the Hatfields and McCoys, unwilling to even acknowledge each other's existence. But now, with PC MacBridge as matchmaker, the two are brought together in a network where they can love, cherish, and share files and printers with each other.

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PC MacBridge Plus is a family of products that enable Macintoshes and IBM PCs to share information and peripherals within an AppleTalk network. PC MacBridge Plus includes a PC half-card with network software. Also included are LaserScript/Plus, LaserGraph and MailBox software. LaserScript/Plus and LaserGraph allow an IBM PC to use the LaserWriter or other PostScript printer while MailBox transfers files around an AppleTalk network.

 Invite the relatives
The PC MacBridge family tree also includes PC MacServe, which permits hard disk sharing by both IBM PCs and Macs within a network. PC MacXt allows you to transform PC files into Mac files and vice versa. And PC MacSpool frees computers for other tasks during any print job.

PCS and Macs—The perfect couple
PC MacBridge is all you need to let your IBM PCs and Macintoshes establish a lasting marriage. Use PC MacBridge with any AppleTalk product, including Hayes' InterBridge. Ask your local dealer for PC MacBridge, or call (404) 662-0366 today.

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Circle 461 on reader service card
More Menus

Tip: Key Caps and many other desk accessories have their own menus. When you choose a desk accessory, it installs its menu at the right end of the menu bar. But Microsoft Word has lengthy menu titles that don’t leave much room for desk accessory menus. You can change Search to Find, shorten Character to Char, and so on, using Apple’s resource editor, ResEdit (see “Mini-Titled Menus”).

To change menu titles, start ResEdit and open Microsoft Word. A window appears, listing the types of resources in Word. Open the menu-type resources. Another window opens, listing the individual menu resources by number. The menus are numbered sequentially from right to left, starting with the Apple menu, 256, and ending with the Document menu, 262. Open the menu resource and in the menu-

Tip: Make more room for desk accessory menus in the menu bar by shortening menu titles with ResEdit. Here, Microsoft Word version 1.05 menus Character, Paragraph, and Document are abbreviated Char, P, and Doc, leaving plenty of room for the desk accessories Other and Acta.

This tip works with any application, though the menu numbers may be different.

FullPaint Screen Snapshots

Tip: Almost everybody knows that pressing Control-Shift-3 puts a snapshot of the screen in a MacPaint file. If you use FullPaint instead of MacPaint, you might like the snapshots to be FullPaint files so that opening one from the Finder automatically starts FullPaint. All you do is use Fedit to change the first occurrence of MPNT to PANT in the System file. After you’ve made this change, screen shot files get the creator attribute PANT, which identifies them as FullPaint documents.

Howard Upchurch
Garland, Texas

You can also make this change using ResEdit version 1.0 (dated 8/20/86) or a later version. Start ResEdit, and then open the System file, the FKEY resources, and the FKEY 3 resource. Find the string MPNT and change it to PANT.

Send tips or questions to Quick Tips, Macworld, 501 Second St. #600, San Francisco, CA 94107. Send electronic mail to CompuServe 70370,702 or The Source BCS440. All published submissions become the property of Macworld.
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Getting Started with Spooling

How the Mac prints documents, with a hard look at the promises and pitfalls of spoolers.

by Jim Heid

Merriam-Webster hasn't recognized it, but *spool* has joined radar and scuba in that elite group of acronyms that have lowered their case and evolved into words. Spooling refers to a process designed to reduce the time you spend waiting for the computer while the Mac formats a document for the printed page. With spooling, data en route to a printer is intercepted and stashed on disk or in memory, either of which can accept data faster than a predominantly mechanical printer. As soon as a document is spooled, the computer is yours. The acronym was born when pioneering computer scientists realized that the time they saved by spooling was lost by saying "simultaneous peripheral operations on line."

Actually, spool works even better as a metaphor than as an acronym. Compare the disk or memory where the spooler stores documents temporarily to a spool that holds thread. The documents are wound around the spool until you’re ready to print them, at which time the spool is unwound and the documents are sent to the printer, or *despoiled.*

The tricky part occurs during the despooling process. A lightning-fast juggling routine called the *interrupt* lets the computer send the document to the printer in bursts while you work, and the Mac appears to do two things at once. (Interrupts also make it possible to move the mouse pointer while printing or accessing the disk, and they allow desk accessories like the Alarm Clock to operate.)

A half-dozen spoolers are available for use with ImageWriters, several have recently debuted for LaserWriters, and many hard disk manufacturers include spoolers with their drives (see "Spoolers and Buffers"). Spoolers can take different forms, but most comprise an application that loads the spooler's code into memory and a desk accessory that lets you control spooling from within an application.

But are spoolers worth using? They shorten the interruption in your work that occurs during printing—but at a price. The technical tricks they perform make them quirky at times, and they don't work with every application. Some background on Mac printing helps explain why.

Two Routes to Hard Copy

Dealing with printers is the job of a Macintosh system component called the *print manager.* The print manager takes one of two routes for printing on Image-
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Writers and similar printers. Which route the print manager selects depends on the print quality option you choose in the Print dialog box. Choosing Draft causes the Mac to send text (no graphics) directly to the printer, which prints the text in a built-in font instead of the font that appears on screen. With draft printing, words are positioned to show where they'll appear in Faster or Best quality, that's why the space between them is often so huge.

Choosing Faster or Best quality, however, invokes a complicated process in which a file called a picture file is created on disk. The picture file contains a series of commands for QuickDraw, the same built-in routines that draw fonts and pictures on screen. After the appearance of every page in a document has been inscribed in the picture file, another part of the Mac's print manager opens the picture file, interprets its commands, and translates them into codes that control the printer. The current start-up disk holds the picture file; that's why you can't print a document in Faster or Best quality when the start-up disk is locked.

Some applications, including MacWrite, take a different approach to creating print files. Instead of describing a document at once, they describe it one page at a time, alternating between creating a page's picture file and interpreting it and sending commands to the printer.

While each spooler has its own behind-the-scenes operating style, all perform their jobs by horning in on the printing process I just described. A spooler erects a few detour signs in the Mac's...
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memory, rerouting data headed for the print manager's routines and waving it through its own print routines. Those routines use interrupts to send a document's picture file to the printer in bursts.

The Laser Difference

Printing to LaserWriters or other PostScript printers is similar to printing to ImageWriters, but there are enough differences to make PostScript spooling much more complex. Normally, when you OK the print dialog box for a LaserWriter-destined document, the Mac displays its "Looking for LaserWriter" message and surveys the AppleTalk network in search of a printer whose name matches the name you last selected in the Chooser desk accessory.

Once it finds the printer, the Mac checks its status to determine whether it's available or in use by another network member. If it's available, the Mac determines whether the printer has been initialized with the LaserPrep System file, which contains code that allows the printer to use the PostScript commands sent by the LaserWriter driver. If the printer is uninitialized—perhaps it's just been switched on—the Mac transmits the LaserPrep file and displays the "initializing printer" message. Finally, the Mac and the LaserWriter begin a dialog that involves translating the QuickDraw commands in the picture file into the PostScript language commands the printer needs. During this dialog, the printer interrupts the Mac to signal error conditions, such as an empty paper tray or the dreaded paper jam. Other two-way communications occur during printing, such as the LaserWriter telling the Mac that it needs a certain downloadable font.

The key word is communication. A PostScript printer isn't just a mutant photocopier with design delusions. It's a computer in its own right, and to print a document the PostScript printer must be able to communicate in real time—the print job—with the computer it's attached to. For a LaserWriter spooler to work, it must fool the Mac into believing that this dialog is occurring. Then, during despooîling, the spooler itself must talk with the printer, determining whether it's available, whether it's initialized, whether it contains the proper fonts, and whether any error conditions exist.

That sounds hard enough, but it gets worse. With PostScript printers, many aspects of a print job are specific to a particular printer. Downloadable fonts from
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Adobe Systems, for example, must be initialized for a specific printer. And LaserWriters contain only a few font families, while LaserWriter Pluses contain nearly a dozen. The spooler can’t assume that all the fonts in a document will actually be on the printer. A LaserWriter spooler must spool for a specific printer: the one you last selected using the Chooser.

The Bad News

If you’ve ever taken a detour, you know how easy it is to get lost. Any software that modifies the Mac’s normal routine can cause problems. Spooling software occasionally sends extra “garbage” characters to the printer during despooiling, especially if you’re using the Mac for some other task—which is likely, since that’s why you use a spooler. And because a spooler imposes another task on the Mac’s already hard-working microprocessor, during despooiling you’ll notice a performance slowdown and, in some cases, erratic mouse-pointer movement.

That isn’t all. Many spoolers stop despooiling when you access the disk to open an application or save a document, so while you may get back to work faster, you’ll wait longer to see your final copy. Some spoolers, such as BackPrint, part of Cortland Computer’s TopDesk, don’t let you quit an application while printing a document created by it—anther quirk that defeats the purpose of a spooler. Then there’s the problem of printing on single sheets. A spooler’s very nature requires it to spool an entire document at once, so you can’t just click the Hand Feed or Manual Feed button and insert pages one at a time. If your spooler supports manual feed operation at all, you usually have to go through a convoluted routine of clicking the Automatic Feed button, then watching for messages from the spooler telling you when to insert paper. Finally, some applications blaze their own trail to the printer, bypassing the Mac’s print manager and sending text directly out the printer port. Such programs, which include ProVue Development’s OverVue data manager and Hayes’s Smartcom II communications program, don’t work with spoolers.

Another Way

A more reliable alternative to spooling software is a printer buffer, a hardware add-on containing memory and its own microprocessor and ROM-based software (see Reviews, Macworld, November 1986).

(continues)
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Spooler Checklist

This list of shopper's considerations will help you assess your spooling needs and choose the product that's right for you.

ImageWriter Spoolers
 Does the spooler in question
 • work with the applications you use?
 • work with both formatted documents and text-only files?
 • work with MacPaint?
 • spool documents to disk or memory? (Avoid memory spoolers unless your Mac has a megabyte or more of memory.)
 • let you reorganize the spooled documents and de-spool them in a different order?
 • let you quit the application in which you created spooled documents?
 • let you remove spooled documents if you decide not to print them?
 • support manual-feed printing?
 • provide a status window showing which documents remain to be despoled?
 • let you defer printing until later, or must it immediately begin despooling a document?
 • work with the Macintosh Plus and the Hierarchical File System?

LaserWriter Spoolers
 Ask all of the above questions, then find out if the laser spooler will
 • work with PageMaker.
 • support downloadable fonts.
 • support networking products such as MacServe and TOPS.

Instead of holding a document in the Mac's memory or on disk, a buffer holds it in its own memory and uses its microprocessor and software to communicate with the printer. The extra microprocessor eliminates the performance and reliability problems that software spoolers introduce.

Printer buffers are, however, susceptible to the same manual-feed foibles and incompatibility problems as software spoolers. And because of a laser printer's extra requirements, buffers compatible with the LaserWriter have been slow in coming, although at this writing several manufacturers, including DataSpace and Ergotron, are polishing LaserWriter buffers (see "Looking for LaserWriter Spoolers," Macworld News, November 1986).

The biggest problem with hardware buffers is cost. Software spoolers for ImageWriters cost about $50 and up; laser printer spoolers go for $100 to $200. Hardware buffers start at $500 (for Ergotron's MacBuffer with 256K) and climb to more than $2000 (for DataSpace's LaserServer). DataSpace's MAX ImageWriter buffer lets you share an ImageWriter over an AppleTalk network, but you could buy another ImageWriter for the $449 it costs. You have to be prolific and impatient to make a hardware buffer worthwhile.

Who Needs Them?
 Reliability and compatibility with your applications are vital considerations, but in the end, base your decision about whether to use a spooler or buffer on the way you work. If you frequently endure interminable printing sessions— running off final drafts of text documents or MacPaint drawings, or printing mailing labels for a sweepstakes offer—a spooler warrants consideration. You'll find some shopper's considerations in "Spooler Checklist."

On the other hand, if you spend most of your time creating documents and only a short time printing them, a spooler or buffer is probably more trouble or more expense than it's worth. In fact, if you work this way, you may find your productivity—not to mention your state of mind—improved by pausing to look out a window for a minute or two while a document prints. It beats plowing into another task while a printer whines next to you. □
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Insights on Microsoft Word

Tips new and old for versions 1.00 and 1.05, and a look at alternatives in 3.0

Charles Seiter and Daniel Ben-Horin

Undeniably, Microsoft Word belongs on the list of the Macintosh’s Greatest Hits. It has consistently ranked among the three or four best-selling programs since its introduction. This sales feat is all the more remarkable since virtually every Mac owner was originally equipped with a copy of MacWrite, which is certainly acceptable for light-duty word processing.

Word features more flexibility and better large-document handling than MacWrite, and its sales have perhaps benefited from lack of competition. It’s hard to imagine any developer in the overheated little world of word processors for the IBM PC having the luxury of waiting two years between major revisions.

The good news is that Microsoft has finally answered most user requests (notably speed improvements) in Word version 3.0. This update doesn’t merely fix bugs—there are enough new features to qualify Word 3.0 as a modest desktop-publishing system rather than a bells-and-whistles word processor. The bad news is that if you’re still using older hardware, you will ultimately pay somewhat more than the $99 you send to Microsoft for the upgrade.

If you don’t have an 800K drive, Word 3.0 leaves you approximately enough space to do a few envelopes. Thus, if you have two 400K drives and are reluctant to pick apart Microsoft’s disk using ResEdit, skill, and grim determination, please note that the upgrade to 3.0 implies a disk-drive upgrade as well.

For this reason we present a collection of tips for the early and current versions of Word. We’ve compiled some ingenious methods Mac users have devised in the last two years for fabricating Volkswagen versions of the Ferrari features that Microsoft finally implemented in 3.0.

Delete (Expletive)

Word processing depends on deletion; manual typewriters are passé because they’re stuck forever in insert-only mode. The standard method of deleting Word text is, of course, selecting the text by dragging with the mouse and deleting the selection with the Backspace key. This has often left users cursing at the relative awkwardness of small changes. Here are two of the most popular tips for speeding up deletion in 1.00 and 1.05:

- To delete previous word, press Option-Backspace;
- To select previous word, press Shift-Backspace.

Both these keyboard tricks also work in continuous mode. Keeping the keys depressed, you merrily delete or select at high (but controllable) speed.

In 3.0, these no longer work. Microsoft offers these delete commands instead:

- To delete previous word, press Option-Backspace;
- To delete next word, press Option-G;

Run, Don’t Walk

Scrolling through Word documents with the mouse is worse than a drag. Puns aside, neither clicking in the right-hand scroll bar nor direct dragging in the document are satisfactorily speedy for multi-page documents. Here are some Word (continues)
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The Object Logo programming environment features an editor with multiple windows, a debugger, and a hidden native-code compiler, so you get the advantages of both a compiler and an interpreter, rolled into one. Object Logo also improves on the graphics capabilities that made Logo famous with multiple graphics windows and multiple turtles, each implemented as customizable Object Logo objects, and with access to more than 100 Quickdraw commands. Sounds overwhelming? The Object Logo manual is written by experienced educators whose examples and comments will guide you every step of the way.

"High-level" programming with objects puts the full power of the Macintosh at your command. Yet with Object Logo, it's easy. Object Logo is already being used by the Apple Vivarium Project, by faculty and graduate students at MIT, and by prestigious Artificial Intelligence Labs such as Bolt Beranek and Newman, Inc. With Object Logo, you can still teach your students geometry, but you (and they) can also explore the most advanced concepts in computer science — like artificial intelligence and object-oriented programming — with ease!
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1.00/1.05 suggestions, followed by a note about Microsoft’s elegant and efficient resolution of the scrolling issue in 3.0.

- Keep it simple, keep it short. Simple: add fancy formatting touches and font variety after you have finished editing your document as plain text. This makes mouse-scrolling faster, and can lead to pleasingly sparing use of visual emphasis.

Short: whenever possible, break long documents into separate smaller documents. That is, select any reasonably independent section of the document, cut it, choose New from the Edit menu, paste the block into the new window, and save it with a suitable name. This way you don’t really have to plot the document as a set of separate sections before you write it.

- By far the fastest scrolling technique uses the Go To option of the Search menu in keyboard mode. For this method, remember to first press \( \text{⌘} \) (the repagination command) every time you pause to think of something to write. Then, to scroll, press \( \text{⌘} \)-G, the actual page number, and Return. With this technique you can scan ten pages in less time than you can drag through two.

There’s a pretty simple reason for the increase in speed. Every time you use the mouse to drag down one more line at the bottom of the screen, the Mac has to rewrite the whole screen. With a properly paginated document, the Repagination command sequence simply retrieves a starting address from memory and writes the screen only once. With practice, you can inspect document pages at the rate of three seconds apiece.

- Another method for reviewing documents is to plant markers throughout, near paragraph headings (this is a primitive form of outlining). That is, use distinctive markers (we use \( \text{zzax} \), \( \text{zzbx} \), \( \text{zzcx} \), and so forth) as tags for sections. Then, to scroll to particular points in the document, use Find in the Search menu. Since, one hopes, you seldom have words in your document beginning with \( \text{zz} \), the search routine rapidly finds these markers (advanced users may pause for a moment here to consider how these searches are pro-

(continues)
How To/Insights

Distant Pages

Word's Page Preview function, represented by the magnifying glass, gives you a close view of a page.

Formatting with Style

Sometimes a trick evolves into a feature. Word fans have known for some time that a fast maneuver in 1.00 and 1.05 for reformatting paragraphs goes like this: pick Show (Para) from the Edit menu, copy the (Para) marker from a formatted paragraph, and paste it in after the paragraph you wish to format. The second paragraph is now given the same format as the one that furnished the marker, as if the formatting information were somehow stored under the (Para) marker. This quirk also frequently leads to grief, as users inadvertently delete a marker (especially easy when the markers are hidden) and lose a paragraph's format.

The feature in Word 3.0 that roughly corresponds to this trick is the Style choice under Format. You can define a paragraph's style (ruler setting, tabs, and indentation), give it a name, and then Apply it to other paragraphs. A 3.0 user will soon develop a collection of styles corresponding to most-used paragraph formats and will find this faster and more convenient than the (Para)-marker trick (which still works in 3.0).

grammed). When your document is finished, remove them with Change in the Search Menu by specifying z?z (the ? is a wild card) as Find What: and a blank space as Change To:.

Of course, the ideal solution is a more streamlined method of labeling document sections, and Word 3.0 gives it to you with Outlining. In addition to its obvious uses, this feature may be employed as a type of rapid scroller. Switch to Outlining in the Document menu (Full Menus, please). Select the outline section that corresponds to the section of the document you're looking for, click Outlining again, and you'll find yourself in the selected section. Since the outline typically fits on a single page, you can use the mouse for fast overview and selection. Alternatively, if you've created a table of contents (in the Document menu) and have a page number for the section of interest, you can press $E-G, the number of the page, and Return to locate text as quickly as possible.

Formatting with Style

Sometimes a trick evolves into a feature. Word fans have known for some time that a fast maneuver in 1.00 and 1.05 for reformatting paragraphs goes like this: pick Show (Para) from the Edit menu, copy the (Para) marker from a formatted paragraph, and paste it in after the paragraph you wish to format. The second paragraph is now given the same format as the one that furnished the marker, as if the formatting information were somehow stored under the (Para) marker. This quirk also frequently leads to grief, as users inadvertently delete a marker (especially easy when the markers are hidden) and lose a paragraph's format.

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Outlining and Styles are two of the major new features of Word 3.0, so we wanted to show how they relate to do-it-yourself tips from the 1.00/1.05 era. Following now are tips with more modest ambitions but reasonable utility.

• For fast selection, from the top to the middle of a document: set the cursor at the top, flashing, then move the arrow down (don't drag it) to the desired spot and press Shift-Click. This selects everything between the cursor and the arrow and is faster than extended selection. For fast selection, from the middle to the bottom of a document: select the desired line by clicking on the right border (the arrow points left). Then immediately press % Shift-Click to select that line and everything below it.

• If you use MacLink to move a document to the Mac from an IBM PC, you'll find that proportional spacing in most fonts scrambles any columns or tables that were properly aligned in the PC document. Scrambling makes resetting the columns with tabs quite tedious. The only simple solution is to select Dover (which isn't proportionally spaced) as the font for the columns and tables. In principle you could also use Monaco, but it's too frivolous for professional work. Don't bother trying to manually realign columns set in a proportionally spaced font—it's an agonizing experience.

• Word processing gives rise to a new species of annoyance—the cut-and-paste typo. This can be a space before a period at the end of a sentence, a space before a comma, a space after a left parenthesis, and so forth. You can check for these with Find by using the symbols for nonprinting characters: ^w for white space, thus Find: ^w to find sentences ending in (space) (period). Other useful nonprinting symbols are ^t (tab), ^p (paragraph), and ^n (end of line).

• Frequently, when you have set up ruler parameters (such as tabs and margins) at the top of a document or a section, you want to extend the same parameters below it. Normally, when you do a multiple selection with the ruler on, the ruler displays only the parameters for the first line of the selection. Instead, start the selection process where you have the desired parameters, extend the selection down to where you want to stop, then move a tab slightly, let go, and move it back again. The result: the whole selection is formatted the same way as the first line.

• If you abhor page breaks in the middle of paragraphs and want to completely avoid them, just repaginate (^J) from the top and look for the first page break that falls in the middle of a paragraph. Then set a manual break (Shift-Enter) at the beginning of the paragraph and repeat the process (^J and manual page breaks) until the whole document has no breaks in the middle of paragraphs.

Incidentally, it seems faster to scroll a whole screen at a time by clicking in the gray area of the scroll bar than by scrolling the screen with the arrows. Since a standard letter-size page covers about 2½ screens, moving from one page break to the next takes two or three clicks in the gray area.

Word 3.0 promises to make some significant changes in its ease of use and overall effectiveness and is likely to attract new users. However, until you upgrade (or if you don't), these tips should keep you going.
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Mac Business Tools

Play out varied scenarios in Excel and forecast the bottom line

by Cynthia Harriman

You run a small company and count on your spreadsheet to tell you not only where you stand financially but also where you might be tomorrow if business gets better—or worse. Want to know the effect of a $2000 increase in sales? Change the sales figure in your income statement, and watch the bottom line as it readjusts automatically. What about a $3000 drop in sales? Change one figure again to see if you're still in the black.

Computerized spreadsheets are famous for allowing you to play "what if" by varying a few assumptions in a financial model and immediately viewing the change in outcome. It's less widely known that some of the more powerful spreadsheets, like Excel, let you try several scenarios at once: by employing data tables you can compare all the alternatives at a glance, making planning and projections easier and more reliable.

Put Your Options on the Table

Let's look at a simplified model, an income statement for a small business. The figures consist of raw data, except for cost of goods, which is fixed at 42 percent of sales, and net income, which equals revenue minus expenses. (This income statement is shown in columns A, B, and C of "Projections at a Glance").

You could simply change the sales figure in cell G6, check the results in C18 (net income), then repeat the process for each projected change. But if you make your projections in this piecemeal fashion, the multiple results will overwhelm you in no time. What sales figure would create a loss, given your present fixed expenses? If business increases $6000, how much would go to the bottom line? Excel shows the whole picture for you if you define:

• a list of different values to substitute in the model;
• the cell where you'd like to substitute the values one by one;
• the area on the spreadsheet that will contain all the variations—the table area; and
• the formula—in this case net income—you'd like to see affected by the changes.

Start by creating the list of values you want to try. You can locate this sequential list anywhere there's room on the spreadsheet. The easiest way to enter the list is with Excel's Data Series command. Type (continues)
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the first value in cell E6, then select the range where the list will be – E6 to E16 in the example. Select “Series” from the Data menu, and in the dialog box that appears choose “Series: in columns”, “Type: linear”, and “Step value: 4000”. Click “OK”, and you’ve told Excel to create a series of numbers down column E in increments of 4000. Naturally, you can pick any increment for your data series.

Next to these sales values, you want Excel to create a column of net income figures corresponding to the values — your table of choices. Type =C18 in cell F5 to indicate that the number at the top of the adjacent column will be the net income formula. (As always, Excel shows the results of the formula rather than the formula itself. That won’t affect the table.)

At this point you’ve carried out two of the four necessary steps; you’ve defined the list of values and indicated the formula to be affected. All you need to do to find the results is to specify the table location and the cell in the original model where each value in the list will be “substituted.” Select the entire table area (the range E5 to F16—the smallest possible rectangle that includes both the list of values and the formula) and then pull down the Data menu and choose “Table”. You’ll see a dialog box like the one in “Table the Issue.”

Table the Issue
In the Table dialog box, you specify the location of the value you’re changing. If your list of substitute values is arranged vertically, enter a column input; if the list is horizontal, enter a row input. Two-input tables, which have two variables, need both row and column inputs.

Click next to Column Input Cell, since your list of values is in a column, then click back on the spreadsheet in cell C6 to show Excel which original value the list of values replaces. Dollar signs ($) appear automatically in the dialog box. Even if you move the table to another part of the spreadsheet, C6 will always be your input cell.

(continues)
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Projections at a Glance

From a simple income statement, you can set up a one-input table to study projected changes in any value in the spreadsheet. Here, the original sales value of $110,000 is changed; corresponding net income figures generated in the table for each sales value show the impact of the change.

Table for Two

Data tables can work with more than one formula at the same time, further streamlining your projections. Let's suppose that you'd like to figure your tax bill, too. It's a calculated figure, equal to 17 percent of net income. To add this to your table, enter the appropriate formula in cell G5: =17%*C8. Select the entire table—now consisting of three columns, or the range E5 to G16—execute the Data Table command, and once again enter a Column Input Cell of G6 to show it's the sales figure that varies. Your table will recompute, giving you both the net income and the tax liability for each sales figure.

With a more complex spreadsheet, you may have several important formulas whose outcome would be affected by a change in a single value. You can carry this type of table even further, adding as many formulas as you want to adjacent columns and enlarging the table to include them.

Another type of two-way table is limited to only one formula but can show the effect of changes in two different values. Let's suppose that your business, like many, is afflicted by skyrocketing liability insurance costs. Using the same income sheet as before, you'd like to see the effect that changes in both sales and insurance would have on your bottom line in coming years.

Click "OK", and after just a slight delay Excel will create the entire table of values. Your finished table should look like columns E and F of "Projections at a Glance."

Now you can take the time to examine and compare the alternatives and get a better idea of your business's health.
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A Table for Two
Two-input tables let you study the effect of changes in two variables at once. This example varies sales from $110,000 to $150,000 while varying insurance from $600 to $16,200. Checking the same variations manually would involve 44 different "what-if" substitutions.

Tips for Tables
The following advice may help you to work with tables more efficiently.

• Tables are dynamic, as are any other formulas in Excel. That is, they recalculate automatically when the values on which they depend change. In our example, any change in the original income sheet would cause the table to recalculate.

• Individual “answer” cells in an Excel table can be copied, but they can’t be cut or cleared from the table area. Try it, and you’ll get the message, "Illegal cell operation.”

• You can move the Table dialog box (the one that asks for column and row input cells) if it’s in your way. Like any other dialog box with black stripes in the title bar, this box can be repositioned so that you can easily click on any input cell on your spreadsheet.

• Complex tables may take some time to compute—after all, you’re asking Excel to redo the same formula several times. If you find that table calculations (and automatic recalculations as values change) are paralyzing your spreadsheet, choose “Calculation . . . Automatic Except Tables” from Excel’s Options menu. Don’t forget, though, to change back to Automatic Calculation or tell Excel to Calculate Now (also in the Options menu) when you’re finally ready to have your tables updated.

Once you’ve spent valuable time putting data into your spreadsheets, you’ll want to maximize your ability to get answers out quickly. Data tables can provide an important shortcut for in-depth analysis of options and alternatives.

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Updates

This list brings you highlights of software recently received but not yet tested. The first price is the upgrade cost for registered owners; the second is the current list price.

Achbar version 2.03 supports color printing on the ImageWriter II, allows ruler settings to be copied, adds extended and condensed type styles, and supports both 7- and 8-bit Hebrew fonts. On either 400K (without color printing) or 800K disk. Davka Corp., 845 N. Michigan Ave. #843, Chicago, IL 60611, 312/944-4070. $49.95; $249.95 new.

Double Helix version DH1+ operates with MultiUser Helix. This edition changes some menu items and adds 17 calculation tiles and features such as the ability to prohibit data entry that doesn't meet predefined criteria. Odestra, 4084 Commercial Ave., Northbrook, IL 60062, 312/498-5615. $100 (upgrade only).


MacSpec version 2.0 imports graphics and supports CSI and Mil-490 specification formats. There are more formatting options and a Preview Document command. LM Software, P.O. Box 93, Belmont, CA 94002-0093, 415/592-4512. $30; $199.95 new.

myDiskLabeler version 2 works with the Mac Plus and HFS as well as earlier models and system software. A LaserWriter printing option and the option to print in color on the ImageWriter II are included. Williams & Macias, P.O. Box 19206, Spokane, WA 99209, 509/458-6312, 800/752-4400. Upgrade from B & W version $25, from color version $15, $64.95 new.


Personal Bibliographic System version 2.6 installs on a hard disk, offers type style choices in whole or partial fields, and allows searching by record numbers. Personal Bibliographic Software, Inc., Box 4250, Ann Arbor, MI 48106, 313/663-9052. $25; $295 new.

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Telecommunications

Red Ryder 8.4 (4111) Latest update. It has an autodial feature and can store up to 80 telephone numbers. It also allows you to receive faxes automatically in any of 3 modes: ASCII, XONXOFF, and KERMIT. Red Ryder Macros (4009) Contains Dow Jones™ & E. F. Hutton Quotes. Also contains a listing of area codes.

Termwork 1.2 (4112) Supports Macintosh & Mac capability for storing numbers & protocol settings. Also included are Freetem 1.8, PackIt III, and MyComm.

Communication Utilities (4107) BinHex 5.0. Supports the new BIN protocol, as well as the old .HEX, .HCX & .HCX protocols. PackIt III.2 (Compress your data for faster transmission). Compact, AppleTalk Chat and more.


Programmer Utilities (4162) Softool™ (Draw many standard software engineering drawings such as Dataflow diagrams, flowcharts etc.). Fast Edit. A powerful programmers' text editor. Includes documentation. Also included is MacroEdit.

Programmer Utilities (4153) MemTest, MyFinder, FST format, PRAM 2, Font-FKEY-DA sampler, (This very useful program will open any font, Desk Accessory or Font Key without having to install them onto the System). Also included: Cleanup, Mac ID, Hex & ASCII Strings. Developer Stuff (4087) ResDecompile. (A Macintosh application which can convert certain types of resources in a resource file, into source code suitable for compiling with ResEdit (Apple's Resource Editor)). Developer Stuff (4088) Obi, System IDs, archiver & more.

Music

MacNifty (4124) This disk contains realistic digitized sounds that may be altered by changing the sampling rate. Sounds included.

Musicwords™ songs (4122) Includes Musicwords Demo which plays back songs. You can't write your own songs unless you have the commercial Musicwords. Songs included: "Invention #1", "Battle of the River", "Born Free", "For Your Eyes Only", "Riders of the Last Ark", "The Gambler", "Jump", "Lightning" and many more.

Pop Music songs.

Concertwords™ Songs (4123) A varied selection of classics as well as contemporary songs.

Midii Music Applications

These programs require a MID Interface:

- MIDI Synthesizer programs.
- MIDI SyncTM MIDI 2.0, Midi, Mouse, 7th Heaven CZedit Demo (4111) CZedit (For use with the Casio CZ101™ Keyboard).

Educational

Flashcard (4138) Orbital Mixing & Grades folder.

- Math Master (4139) Venn, Conformal Maps, Automata, Time and Tangent.
- Speech Synthesizer (4140) The following programs support Speech Synthesis: Rona, Talking Eliza with demo files & instructions, Speak & Easy and La Limerick Machine. This one will read limericks that are typed.

- Math Tutor (4181) Weinberg. This program facilitates drawing math functions like integrals, summations etc. Equation, Math Drill & Camera tutorial.

Disk Cataloger:

- Disk Librarian (4092) Excellent for cataloging extensive libraries. Just run the program & insert disks. Includes multiple sort functions.
- Disk Builder: Excellent for cataloging extensive libraries. Just run the program & insert disks. Includes multiple sort functions.

Minimum order quantity on PD - 5 program disks

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Updated Disks

RedEdit 1.2 (4165).

European Resource Editor. This program is excellent for translating Macintosh programs to other languages. It does not alter any of the resources.

Switzer 5.0.1 (4168)

Languages

Basic Compiler (4101) Complete with documentation and examples. Smalltalk (4099) Disk also includes Acla and a 8000 disassembler. Mix 1.4 (4037)

Mcm (4035) 68000 Assembler and Linker.

Engineering:
- DesignScope (4119). Simulation Program that helps design components.
- Circuitry (Demo Version)

Digital Simulator (4120)

Digital Logic Simulator.
Macworld Directory

The Macworld Directory is a comprehensive listing, by category, of products and services available for the Apple Macintosh. It provides advertisers with a low-cost advertising alternative and our readers with an easy reference guide.

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Capitano Computing, 300-1120 Engineering
Blvd., Birmingham, AL 35209

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File Converter (V2) is a fast file-conversion program for the Mac. It does search and replace operations on text files up to 400K on a Mac Plus in 20 sec. If changes space to tabs for Excel, adds/deltes tabs, carriage returns, line feeds, or spaces as well as printable characters. $29.95. Beamer Software, 1633 Commonwealth Ave, West Newton, MA 02145, 617/332-1373

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March 1987

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- a. In your company
- b. At home
- c. Both
- d. Reference only

**5. How many of the above are Macintoshes?**
- a. In your company
- b. At home
- c. Both
- d. Reference only

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MACWORLD

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AST Research Inc., 7901 Stoneridge Dr. #500, Pleasanton, CA 94566, 415/663-8822. 512K minimum memory; requires a printer; 90 percent HFS compatible; prints only black and white on the LaserWriter. $29.95.

**AppleShare**

Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory. Free with each Macintosh purchase.

**AppleShare**

Version 1.0. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 512K minimum memory; requires AppleTalk network and a dedicated Mac Plus; HFS only. List price to be announced.*

**AST TurboScan**


**CalendarMaker**

Version 2.0. CE Software, 801 73rd St., Des Moines, IA 50312, 515/224-1995. 512K minimum memory; printer recommended. $30.*

**ClickArt Effects**

TMaker Co., 1973 Landings Dr., Mountain View, CA 94043, 415/962-0095. 128K minimum memory. $49.95.

**ColorPrint**

Version 2.3. I/O Design, Inc., P.O. Box 156, Exton, PA 19341, 215/524-7277, 800/241-2122 (orders only). 128K minimum memory; requires a printer; 90 percent HFS compatible; prints only black and white on the LaserWriter. $29.95.

**Dark Castle**

Silicon Beach Software, Inc., P.O. Box 26430, San Diego, CA 92126, 619/695-0956. 512K minimum memory. $49.95.*

**Deluxe Music Construction Set**

Version 2.0. Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/572-4525, 800/245-1525 (orders only). 800/562-1112 in California (orders only). Key-disk copy protection. 128K minimum memory; 512K recommended; MFS only. $49.95; $20 extra for an unprotected copy.*

**Easy3D**

Version 1.01. Enabling Technologies, 600 S. Dearborn #1306, Chicago, IL 60605, 312/427-0408. 512K minimum memory; ImageWriter or ImageWriter II recommended. $149.

**FullPaint**

Version 1.0E. Ann Arbor Software, Inc., 2393 Taylor Rd. #106, Newbury Park, CA 91320, 805/475-1467. 512K minimum memory; ImageWriter or ImageWriter II recommended. $149.95.

**HD-20SC**

Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 512K minimum memory; requires Macintosh with SCSI port; HFS only. $1299.*

**Hypernet**


**InBox**

Version 1.3. Think Technologies, 420 Bedford St. #350, Lexington, MA 02173, 617/863-5590. 512K minimum memory. $295.

**InterBridge**

Version 1.05. Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348-4041/441-1617. 512K minimum memory; product is hardware/software combination and connects to AppleTalk; requires Finder Version 5.2 or higher. $799.

**JetReader**

Datacopy Corp., 1215 Terra Bella Ave., Mountain View, CA 94043, 415/965-7900, 800/821-2898. 1MB minimum memory; requires Mac Plus and hard disk; HFS only. $2950.

**LaserPrint Bundle**

Knowledge Engineering, GPO Box 2139, New York, NY 10116, 212/473-0095. 1MB minimum memory; hard disk and LaserWriter recommended; HFS only. $1495.

**LaserServer**

DataSpace Corp., 185 Riviera Dr. #9, Markham, Ontario, Canada L3R 5J6, 416/474-0113, 800/387-4922. 512K minimum memory; requires Macintosh and hard disk; LaserWriter recommended. $2295.

**LS-300**


**MacBuffer LW**

Ergotron, Inc., 1621 E. 79th St., Minneapolis, MN 55420, 612/854-9116, 800/528-9839. 128K minimum memory; requires AppleTalk; Price to be announced.

**MacDraw**

Version 1.9. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; external drive and printer recommended. $195.

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GTCO Corp., 7125 Riverwood Dr., Columbia, MD 21046, 301/381-6688. 128K minimum memory. $399.*

**MacMovies**

Version 1.2. Beck Tech. P.O. Box 5027, Berkeley, CA 94705-0027, 415/548-4054, 800/227-2400 ext. 999. 512K minimum memory; Mac Plus and external drive or hard disk recommended. $99.95; includes limited warranty and customer support.*

**MacPaint**

Version 1.5. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; 512K, external drive, and ImageWriter or LaserWriter recommended. $125.

**MacProof**

Version 2.1. Automated Language Processing Systems, 190 W. 800 North, Provo, UT 84604, 801/375-0090, 800/254-5566. 512K minimum memory; network version will work on a 512K; stand-alone version requires a 512K; or Mac Plus; external drive recommended. $195.*

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<td>Composite/NTSC Video</td>
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<td>Composite/NTSC Video</td>
<td>1 VCR</td>
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<tr>
<td>Color Monitor (RGB)</td>
<td>RGB Video</td>
<td>1 Monitor</td>
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*Maximum number of devices per output is a function of device type and impedance.

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YES! Please enroll me as a member in the PC NETWORK* and send my catalog featuring thousands of computer products, all at just a few above DEALER WHOLESALE PRICES. I will also receive "THE PRINTOUT", a special quarterly update on merchandise at prices below even those in my wholesale catalog and all the other exclusion, money-saving services available to Members. I am under no obligation to buy anything. My complete satisfaction is guaranteed.

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100% Hayes and Apple Compatible

THE™ 1200 COM
1200 BPS External Modem w/auto answer, dial, redial and built-in speaker.

$119.00*

Anchor Lightning 2400
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Imagewriter II
10" Carriage 250CPM/480COL 45CPM NLQ Color Capable

$419.00*

Apple Imagewriter II Cut Sheet Feeder
Apple Laserwriter
Apple 15" Imagewriter for Mac
Epson FX-85 1200/2400 Parallel/Serial
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Print Shop
New for the Mac
Write, Design and Print Cards, Lettersheads and More

$24.75*

GAMES AND EDUCATIONAL SOFTWARE

Anno Arbor Full Paint
Apple MacTerminal or MacPascal
Ashcon-Tape Full for the Mac
Bryte Software Omnigraph II
Berland Reel or Turbo Pascal for the Mac
Berland Sidekick for the Mac
Central Point Copy II Mac
Hayes SmartDraw II
Lagged Software Front Desk
Living Videotext More
Living Videotext Thxbox 5.5K Ver.
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BUSINESS SOFTWARE

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Central Point Copy II Mac
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*PC NETWORK is the #1 Source for Macintosh Products
## Hardware

**DISK DRIVES/TAPE BACKUP**
- LD-40 40mb Hard Disk: $1650.00
- LD-30/50 Combo: $1970.00
- LD-20/20 Combo: $1750.00
- LD-40/40 Combo: $1870.00
- LD-30/30 Combo: $1500.00
- LD-20/20 Combo: $1420.00
- Western Computer Mac Twin Pack (for MacPlus, 2mb Hard Disk/2mb Tape Backup): call

**MODEMS**
- LD-40 120 Combo: $2150.00
- LD-30/50 Combo: $1970.00
- LD-20/20 Combo: $1720.00
- LD-30/30 Combo: $1650.00
- LD-20/20 Combo: $1420.00
- LD-40/40 Combo: $2450.00
- LD-30/30 Combo: $2150.00
- LD-20/20 Combo: $1650.00

**PRINT BUFFERS**
- Anchor Automation Signalman Express 1200: $2300.00
- Anchor Automation Signalman Lightning 2400: $3000.00

**SMB PROTECTORS**
- PPI 516: $67.00
- PPI 5100: $75.00

## Software

**ARTS**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**BLYTHE**
- Microtune 2000: $1650.00
- Microtune 3000: $1970.00
- Microtune 4000: $1750.00
- Microtune 5000: $1970.00

**CIRCLE**
- Mac Buflor 1mb: $565.00
- Mac Buflor 512K: $365.00
- Mac Buflor 256K: $245.00
- Mac Buflor 128K: $177.00

**GRAPH**
- Mac Buflor 1mb: $565.00
- Mac Buflor 512K: $365.00
- Mac Buflor 256K: $245.00
- Mac Buflor 128K: $177.00

**MICRO**
- Mac Buflor 1mb: $565.00
- Mac Buflor 512K: $365.00
- Mac Buflor 256K: $245.00
- Mac Buflor 128K: $177.00

**MICRO**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**PRINT**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**REMARK**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**SUPER**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**SWITCH**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

**TOPS**
- Microtune 2000: $200.00
- Microtune 3000: $225.00
- Microtune 4000: $250.00
- Microtune 5000: $275.00

## Where to Buy

**Sizer & Adjacency**
- Version 1.7. Johnson & Johnson Design/Build, 677 Grove St., Newton, MA 02162, 617/253-5965. 128K minimum memory; two desk accessories require MacDraw: $69.*

**Slide Show Magician**

**SpellCheck**

**SuperPaint**
- Version 1.0. Silicon Beach Software, P.O. Box 261430, San Diego, CA 92126, 619/695-6956. 512K minimum memory: $99.

**The Surgeon**

**Switcher**
- Version 5.0. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014, 408/996-1010. 128K minimum memory; Mac Plus, external drive, or Hard Disk 20 recommended. $99.95.

**3Server**
- 3Com, 1365 Shorebird Way, Mountain View, CA 94043, 415/960-9451, 800/638-3266. 512K minimum memory; requires AppleTalk and at least four Macs. $599.5.

**ThunderScan**

**TimeLink**
- Version 2.0. Batteries Included, 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5, 416/881-9941, 800/387-5707. 128K minimum memory: $49.95; for update, send $10 and return disk.*

**TOPS**
- Version September II. Centram Systems West, Inc., 2560 Ninth St. #220, Berkeley, CA 94710, 415/549-5900. 512K minimum memory; requires AppleTalk and at least one hard disk. $149 per Mac; $389 per PC.

**Typing Made Easy**

**VideoWorks**
- Spinnaker Software, One Kendall Square, Cambridge, MA 02139, 617/944-1222. 128K minimum memory; 512K recommended; MPS only. $99.95.

Public domain software is available through on-line information services, through user groups such as Berkeley Macintosh User Group (415/849-2684) or the Boston Computer Society's Mac special-interest group (617/367-8080), or through mail-order clearinghouses such as Educomp, 2420 Oxford St., Cardiff by-the-Sea, CA 92027, 616/942-3838 or SoftCore (formerly Public Domain Exchange), 673 Hermitage Ln., San Jose, CA 95134, 408/942-0309.

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*Prices subject to change.*

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Knowledge + Inference = Intelligence

Knowledge is a strategic resource of individuals and of corporations. Properly managed, the impact can be tremendous. The substantial investment in developing expert systems has paid off in corporate savings of many millions of dollars to such companies as Digital Equipment, Westinghouse Corporation and Texas Instruments.

MacSMARTS™, the Intelligence-Amplifying Software for the Apple Macintosh, was designed to facilitate similar successes in a wide range of businesses and professions using the new knowledge management techniques but with a much reduced investment.

The innovative Logic Worksheet of MacSMARTS is laid out like a spreadsheet, with columns for FACTS, RULES and ADVICE. In its operations, users of Excel, Jazz or other Macintosh spreadsheet processors will feel quite at home. You don't need to master a complex syntax just to get started. And with the click of a mouse and a menu selection you can link graphics and text to rules and to elaborate and inform with geological maps, engine diagrams, or architectural plans; key contract paragraphs, laboratory protocols or balance sheets.

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PRODUCTIVE
By making it easy to construct a knowledge base—consisting of facts, rules and examples—in the Logic Worksheet you can use deductive and inductive inferences to diagnose and advise, design, plan or troubleshoot.

Some typical applications include:

- A partner in a major law firm is using MacSMARTS to advise a junior associate on the finer points of corporate law.
- A real estate developer used a MacSMARTS program to make certain no considerations were missed in the decision to build a new office complex.
- A medical laboratory director found that a MacSMARTS program could assist new technicians in performing diagnostic tests.
- A marketing director will use a MacSMARTS program to configure the best components to meet a customer's requirements.
- A financial consultant saw that a MacSMARTS program could assist him in strategic portfolio planning for more clients.
- An MIS director uses a MacSMARTS program to assist programmers to track down problems in systems software.
- A doctor is using a MacSMARTS program to analyze the implications of tests on his visually-impaired patients.
- The possibilities are bounded only by logic and human imagination. Our customer base spans two continents and a wide range of professions and businesses from individual consultants to the Fortune 500.

AFFORDABLE
Artificial intelligence is one of the most significant developments in the history of computer technology. Now you can access the power of this new technology and put it to work with MacSMARTS. MacSMARTS has the features of programs costing hundreds or even thousands of dollars more yet costs only $149.95. As a limited introductory offer order MacSMARTS direct risk-free now for only $99.95. A small price to put you ahead of the competition and into the 21st Century. If MacSMARTS does not achieve your satisfaction, return it within 90 days for a full refund—no questions asked. We guarantee your satisfaction!

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Choose and purchase orders will NOT be accepted. For the 512K Mac, MacXL and Macintosh Plus.
## Macworld Best-Sellers

### Business Software
- **Microsoft Word** by Microsoft
- **Microsoft Works** by Microsoft
- **Microsoft Excel** by Microsoft
- **PageMaker** by Adobe
- **MacWrite** by Apple Computer
- **FullPaint** by Ann Arbor Softworks
- **MacPaint** by Apple Computer
- **MacDraw** by Apple Computer
- **Microsoft File** by Microsoft
- **Omnis 3** by Blyth Software

### Education Software
- **Kids' Time** by Great Wave Software
- **Math Blaster** by Davidson and Associates
- **KidTalk First Byte** by First Byte
- **MacEdge II** by Think Educational Software
- **Typing Tutor III** by Simon and Schuster Computer Software

### Entertainment Software
- **Flight Simulator** by Microsoft
- **MacGolf** by Practical Computer Applications
- **Grand Slam Tennis** by Infinity Software
- **The Ancient Art of War** by Broderbund Software
- **Dark Castle** by Silicon Beach

### Networking/Data Communications
- **AppleTalk** by Apple Computer
- **MacServe** by Infosphere
- **Apple Personal Modem** by Apple Computer
- **TOPS Centram**
- **Smartcom II** by Hayes Microcomputer Products

### Hard Disk Drives
- **Apple Hard Disk 20** by Apple Computer
- **Apple Hard Disk 20SC** by Apple Computer
- **HyperDrive 20** by General Computer
- **FX-20** by General Computer
- **DataFrame 20** by SuperMac Technology

### Books
- **Excel in Business** by Douglas Cobb
- **The Apple Macintosh Book** by Gary Lu
- **Microsoft BASIC Book/Macintosh Edition** by Walter A. Etlin and Gregory Solberg
- **The Printed Word** by David A. Kater and Richard L. Kater
- **Microsoft Macinations** by Mitchell Waite, Robert Lajore, and Ira Lansing

### Product Watch
- **AppleShare** file server software
- **InterMail** Internet electronic mail program
- **SuperLaserSpool** software spooling software

*Editors' choice: Other recent products of particular interest.*

Source: Exclusive InfoCorp survey of more than one hundred Macintosh retailers and selected mail-order suppliers. Covers sales during November 1986.

*Formerly bundled with the Mac.*
"Despite our best efforts to disrupt MacServe, we failed. MacServe's automatic crash recovery system was able to recover from the worst network disasters we could throw at it and never lost any data. We could reestablish network connections quickly and without any elaborate recovery procedures. This is a remarkable achievement for such a complex product with so many opportunities for data loss."

"We are impressed and can't imagine what more could be done to make MacServe bullet proof."

INFOWORLD
November 17, 1986
Four things no Mac should be without.
All in System Saver Mac.

That's right — four things. In one remarkable accessory. Take a good, close look at System Saver Mac. You'll find one hard-working accessory, skillfully engineered to perform four important functions at once.

1) System Saver Mac keeps your Macintosh cool. Its quiet fan draws cool air through your Mac at the rate of 15-18 cubic feet per minute. 2) System Saver Mac stops the scramble for power. It provides outlets for two peripherals (like your printer and modem), while replacing the Mac's power cord. 3) System Saver Mac has a single or double switch option. It comes equipped with two switches, in case you want to power one of your peripherals (like a Hard Disk 20) separately. If you'd prefer the convenience of a single switch to control your entire system, just pop off the two separate switches and pop on the special single switch cap provided. 4) System Saver Mac provides pure power. It protects your Macintosh, clipping surges and spikes at a safe level and filtering out line noise to make your Macintosh more accurate, efficient and reliable.

Now, isn't that just the kind of remarkable product you've come to expect from Kensington? System Saver Mac, $99.95, is available at Apple dealers everywhere. For the dealer nearest you, or for a free brochure of all Kensington’s Apple accessories, call toll-free 800-535-4242. In NY, 212-475-5200.