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- Works with 128k or 512k Macintosh.
- Warranted for six months—parts and labor.

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The Macintosh...

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Your Mac's been lonely too long.
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**The Right Breeding:** Paradise Systems is known for innovative engineering. The MAC 10 is the latest in a line of ground breaking micro computer peripheral products from Paradise.

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---

Do Your MAC A Favor: Go see your Apple dealer and look at a MAC 10 or call us toll free at (800) 822-2020 (CA.) or (800) 527-7977 (outside CA.). It will be the beginning of a wonderful relationship.

**Specifications:**

- **CAPACITY:**
  - 12.75 mb unformatted
  - 10mb formatted

- **DISK DRIVE SEEK TIMES:**
  - Adjacent track: 18 ms
  - Average: 85 ms
  - Maximum: 180 ms

- **ROTATIONAL SPEED:**
  - 3600 RPM

- **POWER REQUIREMENTS:**
  - 110/220 Volts AC, 50/60hz, 50 watts max.

- **DIMENSIONS:**
  - Height: 5.5 inches
  - Width: 3.5 inches
  - Depth: 10.8 inches

- **WEIGHT:**
  - Approx. 5 lbs.

- **INTERFACE:**
  - Connects to your MAC via the modem or printer port. Printer connector and integral print spooler provided on MAC-10.

*See retailer for details.

**Suggested Retail Price**

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*MACCOUNTANT suggested retail price is $275.00. Introductory
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Breaking the 512K Barrier

A look at the memories that the future has in store

If it hasn’t happened to you yet, sooner or later you will ram up against the Mac’s 512K barrier. And invariably you will wish your Macintosh had more memory. Wouldn’t it be great if the Mac had 4 megabytes of RAM—well within the amount its 68000 processor is capable of addressing? Going from 512K to 4 megabytes on a Macintosh would be like trading in a Volkswagen for a Ferrari.

And using the Switcher program developed by “Mac Wiz” Andy Hertzfeld with a multi-megabyte Mac would be fantastic. Dreams of infinite chains of programs and documents dance in my head.

As memory capacity increases exponentially, it becomes proportionally less expensive. While complaining about paying $1000 for 512K, we quickly forget that only a few years ago the same amount of money purchased only 16K—and the maximum any computer could hold was a meager 64K.

It’s too bad Apple didn’t provide a way to expand the Mac’s memory except by upgrading the entire digital board. Is an optional memory expansion box too much to ask for?

Lotus Development, in tandem with Intel, recently announced a memory board for the IBM PC called Above Board. Using a technique called bank-switching, the product can expand the PC’s memory to 4 megabytes.

If a similar board were developed for the Mac, it could address more than 60 megabytes of RAM.

As a Mac owner you are stuck waiting for bigger memory chips to replace the 256K chips in your 512K system. Or you are holding on to the edge of your chair until Apple introduces a new Mac faster than the Fat Mac.

While wishing for more internal memory lingers, I have to admit that increased external memory is also high on my list of Mac needs.

The whole notion of computing takes a quantum leap when you discover that information can be stored in one place rather than scattered over hundreds of little disks. Average users can store all their programs as well as a year’s worth of files on a 10-megabyte hard disk—and theoretically never have to look at a floppy again.

The only factor preventing hard disks from becoming standard equipment on personal computers is the cost. However, that is quickly changing. By the end of 1986, you should be able to buy a 10-megabyte hard disk for around $500.

If hard disk drives don’t become standard, it will be only because optical disks make it to the finish line first.

Optical disks use laser technology to store information. The first, introduced by Sony, is a read-only device called CD ROM (Compact Disk Read-Only Memory). Some optical disks, which are about the size of floppy disks, have a data storage capacity of about 550 megabytes. Although you cannot write or erase information on CD ROM disks, they add a new dimension to personal computers because they make it possible to combine digital, video, and audio information for the first time.
WITH MEGAHAUS, YOU CAN TURN YOUR MACINTOSH INTO

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NOW! NEW, SUPER SOFTWARE FOR THE MACINTOSH!

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MegaMerge

MegaMerge is a DLX mail merge program for Macintosh. With MegaMerge, you can use MacWritr to create form letters, print mailing labels and more. You can even prettify MacWriter's limited documentation with a wide range of MacWritr's features (flying) several documents together and printing them as one long document.

MegaFiler

MegaFiler automatically formats, sorts, and prints sales orders, invoices, and other information. It's the file management system for the Macintosh that lets you file and retrieve information with EASE! You can store names, addresses, or other information using MegaFiler's library of more than 1,000 files for:

- Invoices
- Sales Orders
- Customer Orders and Invoices
- Business Invoices
- Business Letters
- And MUCH more!

You can also design your own files using MegaFiler's easy-to-use design. You can also print lists, tables, mailing labels and MegaMerge mailing lists. You can even incorporate them into MacWritr and other Macintosh applications.

Here's what the MegaFiler can do:

- Store information on any field
- Include form letters on any receipt you choose. For example, find all the people who live in California whose names begin with "J" and send a blank sheet and print them in zip code order.
- Store information about invoices, etc. and "sort" it into another
- Make MegaFiler truly the file management system you've been waiting for. In short, how super it really is!

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MegaDesk is a desktop calendar, appointment book, and reference card that you can use on your Macintosh.

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Microsoft® BASIC is the language spoken by nine out of ten microcomputers worldwide. It's the language with the most programs written for it.

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It's no wonder Microsoft is the most logical choice for the Macintosh.

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David Bunnell

Someday, as you look up birds in your encyclopedia, you will be able to browse through video clips that not only show your favorite species in flight—but also let you hear it sing.

Within a year optical drives should be available that will permit computers to "write once" to a compact disk. This may seem a crippling limitation for a mass storage device, but with several hundred megabytes on a removable disk it won't make much difference. You simply store every version of a file and archive its creation. Later in the decade affordable read/write optical drives will become available.

After optical mass storage has been introduced to personal computers, the next step will be the development of organic memory chips. These self-reproducing components will be about the size of the period at the end of this sentence. Each one will hold at least 1 megabyte of data.

As memory storage devices continue to grow in capacity and shrink in size, someday individuals will have their own complete database containing information gathered from birth.

You'll never have to worry about losing a phone number—even if you entered it years ago, it will be only a click away. And comprehensive medical and educational records will always be at your fingertips.

At death our life history databases will be filed in the equivalent of the Library of Congress—on one small chip. What happens to this information will probably become a major issue among the masses.

It is thoughts like these that make me impatient with my Mac and its puny 512K of memory. ☐
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- 400 accounts on one 400K disk.
Retail price: $145

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The perfect system for your retail or wholesale business.
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- Analyzes your inventory as well as providing cost and sales histories and gross profit margins. Also, product status by type and location is given.
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The new Financial Series from Palantir does more than just help you run your business. It helps you manage it, for growth and profitability.

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* Requires Microsoft® Basic
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Created by Kriya Systems, Inc. for the development of our Typing Tutor III® keyboard instruction program, Neon is your answer to software artistry with the Mac.

Call 1-800-621-0660 now with Visa or MasterCard, or send your check to Kriya Systems, Inc. 505 N. Lake Shore Drive, Suite 5510, Chicago, IL 60611, (312) 822-0624, to order your copy of Neon. The price is $299. As a special introductory offer, you may purchase Neon and full documentation through June 30, 1985 for $155, including shipping and handling.

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Jeremy Williamson, Jr.
1456 East Raybourne Road
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March 6, 1985

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Sincerely,

John L. Spokesman

The Spokesman

12 Bearing Street
Wheeling, W.VA 26005

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Product Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>AC 2345</td>
<td>Lace 26&quot; Breeze 10 Speed</td>
<td>$179.00</td>
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<tr>
<td>AB 240</td>
<td>Bicycle Rails For Two</td>
<td>$69.00</td>
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<td>AB 100</td>
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Total Order: $234.78

To: Weinmann, USA
88 Skid Row
New York, NY, 11103

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<td>1</td>
<td>$5.45</td>
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<td>2</td>
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<td>$10.90</td>
</tr>
</tbody>
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Amount of Purchase order: $17.05
Sales Tax: $1.12
Total Amount of Purchase order: $18.17
Introducing FileMaker.

Because just having information isn't enough. You have to be able to do whatever you want with it. Arrange it. Rearrange it. Massage it. Embellish it. Make it into something you can use. Easily.

FileMaker™ lets you not only store and organize your business information, but manipulate it in limitless ways, to create literally any kind of form or report you want.

First of all, FileMaker lets you change direction, any time, without redoing everything. It even lets you start out without a direction.

And in addition to doing all the meat-and-potatoes things a database is supposed to do—calculations, summary reports, sorting of all kinds—FileMaker does everything you bought your Macintosh™ for. Text editing. Graphics. Pull-down menus. Keyboard commands. Windows. Different fonts, styles and graphic design tools. Your information not only makes more sense, it makes an impression. Any kind you want.

With FileMaker, you can even design your own data entry forms, so you can put information in any way you want, without arbitrary limitations. And of course, it does all the tricky little things automatically... like indexing every word, number and date for speed searches.

Because you design your output right on the screen, you can see exactly what you (and your customers) are going to get. And you can create any number of forms for your information to take.

So what might have been a dreary order acknowledgement can now be a clear, friendly letter. Or it can be a meaningful comparison of inventory by vendor. Or parts lists, receiving verifications, purchase orders, labels, name badges, rosters and hit lists.

With FileMaker, you can pick up from other programs, like MacWrite™, MacPaint™, MicroSoft Plan™, Jazz™, and share the applications you've created with other members of your team. You get all the tools you need to easily consolidate group efforts into one database.

And FileMaker takes full advantage of the Macintosh family, including the Macintosh XL™, Macintosh Office™ and LaserWriter™.

So for $195 (suggested retail), things could look considerably better for your entire division, department, professional practice, retail operation, club, organization, or principality.

Contact your Macintosh software dealer for a demonstration, or call 1-800 MACWARE to find out where you can get FileMaker in your area. From Forethought, Inc.
Break the routine. Give your serious side time off. All without leaving your desk. With MouseStick™ from Video 7™.

Mastery from the masters
MouseStick is the original joystick for the Macintosh™. And it's from Video 7, masters of video enhancements for Apple™ computers.

Friend, not foe
MouseStick works with any software on any size Macintosh. It's armed with a dual plug, so mouse and MouseStick take you from office to castle and back, without even flipping a switch.

Escape with MouseStick
So get MouseStick for your Macintosh. And give your serious side a break.

MouseStick. From Video 7.
Call for the dealer nearest you: (800) 238-0101, in California, (408) 943-0101.

MouseStick includes a joystick and the MouseStick interface which is compatible with any Atari™ joystick.

MouseStick is a trademark of Video 7 Inc. Apple is a registered trademark of Apple Computer Inc. Macintosh is a trademark licensed to Apple Computer Inc.
Introducing the State of the Art of Persuasion.

PageMaker Desktop Publishing.

No matter what business you're in, you're in the publishing business. Because what you've got to say has to catch someone's eye before it gets read.

That's why we invented PageMaker.

PageMaker can give any document—proposals, presentations, price lists, newsletters and spec sheets—the eye-appeal and attention-getting clout of professionally designed and typeset publications. Without the time or expense.

So they get noticed.

And because PageMaker software works with Macintosh,* you know it's very easy to use.

Learn more about how PageMaker can turn your Macintosh into a low-cost, in-house publishing center that speaks up for you and your company. See your Macintosh dealer for details today. Or call (206) 467-0165.

PageMaker is a trademark of Aldus Corporation.

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Arch News

Value is what the 1985 SOA National Seminar in Atlanta is about — and it's what you'll find in greater quantity and greater quality than ever before at the convention's 1985 SOA Exhibit of New Technology and Products.

The biggest convention exhibit in SOA history will present you with a demanding challenge: Find a way to decide which products, services and technologies you want to learn more about.

Computer Technology

Software, Hardware

Contract Furniture

Interiors, Exteriors

Practice Systems

You'll find it all, plus a convention schedule that lets you see it all, at the 1985 SOA Display of New Products and Design.

The Art of Dormers:

A retrospective look at 19th Century dormers at the Seattle Architectural Gallery through January 12.

"Architecture...has its own validity. It needs no defense to other disciplines to make it valid, or to justify its value.

—Philip Johnson

Master Architect

The man featured in this month's issue may well be one of Vancouver's best kept secrets. You may not know his face, but if you live in Vancouver you know his work - that is, if you've ever visited Simon Fraser University, The Museum of Anthropology, Robson Square, or the Law Courts, or number of other offices, commercial and residential. The man is Arthur Erickson, Architect, and he has called Vancouver home for most of his life.

While the layperson may not recognize his face or name, during a remarkable and prolific career spanning more than 30 years, Arthur Erickson has received dozens of honorary degrees and virtually every major professional and personal award. To list them all would take pages, but they include the Man of the Year award, 1972; the Tau Sigma Gold Medal for excellence in Design.
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QUICKWORD™

The First Product for the Macintosh that Dramatically Reduces Your Typing Time...Even If You Don't Type!
Quickword is a remarkably powerful word processing expander that sets MacWrite or Word on its ear while saving you lots of time!
Now typing 2,4,6-Dimethylbenzoxide, “For the party of the first...” or “Sincerely yours,” can be as easy as typing an A, B, or C.
Quickword lets you create multiple abbreviations tables for phrases of up to 50 characters. Whether speed typed or thoughtfully entered, Quickword will translate your abbreviations “on the Fly” into their full meaning within your documents.
So if you’re interested in cutting your typing time in half, see your authorized Apple Computer dealer today. You’ll wonder how you ever got along without it.

Requires a 128K, 512K or XL Macintosh
Price: $59.95

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QUICKPAINT™

The amazing MacPaint™ expander that will never leave you at a loss with pictures.
Quickpaint™ lets you browse through entire volumes of MacPaint™ drawings in minutes rather than hours. Simply use Quickpaint’s™ “miniview” feature to locate any of the drawings that come with Quickpaint or to find drawings from any other popular clip art product. Then blow it up for full screen viewing and editing. You can cut, paste, edit and erase selected parts or copy the entire picture into other drawings or documents. And Quickpaint™ does this all from whatever application you’re working in!
To see how Quickpaint™ can help enhance the state of your art, stop by your authorized Apple Computer dealer today. You’ll wonder how you ever got along without it.

Requires a 128K, 512K or XL Macintosh
Price: $49.95

For the name of your nearest Quickword™ or Quickpaint™ dealer call (800) 556-2283.
For more information call (415) 543-7644

EnterSet, Inc. 410 Townsend Street San Francisco, CA 94107
Circle 218 on reader service card
Letters

Haunting Memory
I recently had my Mac upgraded to 512K by MassTech and am very pleased with both the quality of the workmanship and the service. I do, however, have some misgivings.

In the weeks since I had the upgrade done, I have twice read about an upcoming ROM upgrade from Apple. Having saved a few hundred bucks by not getting the Apple upgrade, I now fear that when the ROM upgrade comes, I'll have a digital board that will not be accepted as a trade-in.

Obviously, only Apple Computer will be able to offer the ROM upgrade. I cannot believe that Apple will accept boards that have been modified by another company in exchange for factory-built boards with the new ROM. On the other hand, if dealers will be able to replace the ROM in their own shops, I probably don't have anything to worry about.

Warren Michelsen
Page, Arizona

The Price of Piracy
The computer industry is going to have to do a better job of dealing with software piracy. Most of us have enjoyed the use of an unauthorized copy of a program and won't think twice about doing so until the benefits and costs of piracy change. The friendliness of Macintosh software makes it rewarding to pirate because paper documentation is almost unnecessary. The practice of making unauthorized copies is so widespread that developers of the best software have no assurance of recapturing their investment. Developers who address the problem with copy protection only irritate users and don't really prevent piracy.

The only other solution is to put some teeth in the software copyright laws. A law with penalties of ten times damages and bounty of five times damages, with privacy protection, may be draconian, but it would be acceptable if it allowed us to get what we really want at a price we can afford.

If piracy is almost eliminated, the software industry needs to adjust its marketing strategy with a two-tiered pricing and licensing policy for business and personal users. The software industry makes money in the business sector, and most pirated software is for personal use. Most nonbusiness users can't justify paying the high prices that are profitable for developers. Together, a two-tiered policy and tough legislation would improve the income of developers and the productivity of users by protecting copyrights, opening up the legal market, and making obstructive copy-protection schemes unnecessary.

Russell P. Davis
Virginia Beach, Virginia

Disks of No Return
Can you believe Microsoft's contest (Macworld, March 1985)? It only costs you a disk each time you enter. Microsoft could afford to return the disks and should, with copies of the winning programs. The contest appears to be a Microsoft scam to get free disks. Frankly, I'm embarrassed that a company like Microsoft would offer such paltry contest prizes. The total value of the non-Microsoft prizes is less than $7000, retail. Hence, after a mere 1750 entries, the company is making money. Perhaps your disk will be put to good purpose after Microsoft erases the program on which you so patiently labored.

Gary Torgimson
Seattle, Washington

Room to Review
I received the March issue of Macworld and was once again disappointed by the small number of product reviews. I am upset particularly by the lack of coverage given to application programs because a magazine such as yours is the only way I can get an objective evaluation.

Considering all the blank space in your magazine, I would think it would be easy to fit more reviews into the same number of pages. If something has to go, I for one could do without reviews of games, the philosophically oriented columns, and the articles about how people are using Macintoshs.

Robert L. Myers
St. Paul, Minnesota

Your point about the need for more product reviews is well taken. In fact, a new Macworld department dedicated to reviews begins next month.—Ed.

Most Likely to Succeed
Today I read "Macs Are for Kids Too" (Note Pad, Macworld, March 1985). I am a 9th-grade student taking art and technical drafting as elective courses, and I would like to inform you that we have one Macintosh in each of those classes.

In drafting I am doing a project on the Mac that I did earlier on the drawing board. The Mac drawing will be used by my teacher in comparison with the pencil drawing for a computer progress report that he must submit at the end of the year. Although I am very familiar
Macccessories 16 ways to improve the performance of your Macintosh.

Macccessories from Kensington Microware—an entire family of products to enhance your Macintosh. Macccessories make your computer more convenient. They increase your system's flexibility. And they protect your investment.

1 **Control Center**

Organizes all your power needs. Styled to fit underneath your second disk drive, it provides fingertip control over your whole system. There's a master switch to power the whole system on and off, and individual switches for a printer, modem and one auxiliary device. And Control Center protects your entire Macintosh system from damaging power surges, line noise and static shocks.

2 **Surge Suppressor**

Portable protection for a travelling Macintosh. Surge Suppressor replaces your power cord, providing UL listed surge suppression and line noise filtering. It's light and fits easily into your carrying case.

3 **Universal Printer Stand**

Raises your Apple® Imagewriter® at a slight angle so you can monitor its performance more easily. It solves the problem of where to store paper—several hundred sheets are accommodated neatly underneath. (Also fits most other dot matrix printers.)

4 **A-B Box**

If you want to take advantage of the AppleTalk™ network, a LaserWriter™ printer or a hard disk in addition to your Imagewriter and modem, you'll have three peripherals competing for the two serial ports on your Macintosh. The A-B Box gives you the extra serial port you need. Just plug two of your peripherals into the A-B Box and plug the Box into one of your Macintosh serial ports. Then simply divert your data output to the peripheral of your choice—press A to send to one, B to the other. Fits perfectly underneath your external disk drive.

5 **Tilt/Swivel**

Gives you the flexibility to tilt and swivel your Macintosh to the viewing angle most convenient for you.
6 Polarizing Filter

A safe, clean place to keep your Mouse when not in use. Attaches to the side of your Macintosh. Fits under the Maccessories Dust Cover.

7 Disk Case & Disk Pocket

Provides safe storage for 36 Macintosh disks. Comes with a packet of spare disk labels. Also includes a handy Disk Pocket for safe transportation of up to 5 disks.

8 Dust Covers

Protect your system from the elements. Anti-static dust covers for Macintosh, Macintosh XL, ImageWriter and External Disk Drive.

9 Mouse Pocket

A full year’s supply of the cleaning materials you’ll need to keep your mouse rolling at top speed. Also includes the Mouse Pocket.

10 Mouse Cleaning Kit

A full year’s supply of the cleaning materials you’ll need to keep your drives running smoothly.

11 Disk Drive Cleaning Kit

A collection of over 250 professional illustrations, covering everything from business to holidays. Use them for reports, newsletters or greeting cards. Graphic Accents are stored in standard MacPaint™ files, for ease of use.

12 Graphic Accents

Also available:

13 Professional Type Fonts

Stylish after the most popular typefaces in the publishing industry. Type Fonts for Text contains 16 fonts in sizes 12 to 24 point. Type Fonts For Headlines (for the 512K Mac) contains the same fonts in sizes 24 to 72 point. Including versions of Times Roman, Helvetica, Optima, Futura, and a dozen others.

For more information, contact Kensington Microware, 251 Park Avenue South, New York, NY 10010. (212) 475-5200. Tlx: 467383 KML NY.

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Circle 11 on reader service card
Accelerated Enthusiasm
My first serious introduction to the Macintosh was through the premier issue of Macworld. As a graphic designer I am very critical of printed material. Visually, Macworld is fabulous. When it arrives at my office, everyone stands around waiting for me to unveil it. The covers are beautifully executed, and the reader is immediately drawn to the key topics. And its oversized format is a definite plus, making it easily recognizable on any magazine rack.

Typography is an important element to Macworld, exemplified by the consistent balance of size, weight, and style in all aspects of text, headlines, and graphics. The flush-left, rag-right copy adds to the friendly-quality inherent in the Macintosh. Justified type would seem rigid and formal. The matte paper on which Macworld is printed is a refreshing change from conventional glossy stock. As for the interior of the magazine, a commendable integration of editorial and visual content is apparent throughout.

Lisa Marks-Ellis
Evanston, Illinois

Apples and Oranges
We've all heard the praise heaped upon the Macintosh since its introduction. Now it's time to hear about a lesser-known machine, one that I call the MacLemon.

I'm quite qualified to write about the MacLemon. I have one. During the past nine months I have had a bad speaker, a bad logic board on the Imagewriter, the CRT replaced, a dead mouse, and three power supply modules; now I'm attempting to figure out how I can get around melting and then bending the arm on each new ribbon cassette I buy so I can feed cut-sheet paper. Currently the cassettes press against the platen, blocking the paper path. Of course, this situation is unique to the MacLemon.

I know I will continue to hear how fantastic the Macintosh is. But remember: every time you turn on your marvelous machine, there are a few poor souls who have the MacLemon, who know what courage it takes just to flip on that little power switch.

Daniel Nign III
Sierra Madre, California

Think, Don't Drive
Apple doesn't know how to sell Macintoshes. Unfortunately, but true. Other computer companies don't know how to sell computers either. Computer companies are selling computers the same way you sell a car. The emphasis is on engineering and appearance.

Because of the way computers are promoted, most people are making purchase decisions...
Amazing what goes into Macintosh these days.
Macintosh and IBM PC software. Compatible at last, thanks to MacCharlie, a rather innovative coprocessing system.

And imagine the consequences. Nearly 10,000 IBM PC software programs designed for general business and specific applications in real estate, insurance, law, medicine, banking, etcetera, can now join forces with Macintosh’s own popular programs.

And, the myriad of IBM PC-compatible software adopts Macintosh’s many beloved features, including desk utilties such as the clipboard and the calculator.

In addition, MacCharlie allows IBM PC and Macintosh data files to be exchanged. Talk about flexibility.

But the good news gets better. You see, MacCharlie delivers hardware compatibility, as well. For example, IBM letter-quality printers can be easily used with Macintosh.

Furthermore, MacCharlie now allows Macintosh to perform virtually any networking an IBM PC can perform. Even to the extent of tying in with IBM mainframes.

In other words, your networking capability goes beyond the Apple family.
How does it happen? As easily as slipping on penny loafers.
In mere moments, MacCharlie combines the best features of the world's premier personal computers.
And despite the fact that it turns one computer into two, MacCharlie adds but a handful of square inches to Macintosh's physique.
In short, one of life's most perplexing decisions—whether to buy a Macintosh or an IBM PC—can now be made with the greatest of ease.
Ask for MacCharlie at your local computer store. Suggested retail price for the 256K single disk drive model is only $1195, and just $1895 for the 640K dual disk drive version.
For more information, call Operator 15 toll-free, 1-800-531-0600. (In Utah, call 801-531-0600.)

MacCharlie offers 256K RAM, with optional upgrade to 640K RAM: 360K disk drive, and optional second disk drive.

MacCharlie 
THE BEST OF BOTH WORLDS.
MacCharlie is a product of Dayna Communications, 50 S. Main, Salt Lake City, Utah 84114

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Circle 232 on reader service card
Letters

backward. First they look for the machine that is most powerful and comes with a good maintenance contract. Then they buy the most recommended or popular software. Finally, they take it all home and try to learn how to use the computer. That's where the problems begin.

The choice of which computer to buy should be the last decision, not the first. People should first examine how they think, write, and analyze and work with data. Next they should pick the software that best fits their personal cognitive style. Only then are they ready to pick the hardware to run the software. Your brain has an individual bias in the way it perceives, stores, processes, and transmits information. Your computer had better be brain-compatible or you are fighting yourself.

Software designers and computer companies haven't done a very good job of matching their products to people's cognitive styles—except Apple, which has two kinds of computers that could cover the spectrum. But Apple doesn't know how to market its computers.

People in the industry talk about "user-friendly" characteristics, but primarily in the context of person-machine interface. I'm talking more about a brain-program interface. People should no longer have to change the way they think in order to use a computer and its programs. A computer doesn't have to be an electronic brain, but it should present information in ways that can easily be appreciated by the brain.

The potential of the Lisa/Macintosh technology for cognitive compatibility has never been described in an Apple ad. I hope that Apple will quit emulating the advertising used by other computer companies. People should be given the kind of information that they need to make the right decision for themselves.

Loren D. Crane
Kalamazoo, Michigan

Xtra Lamentable
My office was an early purchaser of the Lisa (back when it was $10,000), and we have many important applications on the basic Lisa tools. About six months ago we bought a 2/10 upgrade in order to take advantage of the purported greater speed and so that we could use MacWorks, gaining access to the software being created for the Mac. The upgrade has been a disaster, and Apple deserves to be publicly lambasted for it.

As it turns out, very few Macintosh programs can work at all on the Lisa with MacWorks. Additionally, something about either the upgrade hardware or the 7/7 software causes the machine to deteriorate over the course of a few weeks into a useless blob. The problem starts with absurdly slow printing in both the Mac and Lisa modes and degenerates to crashing the Profile (the Lisa hard disk) and crashing under every Mac program. Continued attempts by the dealer to repair and replace hardware elements, along with a new version of the 7/7, have helped for only a few weeks before the degeneration resumes.

I am thoroughly disgusted. One of the major reasons I purchased a Mac so quickly was so I could use it with our Lisa. Considering my experience, I now remain committed to Apple only for financial reasons.

Robert W. Gilstein
Lakeville, Massachusetts

Letters should be sent to Letters, Macworld, 555 De Haro St., San Francisco, CA 94107, or sent electronically to CompuServe 70,701,702 or The Source BCW440.

AN ERGONOMIC WORKSTATION FOR MACINTOSH® THAT MEANS BUSINESS

Ergotron's new MacTilt™ is the professional ergonomic workstation that provides the utmost in operator flexibility and viewing comfort. With a silky-smooth, one hand motion, your Macintosh can be adjusted to relieve operator stress, ease neck, back and eye strain, and increase productivity. A special bracket is provided to mount your external disk drive providing additional convenience and savings in desk space. The MacTilt by Ergotron® elevates the Macintosh approximately 4", and provides 30° tilt/360° rotation at the touch of a finger for only $99.95. If you would like to receive more information on this exciting new product visit your Apple Computer Dealer or contact Ergotron at (800) 328-9839.

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PO. Box 17013 • Minneapolis, MN, USA 55417

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32 July 1985
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AND STAY ORGANIZED FOREVER.

Quickset. The complete multifunctional desk manager and organizer designed specifically for the Macintosh. It works the same way that you and your Mac do. With icons, words, numbers and symbols.

New Power For Your Mac
Quickset works concurrently with most other Macintosh programs. You won't have to interrupt your work-in-progress to schedule a meeting, jot down a fresh idea, or pause to figure out how much you still owe on your yacht.

There's Flexibility
Quickset works where and when you want it to. Its modular design allows you to customize the Quickset applications according to the demands of your work.

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Quickset's Notefiler, Cardex and Calendar all come complete with their own individual set of icons to reference and index all of your personal information, reminders and notes. Scheduling events, categorizing notes and indexing rolodex entries is now as easy as clicking an icon.

Numbers and Symbols
Two professional calculators with several built-in financial and statistical functions that let you set the precision, select the mode and perform calculations such as Internal Rate of Return, Net Present Value, Amortization, Standard Deviation, Linear Estimation, etc. All at breath-taking speed.

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Keep any file from any Macintosh program "leak" proof with Quickset's Encryptor. More than just a simple password device, the Encryptor is a sophisticated no-nonsense approach towards information security.

Start getting organized forever
Try out Quickset at your authorized Apple Computer dealer today. You'll wonder how you ever got along without it.

Requires a 128K, 512K or XL Macintosh Price: $99.95

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For more information call (415) 543-7644.

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Circle 251 on reader service card
How to design and produce the perfect page in 15 minutes

Get ReadySetGo™. Because ReadySetGo automates page design and production, turning your Mac into a professional publishing system.

It's ideal for any project requiring page layout, like a presentation, newsletter, report, form, flyer, slide or ad.

Build pages dynamically from blocks containing text or graphics. Move the blocks around the page and resize with the mouse. There's a ruler for visual positioning but a unique specification sheet gives each block's exact design and allows very accurate positioning not possible with the mouse alone.

Keyboard text from scratch or bring it in from other Mac programs. Either way, you get full text editing features with the ability to change font, style and size at any point. ReadySetGo supports all Mac fonts including real typefaces like Times™ and Helvetica™ and all sizes 1 thru 99. When you edit text or resize a block, the display instantly updates and text automatically refits the block.

Use graphics blocks to make frames, solids or pictures. And bring in graphics from other Mac programs. Move and resize graphics blocks just like text blocks.

ReadySetGo requires a 512K Mac. ReadySetGo and “The Ultimate Page Processor” are trademarks of Manhattan Graphics Corporation. ImageWriter and LaserWriter are trademarks of Apple Computer, Inc. Times and Helvetica are trademarks of Allied Corporation.

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...and a page you can use to share your ideas

"The only software product I would have paid more for."
Nancy Taub, Manager Technical Documentation, Chemical Bank, New York, NY

"The program encourages good design by making it almost effortless to create and modify page layouts."
Brian Arel, Graphic Design Consultant, Fitchburg, MA

"I use ReadySetGo regularly for my newsletters...it's remarkably easy to use and it's simple to construct precise layouts."
David Kosiur, Research Geochemist, Chevron Oil, La Habra, CA

"What I appreciate most about ReadySetGo is the ease and speed of creating formats and the ability to insert photographs and immediately see them in place."
John Lutz, Director of College Printing, Dartmouth College, Hanover, NH

"As a graphic designer, I find the 'save layout only' option is a dream come true."
Jane D. Kunzman, Kunzman Studio, Somerville, NJ

"For me ReadySetGo marks the beginning of the 'personal publishing' revolution."
Tony Gluck, President, Libra Press, London, England

The Ultimate Page Processor™

Attention ReadySetGo users! We're considering publishing a ReadySetGo users newsletter on this page, featuring you, your ReadySetGo projects and tips on page processing. Please send your ideas and suggestions to Manhattan Graphics, 163 Varick Street, New York, NY 10013.

Circle 2 on reader service card
"Good grades."

The report cards are in. And OverVUE has earned high marks among databases for its mind-boggling speed, its incredible range of features and its amazing power. Now we could elaborate on these things ourselves. But we figure you'd rather hear it straight from the experts who make out the grades:

April 1, 1985: "OverVUE is rich in features that rank it with the more sophisticated databases available for the Macintosh...the more we worked with it, the more we came to respect OverVUE's power and capabilities, not to mention its speed."

According to MACWORLD, January, 1985:
"OverVUE is a fascinating program. A cross between a database manager and an electronic spreadsheet....its ability to share data with Multiplan makes it a must for serious financial work."

A+ February, 1985 said:
"OverVUE is Macintosh software the way it was meant to be. ...Speed Demon....geared especially for lightning fast performance. ...Extremely easy to master.

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Apple placed OverVUE on its demanding "MUST BUY" List, November, 1984: "Does more with less effort than anything we've ever seen. ...A Gem."

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Macworld View

The Finder’s latest incarnation, COBOL comes to Cupertino, public-domain masterpieces, and more

Edited by Herschel Schmedick

The Macintosh community is expanding rapidly, and I’ve come across some interesting items to share with you. With over 300,000 Macs delivered and more on the way, I suspect that many of you have had some strange or enlightening encounters with the Mac. Or perhaps you’ve heard of someone else’s unique experience with the Macintosh. Your contributions are welcome. Macworld pays up to $50 for each item published. Send your contributions to Macworld View, 555 De Haro St., San Francisco, CA 94107. I look forward to hearing from you.

Lives of the Finder

I ran into Macintosh programmer Steve Capps about noon at Apple’s Cupertino headquarters, dressed in his usual jeans and white shirt and wearing his trademark raster shoes—canvas loafers with black and white squares resembling a raster screen. He had just arrived from an all-night session working on a new version of the Finder.

Before Capps releases a version of the Finder to his battalion of testers, he christens the program with a new name, such as Swizzle, Spandex, Sterno, Snufl, and Sysiphus. Capps says he had an unexplained preference for S’s while working on a new Finder. The prerelease version Capps demonstrated, named Stalemate, has several new features. Here are the highlights:

• The Finder I saw is much faster than the original version. Opening or closing an application from the desktop takes about 15 seconds compared to about 30 seconds with the old Finder. In addition there is a “quick” Finder called the MiniFinder. You can place up to 12 applications or documents in a special MiniFinder window. When you double-click on an application or a document (or select the file and click the Open button), the program appears on the screen in about 5 seconds.

• The File menu contains a New Folder command that, true to its name, creates a new folder. Since the Empty Folder icon no longer exists, you don’t have to make a copy of the Empty Folder to get a new folder.

• With the original Finder you had to display files as icons to move documents or applications around the desktop, put them in the trash, move them to other disks, or rename them. The new Finder lets you make those modifications from any of the View menu options.

• A Shut Down command in the Special menu ejects the disks in one or both drives and reboots the Mac in record time.

• The new Finder includes some shortcut commands. Holding down the Option key while you click the Clean Up command rearranges the icons, starting from the top-left corner, in neat rows.

Stay tuned for further lives of the Finder.
Mac to VCR Update

Unless you want to spend a lot of money, connecting a Macintosh to a VCR probably isn’t something you should attempt at this time. While several products are available that bring the Mac’s video signal to an external monitor, the video signal is incompatible with a VCR and, in fact, can’t be used with most low-resolution monitors.

The Mac’s video signal isn’t compatible with a VCR because the Mac’s horizontal scan rate is 22.25 kHz. In other words, the Mac beams a horizontal line of dots on the screen 22,250 times a second. Most standard monitors have a horizontal scan rate closer to 15kHz. If you connect the Mac’s video output to a low-resolution (12- to 15kHz) monitor, you end up with a blur on the screen, since many of the dots that make up the image don’t get displayed.

The easiest and cheapest method of displaying Mac screens on a VCR is to record them with a video camera. But be forewarned that you’re going to lose a lot of resolution, and the resultant image will lack detail.

The Mac’s screen can be displayed on a low-resolution external monitor by using a scan converter. Primarily because of the cost of $20,000 to $60,000, you don’t find these devices except in the hands of video professionals. Video scanners take a video input—say a screen image from the Mac—and store the image in internal memory or in a buffer. The image can then be sent out at a new scan rate, say to a VCR or another low-resolution monitor. Nice, but expensive.

But videophiles take heart. If you’re willing to wait, you can probably expect to see an affordable scan converter by the end of 1985 that will allow you to connect the Mac to a standard television monitor or VCR.—David Ushijima

Macintosh BASIC Book Blues

As I was sitting in my office one bright morning, itching to get outside, I received a call informing me that MacBASIC from Apple Computer would be delayed another few months. Glancing at my bookshelf, I spied two handsome books on MacBASIC: The Macintosh BASIC Handbook, by Thomas Backadar and Jonathan Kamin (Sybex), and Introduction to Macintosh BASIC, by Scot Kamins (Hayden). My sources tell me several other MacBASIC books, including ones by Emil Flock and Jim Heid, are stockpiled in the warehouses of unhappy publishers, waiting until the product reaches computer store shelves.

Publishers waiting in the wings with their wares should take note. According to Mike McGrath, senior editor of Hayden Publishing, “Sales for Kamin’s book, which was published in November, were super. In fact, the book outdistanced our sales projections. I have to believe that there is a lot of pent-up demand for the language.”

Hopefully, the people buying those books and coincidentally waiting for the program to be released won’t lose their appetites.
The Mac Goes to Camp

Swimming in Lake Michigan or visiting a castle in Switzerland may be your idea of the ideal summer camp activity, but for many kids the attraction this summer will be computers.

Six years ago Lowell Carmony started a computer camp with Apple IIs at Lake Forest College in Lake Forest, Illinois, on the shores of Lake Michigan. This year he is adding the Macintosh to the curriculum. The camp offers one-week sessions for 50 to 60 boys and girls aged 10 to 16.

Since most of the students who attend the camp are interested in programming, Carmony plans to teach Microsoft BASIC and MacPascal. Although athletics are a part of the day's activities, Carmony claims athletics have to be required to get the kids outside. A standing joke among the teachers is that the students' idea of the optimal computer camp "would be a room full of computers with some sleeping bags, and pizzas served every 6 hours."

Susan Riskind, director of Compute Camp International, is running the first residential computer camp in Europe. Macintoshes, instructors, and approximately 50 boys ages 14 to 17 will set up camp at the Institut Montana in Zug, a town 18 miles south of Zurich. The course, which will be taught in English, introduces the students over a three-week period to programming, graphics, databases, spreadsheets, and word processing.

When asked why she chose the Mac, Riskind replied that she thought "the kids could learn on it quickly and pick up the kinds of computer skills they would need for academic work."

Next year maybe she'll allow girls to attend the camp as well as boys.

She plans to set up a corporate office in Neuchatel, Switzerland—a high-tech area—and offer computer camps and instruction to adults. If you're interested, contact Lake Forest College, Sheridan and College Roads, Lake Forest, IL 60045, or Institut Montana, 6316 Zugerberg, Zug, Switzerland.—Janet McCandless

Banking on the Mac

Bankamerica Corporation's subsidiary Seattle First National Bank (Seafirst) recently purchased 1000 Macintoshes for its 167 offices. When asked why Seafirst chose the Mac when the bank was already using IBM Personal Computers, Timothy Turnpaugh, senior vice president and manager of operational technology, responded, "Economics and economics." Turnpaugh's aim is to arm every professional at Seafirst with a computer that's easy to learn, and he says the Mac is the linchpin of that strategy. Switching from PCs to Macs lowers the cost of training employees to use computers, and Turnpaugh does not have to be concerned with turning bankers into computer technicians. "Most people want to use a tool to get the job done and then move on to the next problem they have to solve," Turnpaugh says.

A San Francisco branch of Seafirst's parent company, Bankamerica, is evaluating the Mac as a tool for its middle managers and may similarly purchase the Mac in large quantities. No doubt Apple is counting on these corporate purchases in its effort to establish the Macintosh Office.—Janet McCandless
In the Public Domain

Having put a lot of time and effort into their masterpieces, many generous Multiplan, MusicWorks, or WhatHaveYou experts like to see their creations used and admired by others. Thus, many of the "programs" in the public domain are not programs at all, but templates for commercial software.

If you are well organized (or want to be), Club Mac's bulletin board contains a home budget template on Microsoft's Multiplan that can help you stay—or get—that way. The file name is BUDGET.MMP of MAUG on CompuServe contains a Multiplan payroll template for small businesses. To find the file, type the keyword payroll at the /KEY: prompt.

Looking for new ways to use Filevision or for sophisticated examples you can use to improve your Filevision database? Some of the most interesting and unusual Filevision templates are being circulated by the program's manufacturer, Telos Software, and are available from many user groups, bulletin boards, and computer stores. The templates include many types of "maps" (from the locations of toxic waste sites in Michigan to the layout of the piano keyboard), organizational charts, and visually oriented versions of traditional filing problems.

Files for MusicWorks practically overwhelm MAUG's Data Library 4. They range from the sublime (a segment of Mozart's Clarinet Concerto in A Major, transcribed by Mark H. Kogan) to the ridiculous (Tiny Tim's "Tiptoe through the Tulips," transcribed by Rick Connolly).

The most visually satisfying templates, however, are MacPaint documents found in MAUG's Data Library 4. One is a file of four cassette tape labels, all carefully measured and drawn by David Eilers; use the keyword cassette to find it.

Bart Thomas and Paul Dobbs created a similar template for Mac disk labels. Their MacPaint files located with the keywords label and labels, provide disk labels decorated with appropriate graphics and with titles written on the front, back, and spine. — Robert C. Eckhardt


Quotations

A phrase often quoted by programmers: "If you come across a bug you can't fix, call it a feature."
Beauty and the Beast

For the marketing wizards at Apple, who are looking to outwit IBM's formidable legions of salespeople and get Apple's wares into corporate America, it must have seemed like a match made in heaven when Micro Focus announced that it had wedded COBOL (Common Business Oriented Language) to the Macintosh.

People who rate computer languages usually place COBOL somewhere between Frankenstein and Godzilla. They note that this monster was created in the late fifties by something even worse than a mad scientist—a committee of business executives, bureaucrats, and generals plus a few computer scientists. Instigating and leading the fateful endeavor was software pioneer and naval officer Grace Hopper, who, recognizing the need for standardization in government computing, led the committee through the herculean labor of creating a new computer language.

Three decades later, Commodore Hopper's brainchild seems to have survived—nay, thrived. COBOL truly lords it over the world of corporate computing; by one estimate, 90 percent of all business applications are written in COBOL.

A strange match indeed: COBOL, the epitome of hulking, horn-rimmed, fifties-style computing, meets the eighties' debutante from Cupertino. But people at Apple don't seem concerned about a mésalliance. Consider the official response of Apple manager Dan Cochran as a study in understatement: "We expect Mac COBOL to give Apple the additional leverage we need in the business/government marketplace and to reinforce the other elements of Apple's Macintosh Office concept." —Ted Nace

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Macworld View is adding a regular feature to its pages, Macworld's Top 10 Best-Selling Business Software chart. Research for the chart is conducted by InfoCorp of Cupertino, California. To collect the data, InfoCorp researchers survey computer retail store owners each month about the best-selling Macintosh business software. The data gathered reflects the number of units sold of each program. MacPaint and MacWrite do not appear on the list because they are usually included with the purchase of a Macintosh.
How to Keep Your Macintosh from Frying to a Crisp

Protecting Your Hardware
From The 6,000 Volt Destroyer

Over 50% of all hardware and software complaints received by manufacturers have nothing at all to do with product quality. To the contrary, most damage reported is caused by surges in household or business current.

These surges continually degrade sensitive microcircuitry resulting in lost data and, even worse, computer repairs that are often mistakenly blamed on original equipment failure.

30,000 Volts At The Tip Of Your Finger

Another common danger to the computer, its peripherals and software, is static electricity. Few people realize that their bodies can carry as much as 30,000 volts of static.

The discharge of static electricity through the operator’s fingertips can pose just as great a threat to your system as power line surges.

The Faulty Ground

In addition to operator safety, a properly grounded computer is better able to drain off charges that would otherwise create dangerous voltage levels between the computer’s chassis and microcircuitry. Again, the operator is typically not aware of whether the outlet is properly grounded and therefore risks both the operator’s safety and hardware damage.

RFI Can Play Havoc With Your Image

While RFI (Radio Frequency Interference) is not a source of damage to computer or operator, it can play havoc with the monitor image and to software. RFI is caused by nearby radio stations, the operator’s own radio or television, as well as other electrical devices. RFI shows up on the monitor as a scrambled image and may also appear as data that has been garbled while in memory. If for no other reason, the computer operator should guard against RFI simply because its effect can nullify the time saving benefits provided by the computer.

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Circle 268 on reader service card
Jeremy Joan Hewes

In certain ways, writing is like building a house. The writer's ideas and words are like the carpenter's blueprints and materials, and each artisan learns precise skills in mastering his or her craft. The tools a writer uses—like those of a carpenter—can be fundamental or highly specialized, but the more sophisticated the tools, the easier it is to produce fine work.

For a distressingly long time, writing tools available for the Macintosh were strictly fundamental. The original tool, MacWrite, provides the basic text-handling operations, but using it for a complex writing task is like building a six-room house with only a hammer, nails, and a handsaw. In recent months, however, Macintosh software has increased dramatically in scope and selection. The writer's tool chest can now rival that of the well-equipped carpenter.

A Writing System

Of course a word processing program is the primary resource in the writer's tool chest, because you use it to write and edit text. But the writing process rarely begins or ends with you sitting at the keyboard, generating new prose or revising old work. For most authors, writing also involves dreaming up topics for new projects, gathering information from a variety of sources, trying to impose some logical organization on a diverse collection of facts and ideas, and—eventually—proofreading the final draft.

Fortunately, a number of application programs for the Macintosh automate the different stages of the writing process. The programs give you the ability to use the computer more productively and integrate it more completely into the task of writing than if you used a word processing program alone. Some programs, such as spelling checkers and thesauruses, work with files you've created with a word processor. Others, such as communications software and data management programs, create files that are initially separate from those in your word processing program.

By assembling a group of such programs, you can create a complete writing system flexible enough to perform chores that a word processing program is not designed to handle. The specific programs you choose depend on the type of writing projects you do. If you are writing a historical novel, for example, a data management program is an efficient tool for keeping events and characters in chronological order. Or if you must do extensive research, you can save significant time and trouble by searching vast sources of information in computerized databases with the Macintosh via a modem.

My own tool chest consists of four categories of programs, not including a word processing program, which is not discussed here. I don't use all the programs for every writing project, but some aspect of my work as a professional writer has benefited from each of these tools. Obviously, my choices do not include all the software that could serve as writing tools, but the four categories cover the major steps in the writing process.

Brainstorming

Usually, the first step in a writing project is generating ideas. Even though I frequently scribble an idea on a scrap of paper while I'm at my desk or in line at the post office, the time comes when I must put my ideas in logical order, preferably in a tidy and useful format.

An outline's traditional structure, with major ideas taking the leftmost position and successively less important ideas indented below, forces you to both capsule your thoughts and organize them in levels of coordination or subordination. Once completed, a
good outline is likely to make your writing proceed more quickly than if you simply started writing, and it can keep you focused on your chosen topic.

*ThinkTank* is a useful program for both brainstorming and producing an orderly outline of your ideas. The program comes in two versions; *ThinkTank 512* has some attractive features not included in its 128K counterpart. Both versions share the two features I find most useful: the outline format and automatic indentation (see Figure 1). Once you create an outline, *ThinkTank* lets you examine and reorganize your ideas by allowing you to expand, collapse, or move groupings of heads and subheads. By making it easy to carefully plan a written work, the program can help you avoid the rewrites and the false starts that result from poor organization and half-baked ideas when you're actually writing.

Although brainstorming with an outlining program may take some getting used to (as it did for me), I find that the opportunity—or necessity—to create a structure for an article or other project makes the writing go more smoothly.

**Gathering Information**

Most writing projects, large or small, fiction or nonfiction, require some research. Usually a writer goes to a library and manually searches through periodical guides, card catalogs, or microfilm to compile research materials. To save the time involved in this work, I frequently use one or more of the commercial database services for research tasks such as locating all the reviews of a certain computer program. These database services store information on large computers that you can tap into using a modem with the Macintosh. The services are excellent sources of specialized information in thousands of subject areas, and they are especially useful if you cannot conveniently get to a major library or if you need quick answers. (See “Combing the Electronic Archives,” *Macworld*, May 1985, for more about database services.)

Tapping a database service requires a modem and communications software. The program I prefer is *MacTep*, public-domain software available from many user groups, including MicroNet Apple User’s Group (MAUG) on CompuServe or Delphi.

Although its features are limited, *MacTep* is easy to use and lets you save files on disk for later editing, which is crucial to research and writing. Other suitable communications programs include *MacTerminal* and *Smartcom II*.

**Getting Organized**

Just as a word processing program stores text, moves it around, formats it, and prints it, a data management program provides structure and easy access to a wide variety of words and numbers, collectively known as a database. Although this type of software is often described as complex and difficult to use, a simple data management program can be highly effective for taking notes, storing random thoughts and ideas, and later combining or reviewing the items on a particular topic.
### Tools of the Trade

<table>
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<th>Address/Location</th>
<th>Contact Information</th>
<th>List Prices</th>
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<tbody>
<tr>
<td>ThinkTank</td>
<td>Living Videotext</td>
<td>2432 Charleston Rd.</td>
<td>Mountain View, CA 94043, 800/822-3700, 800/443-4310 or 415/964-6300 in California</td>
<td>$145, $245</td>
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<tr>
<td>Smartcom II</td>
<td>Hayes Microcomputer Products</td>
<td>5923 Peachtree Industrial Blvd.</td>
<td>Norcross, GA 30092, 404/449-8791</td>
<td>$149</td>
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<tr>
<td>Factfinder</td>
<td>Forethought</td>
<td>1973 Landings Dr.</td>
<td>Mountain View, CA 94043, 415/961-4720</td>
<td>$150</td>
</tr>
<tr>
<td>Filevision</td>
<td>Telos Software Products</td>
<td>3420 Ocean Park Blvd.</td>
<td>Santa Monica, CA 90405, 213/450-2424</td>
<td>$195</td>
</tr>
<tr>
<td>MacSpell Right, The</td>
<td>Hayden Software</td>
<td>600 Suffolk St.</td>
<td>Lowell, MA 01854, 800/343-1218</td>
<td>$79.95</td>
</tr>
<tr>
<td>Microsoft File</td>
<td>Microsoft Corp.</td>
<td>10700 Northup Way</td>
<td>Bellevue, WA 98004, 800/426-9400, 206/828-8088 in Washington, Alaska, and Hawaii</td>
<td></td>
</tr>
<tr>
<td>MacTerminal</td>
<td>Apple Computer</td>
<td>20525 Mariani Ave.</td>
<td>Cupertino, CA 95014, 800/538-9696</td>
<td>$99</td>
</tr>
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If you were writing a term paper on endangered animal species worldwide, for example, you might use a data management program to record research on species, habitats, and other pertinent information. Once stored in the data management program, information can be sorted according to subtopics that refer to specific sections of your paper. Unlike a word processing program, a data management program can work as an automated set of index cards, easily assembled and reassembled as required.

One practical program for this purpose is Factfinder (see “Just the Facts,” Macworld, February 1985). Unlike most data management programs, which force you to fit information into a predefined format, Factfinder lets you take notes in free-form fashion on factsheets of up to four pages. When you want to collect the notes you’ve taken on a specific topic, Factfinder recalls related factsheets by searching for keywords that you designate (see Figure 2).

A few other programs deserve consideration if you create and manage images as part of the writing process. Filevision is a database program designed for graphic information, although it also stores a limited amount of text describing each image (see “Filevision: A Data Base in Pictures,” Macworld, January 1985). ThinkTank 512 allows you to store both text and graphics, and it offers an animation feature that lets you display a series of text or graphic screens at intervals as brief as ½ second. Finally, Microsoft File is a general data management program that stores pictures in addition to text and numbers.

### Getting the Words Right

Another excellent use of the computer’s power as a writing tool is to check the spelling in a written work. Although word processing programs help you create and format text documents, they can’t detect spelling errors. Instead of meticulously proofreading your work, you can use a spelling-checker program to compare every word in your document against every word in its dictionary. This process takes a matter of seconds and uncovers most, if not all, of your errors. Even if you’re an excellent speller, a spelling checker is worthwhile protection against the typing errors that seem to stumble into every writer’s work. It’s good practice to check the spelling in every document that represents your professional work.

The program I find most useful for this purpose is Hayden:Speller, which contains a 20,000-word main dictionary. It also provides a personal dictionary that stores words you mark for inclusion (see Figure 3). You can also create new dictionaries, using a word processing program and a utility supplied with Hayden:Speller, as well as edit any dictionary except the main one.
Getting Started

After a spelling check you can view suspect words individually in this dialog box, which offers you alternatives. Clicking the Lookup box lets you view words stored in the program's dictionaries that have similar spellings to the suspect word.

Figure 4
Figure 5

The program provides several options for spotting and correcting errors. For a quick check, Hayden:Speller can display or print a list of words that are suspect because they're not in any of the program's dictionaries. You can't correct words at this stage, but you can verify whether the suspect words are spelled correctly.

If you find a misspelled word or choose to bypass the list, you can go to the correction stage of the program. You have the option of checking individual words or viewing them in context. Either method lets you accept a word as it appears, accept it and add it to a personal dictionary, correct it, or postpone action. The program also allows you to display words from the main dictionary that most closely resemble the spelling of the suspect word (see Figure 4). I find this feature especially useful when I encounter one of those slippery words whose correct spelling often eludes me.

Hayden:Speller works with MacWrite, Microsoft Word, and other text files created with the Macintosh. Another spelling checker, Mac Spell Right, provides a dictionary of 40,000 words and a thesaurus of 15,000 words for use with MacWrite files. For use with Word files, The Right Word provides the same dictionary and thesaurus.

Mac Spell Right is less versatile and easy to use than Hayden:Speller, but it may be preferable for writers who depend heavily on a thesaurus. Like its spelling checker, however, Mac Spell Right's thesaurus is tedious to use. The thesaurus requires you to choose a word from its dictionary listing, select a category of related words, and view a third list, which finally provides the synonyms. For my time and money, a thesaurus in book form is easier to use and a far better resource than this program.

Organizing Your Tool Chest

Once you've chosen the programs for your writer's tool chest, you need to establish a system of handling and labeling files for quick identification. Every Macintosh application program is represented on the desktop by a unique icon, but I can't always remember which program an icon represents. With several programs and associated documents the identification problem is exacerbated.

Clearly labeling files can save you a great deal of time and frustration by helping you readily identify which files are products of which tools. Like most writers, I prepare two or more drafts before judging a written work complete. So I use file names that reflect both the draft number and the program name. My naming system identifies the program first, followed by the draft number and the name of the writing project (see Figure 5).

Brainstorming, research, getting organized, and checking your spelling may not cover every stage in the writing process, but clearly ample software writing tools are available. With my word processing program (I still use MacWrite), my four programs—ThinkTank, MacTap, Factfinder, and Hayden:Speller—constitute a powerful and complete writing system that meets my requirements. Of course, when software useful to writers in other, unforeseen ways becomes available, I'll be ready to add it to my tool chest.

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Jeremy Joan Hewes is a Contributing Editor of Macworld.
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No doubt about it, Macintosh is one great graphics machine. But until now, Mac graphics have been limited to what you can draw with a mouse and what someone else has put on a disk. Consequently, taking full advantage of Mac's graphics capabilities has been tough. But now there's ThunderScan. The new optical scanning device that lets you feed your Mac a steady diet of graphics that are useful to you.

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Get Info

Lon Poole

Macworld's tutor answers questions about the Finder, printing, and the keyboard

Get Info answers questions about the Macintosh and how it works. Most inquiries deal with application programs, but no topic is too elementary or too advanced. Discussions range from setting up the Mac to programming in BASIC and Pascal. So when you need advice about using the Mac, drop me a line. I cannot respond to individual letters, but I will answer the most representative questions.

What are those blank, featureless icons that sometimes haunt the desktop? Where do they come from? Where do they go? The answers lie with the Finder.

Also this month, the Finder lets you solve another riddle: how to print a series of documents at one time. And remember how easy it was on a typewriter to turn the paper sideways and type lengthwise on a page? One reader wonders if a way exists to do the same thing on a Mac. Another reader used the Set Startup feature of the Finder several months ago and has been happily bypassing the desktop ever since. Now he wants to bring back the desktop but can't figure out how to do it. And a couple of people have stumbled upon a quirk that makes the keyboard generate characters at an uncomfortably rapid rate. Finally, a reader from Norway has some advice for a reader from Chicago about the correct placement of the external disk drive.

Printable Broadsides

Q. I am trying to print a certificate wider than an 8½-by-11-inch piece of paper. On a typewriter I simply insert the paper crosswise in the platen. Is there any way to print extra-wide documents on the Macintosh?

H. W. Abraham
Fort Lauderdale, Florida

A. Choosing Page Setup from the File menu in most Mac applications lets you use a dialog box to pick a paper size and page orientation. Typically the application can adjust the printed document to fit four paper sizes. In addition you usually have three page orientation options: Tall, Tall Adjusted, and Wide. For the sideways printing you want, in which the top line of the document runs along the long edge of the page, choose Wide orientation. With Wide orientation you feed the paper in normally (not crosswise), and the Imagewriter prints sideways.

A few programs that have the Page Setup feature are MacWrite, Word, ThinkTank, Multiplan, and Helix. MacPaint, however, lacks Page Setup. To print a MacPaint document sideways, you must draw it sideways. A part of a MacPaint drawing that can be created only upright, such as text, can be selected with the marquee and then rotated sideways by choosing Rotate from the Edit menu.

Low-Profile Chain Printing

Q. I would like to print four or five small documents in succession rather than one at a time. Do you know a way to "chain" print using MacWrite?

Pat Chase
River Forest, Illinois

A. The Finder can instruct an application program to print a series of documents directly from a directory window, a folder window, or the desktop. You can even chain documents created by different application programs.

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the Shift key as you click on several icons. Then choose Print from the desktop File menu. The Finder opens the appropriate application for each selected icon and tells the application to print the document. The application needed to print each document must be present on one of the disks currently loaded in the Macintosh's disk drives.

Machine-Gun Repeating

Q. DDDDDedeeeeeeaaaaaarrrrr LLLLLooooonn,,,

The above is an example of what happens when I start to type after inserting any disk on which the keyboard touch and repeat rate are both set to 0 in the Control Panel. Instead of no repeat, I get too much. I can temporarily solve this problem by changing the repeat rate from 0 to 4 and back to 0 again. After that it's fine until the next time I start up the disk.

Where in the system does this strange behavior come from, and what can be done, if anything, to fix it?

Boyd Kendall
Los Alamitos, California

A. You and several others have discovered the undocumented Macintosh "feature" that Richard L. Voit of Chapel Hill, North Carolina, aptly calls "machine-gun repeating." Setting the repeat rate, touch, or both to 0 should disable keyboard repeat until you reset the rate or touch. It shouldn't matter what disks you eject and insert or whether you restart the Mac.

All the Control Panel settings and some other settings are kept in a dedicated section of RAM that's kept alive by the clock battery when the AC power is off. The battery-powered RAM contains the settings in a highly compressed form that is difficult to access. So every time you start up the Mac, programs built into read-only memory (ROM) transfer the settings to a part of regular RAM in a more accessible form.

When you restart the Mac, a quirk in one of the ROM programs changes the meaning of 0 settings for repeat rate or
touch. After restarting, a repeat rate of 0 means “repeat at top speed” instead of “never repeat,” and a touch setting of 0 means “repeat instantly” instead of “never repeat.”

You can partially circumvent the machine-gun repeat feature by setting the repeat rate to 1 and the touch to 0. Setting the keyboard touch to 0 disables keyboard repeat until you restart the Mac. Restarting reinstates repeating but at a tolerably slow speed, thanks to the repeat rate of 1. To disable keyboard repeat again, move the keyboard touch setting out of the 0 position and then back into the 0 position.

**Undo Startup Application**

**Q.** When I first began working with MacWrite, I decided to use the Set Startup command to have MacWrite automatically start up when I insert the MacWrite disk. How do I undo that?

Matthew DeMarco
Philadelphia, Pennsylvania

**A.** To change your disk so it starts up at the desktop instead of in MacWrite, make the Finder the startup application. To do that, get to the desktop by quitting MacWrite. From the desktop open the System Folder and select the Finder icon. Then choose Set Startup from the Special menu.

**Stacking Disk Drives**

**Q.** The external disk drive takes up a lot of room sitting next to the Macintosh. I’ve noticed that the cable on my external drive is just long enough so that I can put the drive on top of my Mac. I’ve also noticed that a lot of heat comes out the top of the Mac, though, and wondered if putting the drive up there would harm anything.

Dot Green
Chicago, Illinois

**A.** You can reduce the amount of table space the external drive occupies by setting it on its side. The drive should work reliably in that position, though inserting disks sideways does take some getting used to. Placing the external drive atop the Mac is risky; Tom Gilb of Kolbotn, Norway, relates his experience:

“Too save desk space, I tried putting my external drive on top of the Mac, figuring that since it didn’t block the air vents, no harm would be done. Then my four boys,
who all use the Mac for schoolwork and recreation, began to accuse one another of destroying their personal disks. Things got quite heated until I discovered that after the Mac had been on for a long time, the heat coming up toward the external drive was making their disks unreadable.

At first I thought the disks were permanently damaged, but when the drives cooled down and the external drive was placed back on the table, we managed to read the disks. So in spite of the temptation, keep the external drive off the top of your Mac.

**Generic and Name-Brand Icons**

**Q.** When I press ⌘-Shift-3 to take a snapshot of the Macintosh's screen in any application program except *MacPaint*, the Screen 0 document shows a blank icon. Later, when I copy the icon to my *MacPaint* disk and use *MacPaint* to work on some other document, the blank icon looks like a *MacPaint* document. Could you please explain what determines how an icon looks?

*Joan Nichols*

*Hartford, Connecticut*

**A.** The Finder is responsible for drawing icons on the desktop, but it contains images only for the folder, the Trash, the system document, a generic application, and a generic document. The Finder does not contain images for the unique icons that most application programs and documents use. An application such as *MacWrite* or *MacPaint* contains the icons for itself and for the documents it creates.

To understand how the Finder assigns icons, you need to know how a document and an application program are linked.

Each document and application program has two hidden attributes—four-letter codes called the Creator and the Type—that tell the Finder which icon to use. An application program's Creator attribute is a unique code such as MPNT, and its Type code is always APPL. A document's Creator attribute specifies which application program contains its icon. A document's Type attribute specifies which icon to use.

The Finder assigns icons in a logical way. It retrieves icon images for all the application programs and documents on a disk when you insert the disk. Rather than repeat the process every time you insert the disk, the Finder copies the icon images it retrieves into an invisible document called the Desktop file. Whenever the Finder encounters a document for which it cannot find a matching Creator application, it searches the Desktop file for another document of the same Creator and Type and uses that document's icon. If the Finder cannot find a matching application or document, it substitutes its generic document icon, which looks like a blank page with the right corner folded over.

If you copy a generic document icon to a disk that contains a matching application and open the application, the Finder replaces the document's generic icon with the correct one. With a two-drive Mac, the Finder replaces a generic icon on one drive with the correct icon from the other drive when you open the matching application.

A document's Creator and Type attributes do more than tell the Finder where to find the document's icon. The Creator attribute identifies which application the Finder must use when opening or printing the document from the desktop. For example, double-clicking on a document with Creator MACA opens *MacWrite*, which in turn opens the document. A document's Type attribute tells an application what type of information the document contains. Also, an application uses a document's Type attribute to determine whether it can open the document or not. For example, *MacWrite* can open a document only of Types WORD (a regular *MacWrite* document) and TEXT (a text-only document, without character styles or formatting rulers). In contrast, *MacWrite* cannot open Type PNTG, which denotes a *MacPaint* document.

Send your questions about the Macintosh, Mac applications, and Mac programming to Get Info, Macworld, 555 De Haro St., San Francisco, CA 94107. Send electronic mail to ComputServe 70370,702 or The Source BCW440.

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MIRAGE, Second Love, ea.
Networking Software So Simple To Use, It's Child's Play.

What do you think of when someone says "network"? Hardware? Complexity? Money? At TouchStone, we think networks should be simple.

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Making computers work together shouldn't be a problem. TouchStone's PCworks, UniHost, and MacLine software packages are only the first three members of The Connectables family. TouchStone is committed to the continued development of software products that solve compatibility problems. Even the problems we won't know about until tomorrow.
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Conceived at Cambridge University, Omnis is the best-selling database on the Apple II and Macintosh in Europe.

Powerful enough for American Express (UK) Security sensitive enough for Her Majesty's Secret Service, MI5. Easy, flexible, and inexpensive for small businesses all over Europe.

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A number of unique features enable Macintosh users to generate individualized, multi-user applications without intricate programming, or extended graphics sequences. Here's what Apple says about the top-end power of Omnis 3:

"The program's unique, user-defined pulldown menus, on-screen button commands, and Mac compatibility make it an outstanding database from which to develop vertical applications on Macintosh."

Guy Kawasaki
Software Marketing Manager
Apple, Macintosh Division

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(415) 571-0222

*Also available on Apple II and IBM PC™
# POWERFUL DATABASE IN AMERICA.

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<th>P</th>
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†Hierarchical file links can make handling of data faster and simpler.

*Numerically unlimited, but performance constraints do apply.

#Plus 60 additional temporary fields for each data entry & report format.

Note: Information for this chart was obtained directly from the companies involved.

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OMNIS

ORGANIZATIONAL SOFTWARE CORP.

A subsidiary of Blyth Computers Ltd.

2655 Campus Drive, Suite 150

San Mateo, CA 94403

Circle 38 on reader service card
Publishing Turns an Electronic Leaf
Countless times you've read a book, glanced at a magazine ad, or stared aimlessly at the packaging on your breakfast cereal. You probably don't think about the complex processes and careful decisions involved in arranging those words and pictures before you. But graphic designers and pasteup artists do think about such things.

Each page of this magazine was planned by a graphic designer and realized by a pasteup artist. To create an expressive and harmonious whole, the designer integrates the textual and graphic elements in the magazine by selecting, arranging, sizing, and combining. Initially, a draft layout of each page, called the dummy, is prepared. The pasteup artist then glues the headlines, text, captions, corrections, and graphic elements precisely into place to create the camera-ready version, which is sent to the printer.
Design and pasteup are accomplished with a drafting table covered by thick poster board, holding areas for typeset text and photostats of artwork, a parallel ruler and right triangles to make sure each element is properly aligned, and the ubiquitous X-acto knife for cutting in corrections.

You can do without all those tools with three programs—ReadySetGo, MacPublisher, and PageMaker—that turn the Macintosh into an electronic drafting table. The Macintosh design and publishing system—composed of a 512K Mac, the LaserWriter printer, and page-make-up software—has extended the low end of the typesetting and design aspects of the publishing industry. However, the system's output may not be high enough in quality to satisfy publishers who are accustomed to typesetting. Still, the quality made possible by these tools brings a professional typeset look to newsletters, flyers, résumés, and other printed materials.

I can't remember ever seeing three products with a common application—in this case assembling Macintosh text and graphics into pages—reach their goal in such different ways. Each program's approach positions it for specific page-make-up tasks. ReadySetGo is suited to the production of simple, single-page publications. MacPublisher is better able to handle complex, multiple-page layouts, though it can be a bit cumbersome. Although the most expensive, PageMaker is the easiest to use and the most capable, with the ability to read MacWrite, MacPaint, MacDraw, and Microsoft Word documents directly. Text and graphics created by other applications have to be imported into ReadySetGo and MacPublisher through the Clipboard, a tedious process in complex layouts.

ReadySetGo

Because of certain limitations, Manhattan Graphics' ReadySetGo deserves third place in my Hit Parade of three programs. The program does not, for example, let you lay out a newsletter in which articles begin on page 1 and continue on inside pages. Worse yet, the program displays only about half of an 8½-by-11-inch page at a time, and its scrolling method is awkward and slow.

ReadySetGo calls the elements that make up a printed page blocks and provides four block types: text, frame, solid, and picture. You use text blocks to type new text or to hold MacWrite or Microsoft Word text pasted from the Clipboard. Frame blocks are for drawing boxes, rules (straight lines), and borders in black and three shades of gray.

Solid blocks are used to draw boxes filled in with one of four patterns. You might use a solid block as a halftone window to indicate the position of a photograph. Picture blocks hold pictures that you paste from MacPaint or MacDraw or that have been created with a digitizer.

ReadySetGo lets you alter the appearance of text in text blocks with a choice of fonts, sizes, and styles. You can also change justification, line spacing, indents, and tabs. Make certain that text pasted from the Clipboard into a ReadySetGo text block fits in the block, because the program doesn't carry the overflow to another page.

You can change the position or proportions of any block. You reposition a block by dragging the upper border, and you resize it by dragging its lower-right corner. For more precise sizing and positioning, choosing the Edit menu's Modify command displays a dialog box that lets you adjust a block's size and location to within 1/10,000 inch—a bit of overlap, since even the LaserWriter's resolution is only 300 inch.

Show Page Pains

The worst aspect of ReadySetGo is its scrolling method, which involves using the Show Page command instead of scroll bars or the grabber (the hand tool in MacPaint). Selecting the command calls up an overview of the page and its blocks (see Figure 1). A dotted rectangle shows you which part of the page is currently displayed. You drag the dotted rectangle to view another area of the page. This technique is cumbersome compared to clicking a scroll bar or dragging the grabber.

Picture This

ReadySetGo lets you resize a picture block and see the results immediately. Any further resizing is based on the proportions of the original picture rather than on the current, already scaled picture. In MacPaint, resizing already scaled pictures leads to highly distorted graphics after two or three times.

I discovered that ReadySetGo's scaling technique can backfire on you, however. When you paste a carefully crafted MacPaint graphic into a picture block, the picture is scaled to fill the block. If you know the dimensions of the original drawing, you can use the Modify dialog box to adjust the picture block's size accordingly. If you don't know the original's size, you must repeatedly resize the block until the picture resumes its original, unscaled proportions.

Modest Amenities

Among a few bugs I found in ReadySetGo, the keyboard equivalents for Cut and Copy failed to work. And while you should be able to draw a border around an existing block and then send it behind another object on screen as in MacDraw, the feature didn't work.
In sum, ReadySetGo adds only a few benefits to MacDraw’s page layout capabilities: a precise measurement system, tab-setting in text blocks, and the ability to resize blocks and immediately see the results (see “Late-Night Layout” in this issue). The program’s price tag seems high for those modest amenities, and I expect a 512K-only program like this one to offer better scrolling methods and layout capabilities for multiple-page documents.

**MacPublisher**

In some ways using MacPublisher is like working at an actual drafting table because of the way the screen is laid out. Text and graphics are held in windows on the left half of the screen. To lay them out, you drag the elements from the windows to the dummy on the screen’s right side (see Figure 2). Each block is represented on the dummy by a rectangle sized to the proportions of the article or picture. If the rectangle is large enough, it contains the name of the article or picture and specifications about its size. An arrow is displayed when text is continued on or is continued from another column or page. Page and column numbers indicating where the rest of the text is located are also displayed.

A MacPublisher document is called an issue; each issue contains up to 32 pages. The text in an issue is divided into articles, each of which has a name and is stored as a file. You type or edit text in an article window, where you choose the column width, font, size, and style for each article. Unfortunately, you can’t change font, size, or style without affecting the entire article. If you want a headline to appear in a larger size than the story, you must type and format the headline as a separate article. This inability to change type style within text—to emphasize a word, for example—is a serious limitation in a page-makeup program.

MacPublisher offers condensed or wide print, with less or more space between characters, and adjustable leading, or space between lines of text. MacPublisher justifies text by adding spaces between letters as well as between words to fill out a line, the way typesetters do.

**Cameras and Rulers**

You add pictures to a MacPublisher issue by using the Clipboard and a desk accessory called the Camera, which functions like a transparent window over the Clipboard window. By adjusting the camera cursor, you can crop the image and then “snap” its picture, transferring the selected image to a picture window; from there the picture can be dragged to the dummy.

MacPublisher has a vertical ruler, which you can calibrate to measure lines, inches, or pixels (see Figure 3). The ruler takes a while to get used to, especially when the text column is longer than can be viewed in the window, but it is a useful tool. When you drag part of an article to the dummy, leftover text is automatically placed in another article window. In other words, you can drag only one column to the dummy at a time.

Aligning blocks on the dummy is made easy by MacPublisher’s layout guides, which automatically position columnar material against invisible margins. A free-form option lets you place blocks wherever you want, and each block can have its own column format.

(continues on page 76)
The Pace of a Page

Adrian Mello

Meeting deadlines is crucial in the world of publishing, and the decision to replace a drafting board and traditional layout tools with an electronic page-makeup system may ultimately depend on the electronic system's ability to save time as well as money. Consequently, page-makeup programs should be judged not only by their features but also by the time they take to lay out and print documents.

To judge the performance of ReadySetGo, MacPublisher, and PageMaker, we designed a sample page and measured the time each program required to lay out and print the page. The table entitled "Page-Makeup Olympics" shows the results of the test, which was performed on a 512K Macintosh with an external disk drive and a LaserWriter printer.

The results show significant differences in speed among the three programs. PageMaker was far and away the winner.

Page-Makeup

Olympics

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<th>Program</th>
<th>Layout Time</th>
<th>Printing Time</th>
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<td>MacPublisher</td>
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</tr>
<tr>
<td>PageMaker</td>
<td>2:31</td>
<td>3:05</td>
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Although ReadySetGo scales graphics, part of the MacPaint picture is missing because the program imports documents through the Clipboard; the size of graphics that can be copied from MacPaint is limited by the size of the MacPaint window. Unlike MacPublisher or PageMaker, ReadySetGo provides no way to carry an overflow of text to another page or window.
because of its flexibility and powerful features. PageMaker's speed was even more evident when layout time was measured alone. Printing time is affected by the way each program stores the information that it sends to the LaserWriter.

The test doesn't reflect the time the programs take to make changes because the sample page was based on a Macworld page that had already been designed. A layout artist usually moves text and graphic elements around on a dummy page to find the most pleasing arrangement. PageMaker automatically adjusts to any change you make to the layout, such as changing the depth or width of a column. You wait only for the program to recalculate the effect of a change on one or more pages. With the other programs you have to reproposition every element affected by the change. Furthermore, the difficulty of making changes with MacPublisher and ReadySetGo is exacerbated by the repeated cutting and pasting necessary to position text and graphic elements taken from source documents. While PageMaker adjusts to a change in seconds, the other programs could easily take several minutes to effect the same change.

MacPublisher

MacPublisher doesn't allow you to mix type styles or sizes within a text block. The bottom and right sections of the picture were cut off because ReadySetGo, the program cannot import MacPaint graphics larger than the MacPaint window. Text was cut off at the right margin when we used MacPublisher's three-column format on the LaserWriter.

PageMaker

Of the three programs, PageMaker is the easiest and most efficient to use. The program gives you complete control over column length, and the Place command allows you to import text and full-page graphics directly into the program from other applications. The picture was scaled to fit in the given space.
Therefore, you can center a headline in free form and set the rest of the page in two or three columns. Aligning separate elements into nonstandard columns, however, isn’t easy because precise measurement or normal-size view options are unavailable.

Making major corrections to text that has already been laid out can be tedious, especially if the text extends over several columns and pages. Corrections must be done to text in the article window, not on the dummy. If you delete a sentence from the first column, the balance of the article’s text that is found in other windows does not automatically move up to fill the space. And if you need to edit a small block of text, the rectangle on the dummy is too small to display the name of the article containing the text. You may have to search your article files to find the one to edit.

Indexing and Printing

After you’ve laid out an issue, MacPublisher can generate an index. In complete form the index serves as a map of the issue, since it gives information about the location of all elements. An edited index can be used as a table of contents.

For a mixture of electronic and mechanical layout, MacPublisher allows you to print out text on the ImageWriter in high quality and enlarged 133, 150, or 200 percent. The printouts can be photostatted down to normal size, pasted up by hand, and sent to a print shop. The resulting quality is much sharper than direct ImageWriter output.

Complicated but Capable

MacPublisher is suited for the production of newsletters or other simple publications in columnar format, despite the difficulties in importing documents from other programs and in changing text that has already been laid out. The program runs—though slowly—on a 128K Mac, which cannot be used with the LaserWriter. Still, its reasonable price will undoubtedly make MacPublisher popular.

PageMaker

From Aldus comes a loaded layout program called PageMaker, which I tested in prerelease form. Of the programs reviewed here, only PageMaker can directly open documents created with other applications.

You start a PageMaker session by setting up a blank page style, including your choice of vertical or horizontal orientation. The document window resembles a layout artist’s table, showing the page being laid out. Like MacDraw, PageMaker has a toolbox for making text changes, drawing dividing lines and borders, and cropping graphics (see Figure 4). You have a choice of 13 borders and 10 fill patterns. The program provides column guides and a ruler that can be set to inches, centimeters, or picas.

Type Layout

Importing text or graphics into a PageMaker document is easy. When you select the Place command on the File menu, a MiniFinder appears to let you choose a file that you can directly paste onto your layout. The program can open MacPaint, MacDraw, MacWrite,
and Microsoft Word documents. After PageMaker opens a document, the pointer turns into a special text or graphics pointer. Clicking the pointer at the desired starting spot on the page places the imported document there.

If the document is lengthy text, the text fills the column until the bottom margin, where an icon resembling a window-shade pull shows a plus sign to indicate more text. When you click the plus sign, the pointer takes the rest of the text, which you can paste onto as many additional pages as needed. This feature is among PageMaker's best, greatly simplifying the layout of multiple-page publications.

When you add a page, an icon appears near the lower-left corner of the screen, showing not only the page number but also whether the page is a right- or left-hand page. Publications are limited to 16 pages. If you add or delete text or graphics, PageMaker adjusts the rest of the article, even if it appears on other pages.

Another PageMaker feature lets you reduce text or graphics to 50 or 70 percent of actual size or expand the material to 200 percent for precise placement. In addition, the Reduce to Fit command puts the entire layout on screen. All functions, including text editing, work at any viewing size.

If you want to cut an element from one page onto another, drag it to the holding area around the page, select another page, and drag the element onto the new page. By dragging column guides and repositioning text, you can even flow text around a graphic element, which normally takes careful measurement and tedious typesetting (see Figure 5). Headers and footers must be manually inserted from MacWrite or Microsoft Word files, but page numbering, if desired, is automatic.

**Professional's Choice**

PageMaker is elegant because it works feverishly behind the scenes to protect you from concerns such as adjusting the flow of text across several pages. Unlike MacPublisher; the PageMaker screen remains remarkably clutter-free, even while you assemble a complex document. A professional layout artist would feel at home with PageMaker, but it's simple enough for almost anyone with a layout task to use quickly and productively.

**Stop the Presses**

If I were shopping for page-makeup software on a limited budget, I would learn to live with MacPublisher's screen clutter and other inconveniences, but I'd be lusting after PageMaker. Of course, you first have to decide whether you should be in the market for such software at all (see "What's Fit to Print"). This complicated decision depends on several interrelated factors.

The first question to consider is the quality you require. ReadySetGo, MacPublisher, and PageMaker are designed primarily for page makeup; they are not typesetting software and cannot do sophisticated text formatting—not yet anyway. For example, none performs automatic hyphenation, which is needed for professional-looking full-justified columns. And none of the programs allows kerning, the adjustment of specific letter spaces to avoid gaps or overlaps.

Two other factors to consider are the size of your publication and the number of copies you print. In general, as the cost of typesetting rises in proportion to the total production cost, designing and printing with the Macintosh becomes more appropriate. For example, a small newsletter with a large circulation has typesetting and pasteup costs that are insignificant compared to total printing costs. In this case you wouldn't save much money with the Macintosh system. On the other hand, a 16-page financial newsletter mailed to only 100 subscribers may be worth producing on the Mac.

The economics of publishing vary considerably depending on how the Macintosh is incorporated into the production process. For example, if you use the Mac with a LaserWriter printer solely to eliminate typesetting, it would take four years—producing a typical monthly newsletter of 250 column inches, or eight pages—to pay off your investment in a 512K Mac, a LaserWriter, and page-makeup software. On the other

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**Figure 5**

When you select double-sided pages, PageMaker lets you view the layout of a two-page spread with the Show Facing Pages command on the Page menu. A click of the mouse button returns you to the layout window.
What's Fit to Print

Edited by J. E. Arcellana

Macworld Editor Kearney Rietmann asked the magazine's Art Director Bruce Charonnat and Production Editor James Felici about the potential of page-makeup software for the Macintosh. The programs, which enable you to use the Mac for the electronic pasting of text and graphics, are the software components of Macintosh publishing—the design and printing system that includes the 512K Mac and the LaserWriter printer. Excerpts from their discussion follow.

Q. What does the Macintosh need to become a system for producing Macworld?

A. Page-makeup programs have both typesetting and pasting functions. The strength of currently available programs is the pasteup function—the placement of text and graphic elements on a page—rather than the typesetting function, which controls typographical features such as indentation, justification, line breaks and hyphenation, and the spacing between letters, words, and lines. While proportional spacing is available, no program offers kerning or effective control over interletter spacing. Kerning is the adjustment of space between particular combinations of letters. For example, a capital Y next to a capital A spells trouble with a capital T because of the large area that is opened up. Professional typesetting software should be able to kern that space, to bring the letters closer together.

Line spacing, on the other hand, is not a serious limitation in Macintosh layout. Traditionally, line spacing on personal computers has been based on typewriter standards. Typesetting machines use a much finer scheme, some of them controlling line spaces in ½-point increments at 72 points per inch. But the Mac is getting closer to what we need, with programs that allow you to control line spaces in 1-point increments. That's good enough for most commercial publications, including Macworld.

In order to set professional type you have to be able to hyphenate it. Hyphenation and end-of-line decisions are partly based on a dictionary with from 20,000 to 50,000 words, which the Mac just doesn't have disk storage space for. A dictionary works best on a system with a hard disk and the processing speed to be able to refer to it constantly. Deciding where to break lines also involves aesthetic controls so you don't end up with lines that are grossly stretched out, for example. Current page-makeup software on the Mac doesn't handle line breaks with that degree of sophistication.

Q. You mentioned the usefulness of a hard disk. What are some other considerations in terms of hardware?

A. The size of the Mac's screen is a limitation, although its resolution is high enough for our purposes. Right now we would love to have a Mac with an 8½- by 11-inch, full-page vertical screen, which would really help the design process. It should also have at least a megabyte of RAM and a faster microprocessor than the Motorola 68000, because the machine would have to keep track of a phenomenal amount of graphic information on the bigger screen. With the professional typesetting programs it could run, such a Mac would be a powerful text and graphics machine that would find widespread acceptance in the publishing industry.

Q. How would the LaserWriter printer be used in that system?

A. The true value of the LaserWriter to commercial publishing is as a proofing device. You check proofs produced on the LaserWriter until they're exactly right and then send them out once to be typeset. True typeset quality won't be available on the LaserWriter until it reaches a resolution that is at least three times greater than it is now. The LaserWriter isn't a printing press, either. That's something a lot of people don't understand. It's an office machine. If you want 50 copies, the LaserWriter is great. If you want 50,000 or 500,000 or 5 million copies, go to a print shop. Five hundred copies is on the cusp.

Q: What kind of publications do you see people producing with the Macintosh?

A. Modest ones like newsletters, small posters, programs,
exhibition notes, price lists—materials that aren’t necessarily going to have a long shelf life. Most of the items would be throwaways. For example, you might go to an art gallery and receive a two-page handout, folded or not, with a descriptive list of the pieces in the exhibit and short biographies of the artists. LaserWriter publications are not materials that people are apt to save. We wouldn’t try to sell anything designed and printed using the Mac, the LaserWriter; and one of the currently available page-makeup programs. In our opinion, a commercial-quality publication can’t yet be produced with a Mac.

Q: How can people take the best advantage of the Mac’s current design and publishing capabilities?

A. You have to remember not to put too much on a layout. Don’t make it too busy. If you can’t see the whole layout on screen, print it out and make an actual dummy. Look at the publications you like, study them, and try to get the look that they have.

Avoid fully justified copy, since the available software can’t fill out a line nicely. Ragged right works best. Use wide columns so that the right margin appears less ragged than if you used narrow columns. Avoid setting too many elements with boxes and rules because of the imprecise line spacing that results.

hand, publications with small circulations could be printed cost-effectively with the LaserWriter each month. For an even cheaper option, small print runs could be accomplished with photocopied I magewriter printouts.

The system that’s best for you also depends on the equipment you already own or can use for other purposes. The strength of personal computer systems is that they can be used for any number of office tasks in addition to page makeup. While an entry-level typesetting system costs only a few thousand dollars more than the hardware and software required for Mac publishing, the typesetting system cannot manage a database or perform calculations on a spreadsheet.

As word processors have undermined the typewriter’s traditional territory, electronic layout tools may eventually replace the drafting table and X-acto knives. Keep in mind, however, that page-makeup programs don’t prevent you from creating unattractive layouts. If anything, those programs place a burden on Macintosh owners to master not only the content of the message but also the design principles that get the message across with the most impact and in the best taste. □

Danny Goodman is a Contributing Editor of Macworld.

ReadySetGo
Manhattan Graphics
163 Varick St.
New York, NY 10013
212/989-6442
List price: $125

MacPublisher
Boston Software
19 Ledge Hill Rd.
Boston, MA 02132
617/327-5775
List price: $99.95

PageMaker
Aldus Corp.
616 First Ave. #400
Seattle, WA 98104
206/467-8165
List price: $495
Out of stock? Out of mind?

Five score and a month or so ago, MacConnection entered the brand new Macintosh market with the claim that we would never advertise a product until it was on our shelves. That's because we didn't, and still don't want you to get all excited about some snazzy software or hardware solution that is delayed, or never gets out of the manufacturer's door. Too many products are announced that just don't appear. So when you see a product on our list you know that it's available and we've checked it out.

Occasionally, we are indeed out of stock of an existing product. Why? Usually one of two reasons. Either there is a new version coming and we think you're better off waiting for it. Or, favorable publicity has caused us to sell something faster than we expected. If we run out of a product, rest assured, we'll get it to you as fast as we possibly can, and usually give you a pretty firm delivery date.

By the way, we're still sending a complimentary copy of the Macintosh Buyer's Guide to everyone who places an order totalling over $50.

SOFTWARE

Ann Arbor Softworks

Animation Toolkit 1 ........................ $36.
Create, edit, and animate pictures.

Apropos

You must have Multiplan to use.

Tax Planner ........................................ 35.
Personal tax preparation.

Financial Planning ............................... 65.
Home budget, tax, auto, life insurance.

Arrays/Continental

Home Accountant ............................... 61.
Financial planner for your Mac.

Assimilation Process

MacTracks .............................. $23.
Store up to 5000 characters on any one key.

Lockit ............................................. 23.
Limit access to your files.

Mac-Memory-Disk .............................. 23.
Access more memory in your 512k Mac.

Mac-SpellRight .............................. 59.
Requires version 3.3 or later of MacWrite.

Axion

Art Portfolio ................................. 37.
120 drawings await your creative desires.

Card Shoppe ................................. 37.
Make professional quality greeting cards.

Computer Software Design

MacLion ........................................ $219.
Relational database manager.

External drive recommended.

Creative Solutions

MacForth - Level 1 ............................ 89.

MacForth - Level 2 ............................ 139.
Level 2 includes an assembler,
floating point, and advanced graphics.

Desktop Software

1st Port ..................................... 55.
Communicate with other micros,
mainframes, and public data bases.

1st Merge ..................................... 55.
Data-entry and mailmerge, labels.

1st Base ..................................... 105.

Dillithium Press

PC to Mac & Back ............................. 89.

Communication between IBM PC and Mac.

Dow Jones

Straight Talk ................................. 49.
Information services at your fingertips.

Spreadsheet Link ........................... 61.
Must have Multiplan, modern and

Dow Jones Straight Talk.

Market Manager PLUS ..................... 125.
Track portfolio information.

Enterset

QuickSet ..................................... 65.
Icon-driven true accessory with powerful
calculations.

1st Byte

Smooth Talker ............................... 89.
Voice synthesis software for the Mac.

Forethought

Factfinder ................................... 89.
Free-form entry.

Harvard Associates

MacManager .................................... 32.
Business simulation.

Desktoppers ................................. 32.
Four new desk accessories.

Hayden Software


DaVinci Interiors ............................ 31.

DaVinci Landscapes .......................... 31.

DaVinci Building Blocks .......................... 46.

DaVinci Commercial Interiors ............. 120.

I Know It's Here Somewhere ............. 39.
Get organized with this foolproof filler.

Musicworks .................................. 46.

Hayden:Speller ......................... $47.

Fox for MacWrite and Microsoft Word.

Score Improvement System for the SAT .......................... 59.
College entrance-exam study guide.

Ensemble .................................... 179.
Database, calculations, graphics and more.

Hippopotamus Software

Edit, compile, link, and execute C
programs.

Hippo-C - Level 1 .................................. 117.

Hippo-C - Level 2 ............................. 297.

Human Edge Software

Mind Prober .................................. 31.

The Communications Edge ................. 113.

The Management Edge ...................... 129.

The Sales Edge .............................. 149.

The Negotiation Edge ...................... 179.

Kensington

Graphic Accents ......................... $33.
250 professional illustrations, business
to holiday themes.

Professional Type Fonts for Text .................. 33.
12 to 24 point fonts.

Professional Type Fonts for Headlines .......... 45.
24 to 72 point fonts, requires 512k.

Layered

Front Desk ................................ 89.
For organizing and scheduling your
most important activities.

Linguist's Software

Tech ................................. $75.
Over 1000 symbols for scientific equations.

MacGreek Plus ......................... $75.
Includes special symbols for Bible studies.

MacHebrew ......................... $75.
Text reads left to right.

MacKana/Basic Kanji .................. 75.
Includes 70 of the most common Kanji.

MacGreek/Hebrew/Phonetics ....... $129.
Includes all extra symbols of
phonetic script.

Living Videotext

ThinkTank 128k ........................ 77.

ThinkTank 512k ........................ 129.

Magnum

McPic - Volume I ............... $31.


The Slide Show Magician ................. 38.

Manhattan Graphics

ReadySetGo ................................ 89.
Interactive page makeup, requires 512k.

Mark of the Unicorn

Professional Composer (requires 512k) 289.
Create performance quality sheet music.

Megalohaus

MegaMerge ................................ 75.

Megaligner ............................... 119.

Megaform (requires 512k) ........... 175.
Design your own invoice, order forms,
and more.

MicroLab

Tax Manager ............................... 115.
Examine different tax strategies.

Microsoft

Entrepreneur ............................. 32.
Competitive simulation of the software
industry.

Chart .................................. 75.

Basic (version 2.0) ............... 92.

Multiplan .................................. 119.

File .................................. 119.

Word .................................. 119.

Business Pack ......................... 389.
Includes Word, File, Chart, and Multiplan.

Miles Computing

Mac the Knife - Volume 1 ........... 25.

Mac the Knife - Volume 2 ........... 29.

Monogram

Forecast ............................... 45.
Tax planning program.

Dollars & Sense ..................... 82.

Northwest Analytical

NWA StatPak .......................... 279.

Statistical analysis, requires Microsoft
Basic.

Organization Software

Omnis 2 (requires external drive) .... 139.
SHORT PEOPLE.
It's sure not easy being only 4½" tall. And having a name like Isidor Shud. And a nickname like "Goofus." And spending your whole life on a shelf. And being perpetually stuck in the year 1952. But it's a lot more fun since our landlady, Ellen Klages, got a Macintosh.

You see, Ellen's a fairly normal person with a fairly normal job as a proofreader, who lives in a fairly normal apartment in Oakland, CA. But her Mac has sent her deep into a twilight zone of micro interior design.

When my family first moved in, Ellen had only a kitchen set up for us. It was nice, but shucks, I wanted a room of my own, and the folks needed a little privacy themselves. Ellen just couldn't find wallpaper, curtains, and upholstery for a family of our stature (or lack thereof) and our historical niche (the 1950's).

HAPPY TRAILS TO YOU.
Then out of the blue of the western sky came MacPaint! (And an Imagewriter Printer with heat transfer ribbons.) Suddenly there was no end to the designs Ellen could create for us on paper and fabric. We got real live imitation linoleum for our floors! I got my very own room with Hopalong Cassidy wallpaper! Mom got pink curtains with atomic age graphics! Dad got an "I like Ike" bumper sticker for his 1952 Nash!

But the real corker was the miniature vintage Vault of Horror comic Ellen made me with colored printer ribbons and a little hand-tinting. It's swell. The Macintosh has opened new worlds for my family, boy oh boy. The Shuds are keeping up with the Joneses now. Be seeing you.
Inferel (advanced) .................. $29.
Suspect (advanced) .................. 29.
Sorcerer (advanced) .................. 29.
Deadline (expert) .................. 31.
Staircross (expert) .................. 31.
Suspended (expert) .................. 31.
Invisickles (hint booklets) are available for any Infocom game. Specify game. 7.

Mark of the Unicorn
Mouse Stampede ....................... 23.
Highly addictive.

McCarron-Dial Systems
McFlip .................. 21.
Mac version of Reversi.
McTrivia .................. 24.
Animated trivia game.

Miles Computing
MacAttack .................. 29.
3-dimensional tank simulation.

Mirage
Triva (new low price) ............... 19.

Penguin
Transylvania .................. 24.
The Quest .................. 24.
Ponderate .................. 24.
You can control the obstacles, but can you make it to the top of the grid?

Priority Software
Forbidden Quest .................. 27.
A truly challenging sci-fi adventure.
Gateway .................. 29.
Sci-fantasy adventure.

Scarborough Systems
Run for the Money .................. 32.
Best with 2 players.
Make Millions .................. 32.
Enter the world of high finance.

Screenplay
Triva Arcades .................. 27.
Sports, music, TV, science, and general.

Sierra On-Line
Frogger .................. 27.
Ultima II .................. 37.
The ultimate fantasy role-playing adventure.

Silicon Beach Software
Airborne! .................. 21.
Works with either 128k or 512k Mac. Superb sound and graphics.

Soft-Life Corp.
Mac-Stols .................. 29.
An electronic slot machine. Includes Keno.

Videk
Collection of familiar, entertaining, and challenging games.

Funpak .................. 23.
MacCheckers/Reverse .................. 29.
MacGammon/Cribbage .................. 29.
MacVegas .................. 35.

HARDWARE
Assimilation Process
Mac-Daisywheel Connection ........... 75.
Mac-Turbo Touch .................. 89.

Compucable
Mac to Hayes Smartmodem cable .......... 17.
Mac to Epson FX/RX printer cable .......... 17.

Cuesta Systems
Datasaver AC Power Backup ........... call
Keeps Mac operating during line power interruptions or brownouts. 90 watts.

Curts Manufacturing
SURGE SUPPRESSORS
All surge suppressers have an on/off switch.
Diamond (6 outlets) .................. $33.
Emerald (6 outlets; 6 ft cord) ........... 43.
Sapphire (3 outlets; EMI/RFI filtered) ........... 53.
Ruby (6 outlets; EMI/RFI filtered; 6 ft cord) ........... 63.

Epson
All Epson printers have built-in graphics capability. In addition, the "Plus" printers can print in near letter quality (NLQ) with the addition of the NLQ parallel or serial option.
RX-100 .................. call
FX-80 Plus .................. call
FX-100 Plus .................. call
JX-90 .................. call
LQ-1500 (letter quality dot matrix) ........... call

Hayes Microcomputing
Smartmodem 300 .................. 149.
Smartmodem 1200 .................. 429.
Compucable's Mac to Smartmodem cable 17.

IOMEGA
Bernoulli Box .................. 1397.
5-megabyte storage for your Mac.
5-meg cartridge .................. 39.

Head Cleaning Kit .................. 69.

Kensington
Mac Dust Cover .................. 10.
Imagewriter Cover .................. 10.
Universal Printer Stand .............. 19.
Swivel .................. 23.
Disk Case (holds 36 Mac disks) ........... 23.
Surge Suppressor .................. 35.
Startar Pack .................. 54.
Control Center .................. 65.
Modem (300 baud) .................. 59.

Koala Technologies
MacVision .................. 229.
Digitize pictures or objects for reports, projects for use with video camera or other video source.

Microcom
MacModem .................. 399.
Upgradable to 2400 baud.

Microsoft
MacEnhancer .................. 165.
Additional ports and terminal software.

Superex Business Software
MacSpeak .................. 15.
External speaker for your Mac.

Systems Control
MacGard .................. 59.
Surge and static protection, provides two outlets.

DISKS
Innovative
Flip & File (Holds 40 Mac disks) ........... 23.

Pacific Wave
Flip Sort Micro (Holds 40 Mac disks) ........... 12.

BASF
Disks 3 1/2" Micro Floppy (Box of 5) ........... 18.

Verbatim
Disks 3 1/2" Micro Floppy (Box of 10) ........... 28.

Sony
Disks 3 1/2" Micro Floppy (Box of 10) ........... 31.

Fuji
Disks 3 1/2" Micro Floppy (Box of 10) ........... 31.

Memorex
Disks 3 1/2" Micro Floppy (Box of 10) ........... $31.

MAXELL
Disks 3 1/2" Micro Floppy (Box of 10) ........... 31.

3M
Disks 3 1/2" Micro Floppy (Box of 10) ........... 35.

INFORMATION SERVICES
Compuserve
Compuserve Information Service ........... 19.
Includes subscription, manual, 5 hours of connect time, and monthly publications.

MISCELLANEOUS
American Tourister
Mac Carrying Case (while they last) ........... 49.

Automation Facilities
Floppicleme (ten cleaning disks) ........... 25.

Computer Coverup
Mac & Keyboard (two covers) .............. 10.

ImageWriter Cover .................. 8.

Wide ImageWriter Cover .................. 8.

External Disk Drive Cover .............. 4.

Diversions
Underware Ribbon .................. 11.
Create iron-on transfers of your favorite Mac pictures. T-shirts, banners.

Underware Color Pens .................. 11.
Add colors to your iron-on transfers.

ColorPack .................. 19.
Includes one black ribbon and set of five color pens.

Esoft Enterprises
ColorPrint .................. 29.
Allows MacPaint documents to be printed in color. Color ribbons not included.

I/O Design
ImageWriter Transfer Ribbons .............. 10.
Available in black, red, blue and yellow.

ImageWriter
Padded ImageWriter Carrying Case with shoulder strap. Navy blue.

Macinward .............. 69.
Sturdy well-padded bag for the Mac, mouse, drive, keyboard, and accessories. Reinforced bottom.

Innovative Technologies
CompulBag .............. 59.
Well-padded carrying case for your Mac and accessories. Reinforced bottom.

Easel .............. 15.
Folding diskette holder. Perfect companion with CompulBag, holds 20 disks.

Kalmar Designs
Roll-top teakwood disk case.
(holds 45 disks) .............. 19.

Microsoft
MacWork/MacPay Book .............. 14.

RAEX Enterprises
Mouse-Trap .............. 8.
A home for your idle mouse.

Ribbons Unlimited
Available in black, blue, brown, green, purple, red, and yellow.

ImageWriter Ribbon .............. 5.


Includes each color except black.
<table>
<thead>
<tr>
<th>Software Publisher</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palantir</td>
<td>MacType</td>
</tr>
<tr>
<td>Scarborough Systems</td>
<td>Mastertype</td>
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<tr>
<td></td>
<td>Typing Tutor III</td>
</tr>
<tr>
<td></td>
<td>Includes Letter Invaders</td>
</tr>
</tbody>
</table>

### TRAINING

- **ATTI**
  - MacCoach Training: $49
  - Teach Yourself Multiplan: 49
- **Forethought**
  - Typing Intrigue: 33
  - Typing instruction that features solving a mystery case.
- **Palantir**
  - MacType: 31
  - Supports Qwerty and Dvorak keyboards.
  - MathFlash: 31
  - Math flash card drills.
- **Scarborough Systems**
  - Mastertype: 29
  - Typing program with arcade action.
  - Simon & Schuster
    - Typing Tutor III: 31
    - Includes Letter Invaders

### OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for charge cards.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All shipments insured: no additional charge.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day guarantee on all products.
- To order, call us anytime Monday thru Friday 9:00 to 9:00, Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711.
- No surcharge added for charge cards.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day guarantee on all products.
- To order, call us anytime Monday thru Friday 9:00 to 9:00, Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711.
- Save the nation from enemy attack.
- Turn your favorite drawings into a jigsaw puzzle.
- How many words can you find?
- The ultimate in computer chess.

### SHIPPING:

- **Continental US**: For printers and drives add 2% for UPS ground shipping. Call for UPS Blue or UPS Next-Day-Air For all other items, add $2 per order to cover UPS shipping. We will automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground. **Hawaii**: For printers and drives, actual UPS Blue charge will be added. For all other items, add $3 per order. **Alaska and Outside Continental US**: Call 603/446-7711 for information.

### GAMES

<table>
<thead>
<tr>
<th>Game</th>
<th>Price</th>
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<tbody>
<tr>
<td><strong>Axlon</strong></td>
<td></td>
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<tr>
<td>MacMatch</td>
<td>$31</td>
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<tr>
<td>Match the squares and solve the hidden puzzles underneath.</td>
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<tr>
<td><strong>Blue Chip</strong></td>
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<tr>
<td>Millionaire (stock market)</td>
<td>37</td>
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<tr>
<td>Tycoon (commodities)</td>
<td>37</td>
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<tr>
<td>Baron (real estate)</td>
<td>37</td>
</tr>
<tr>
<td><strong>BrainPower</strong></td>
<td></td>
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<tr>
<td>Think Fast</td>
<td>29</td>
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<tr>
<td>Improve your memory.</td>
<td></td>
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<tr>
<td>Chipwits</td>
<td>31</td>
</tr>
<tr>
<td>Create your own robot. No programming knowledge required.</td>
<td></td>
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<tr>
<td>TeleChess</td>
<td>41</td>
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<tr>
<td>Play chess over the phone. Modern required.</td>
<td></td>
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<tr>
<td><strong>Broderbund Software</strong></td>
<td></td>
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<tr>
<td>Lodor Runner</td>
<td>26</td>
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<tr>
<td>Arcade style; attempt to recover stolen gold.</td>
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<tr>
<td>Cyborg</td>
<td>26</td>
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<tr>
<td>A sci-fi text adventure.</td>
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<tr>
<td><strong>CBS</strong></td>
<td></td>
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<tr>
<td>Murder by the Dozen</td>
<td>29</td>
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<tr>
<td>12 intricate mysteries.</td>
<td></td>
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<tr>
<td><strong>General Computer</strong></td>
<td></td>
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<tr>
<td>Ground Zero</td>
<td>26</td>
</tr>
<tr>
<td>Save the nation from enemy attack.</td>
<td></td>
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<tr>
<td><strong>Hayden Software</strong></td>
<td></td>
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<tr>
<td>Masterpieces</td>
<td>24</td>
</tr>
<tr>
<td>Turn your favorite drawings into a jigsaw puzzle.</td>
<td></td>
</tr>
<tr>
<td>Word Challenge II</td>
<td>24</td>
</tr>
<tr>
<td>How many words can you find?</td>
<td></td>
</tr>
<tr>
<td>Sargon III</td>
<td>31</td>
</tr>
<tr>
<td>The ultimate in computer chess.</td>
<td></td>
</tr>
<tr>
<td><strong>InfoCom</strong></td>
<td></td>
</tr>
<tr>
<td>You're a magician challenging the dungeon master, a detective solving a murder mystery, a scientist deciphering hieroglyphics, or just an ordinary mortal meeting the Wizard of Frobozz. (Difficulty levels shown in parentheses). Seastalker (junior)</td>
<td>25</td>
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<tr>
<td>Enchanter (standard)</td>
<td>25</td>
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<tr>
<td>the Witness (standard).</td>
<td></td>
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<tr>
<td>Planetfall (standard)</td>
<td>25</td>
</tr>
<tr>
<td>Cutthroat (standard)</td>
<td>25</td>
</tr>
<tr>
<td>Hitchhiker's Guide (standard)</td>
<td>25</td>
</tr>
<tr>
<td>Zork I (standard)</td>
<td>25</td>
</tr>
<tr>
<td>Zork II (advanced)</td>
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### 1-800/Mac&Lisa

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Circle 4 on reader service card
Business forms that fill themselves out at the press of a key

Bill Grout

The paperless electronic office, where paper lands on your desk as rarely as bouquets, appears to be another modern myth. Filling out paper forms will be in fashion long after the police decide to stop handing out tickets or the government gives up the Form 1040 in favor of asking for an annual donation. Although wrestling with paper forms is probably inevitable, a program called MegaForm can at least lend you a hand.

MegaForm enables you to design forms on the Macintosh screen and helps complete them automatically. The program runs only on the 512K Macintosh and is best suited for forms that you use routinely on the job. Depending on your work, you might design forms such as expense reports, invoices, shipping orders, time sheets, estimates, or even payroll checks and stubs. Designing forms is a two-step process: first you design a form's physical layout, and then you set up the program so that it supplies the required information automatically. Once a form is completed, you can file it away for later review or print copies for distribution.

Well-designed forms should not only help you keep your work organized but also have a professional appearance. MegaForm allows you to embellish forms with graphics—such as a company logo, bold rules, or patterned backgrounds—to give
forms the well-finished quality associated with preprinted commercial designs. Forms can also include text in any combination of Chicago, Geneva, New York, Monaco, and London fonts, and font sizes can range from 9-point to 48-point. A single-page form can theoretically be as large as 24 by 36 inches, but form size is limited by the printer you use. In the ImageWriter's case, forms are limited by the printer's 10½-inch carriage width. If you use the LaserWriter, forms are limited to legal-size paper. You can design forms for any paper size under 24 by 36 inches, and multiple-page forms can be created.

The process of designing MegaForm forms is easy to master, although creating complex forms that have many blanks and text headings can be time-consuming. Drawing forms on the screen is similar to using MacDraw or MacPaint. You design forms with lines, boxes, and circles, and you fill objects with patterns like those found in MacPaint or create your own custom patterns. Although MegaForm's drawing capabilities don't provide MacPaint tools like the paintbrush, the paint bucket, or the spray can, you can transfer MacPaint images into a form via the Clipboard.

If you don't relish the prospect of creating a form from scratch, you can model MegaForm forms after standardized paper forms. However, you need to avoid violating copyright laws.

MegaForm comes with a half-dozen ready-made forms that can quickly be modified and used. The sample forms include an invoice, a dry cleaner's receipt, an expense report, and a Form 1040. This selection of ready-made forms probably won't be useful for many businesses. A spokesperson from Megahaus claims that the company will make additional ready-made forms available on CompuServe and The Source and that it also plans to develop disks of forms designed for specific professions.

The Cell Is Magic

Once you design a form, MegaForm helps you complete it by filling in as many blanks as it can. The program calculates figures and provides facts in much the same way as an electronic spreadsheet does. When a traditional spreadsheet appears on screen, you're presented with a grid of cells into which you place numbers, text, and math formulas. MegaForm also has cells; wherever a blank should appear in a form, you draw a rectangular cell large enough to hold the information required. In the sample invoice shown in Figure 1, for example, cells were created to hold such information as customer account numbers, dates, and customer names and addresses.

After you position cells in a form during the layout process, the next step is to define the type of information individual cells will hold and the source of that information (see Figure 2). Cells can receive information from four sources: the keyboard, a formula, a table, or a database file. If a cell's information is to be typed, you define
the cell's source as the keyboard. A *MegaForm* cell can also use as its source a math formula similar to those used in spreadsheet models. Addition, subtraction, multiplication, and division can be used in cell formulas.

Spreadsheets often have numerous functions such as SUM and AVG, which quickly sum and average the contents of groups of cells. In contrast, *MegaForm* has only five functions. One function provides a date. Two other functions find the minimum and the maximum of two compared figures. Another function puts titles such as "Customer Copy" or "Vendor Copy" on forms. A serial function provides serial numbers that increase as forms are completed, as required for numbered invoices, for example.

Since *MegaForm* limits the number of characters that can make up a single formula, long, complex formulas that refer to a dozen or more cells are not always possible. Although probably adequate for the math required to complete most forms, *MegaForm*’s capabilities remain rudimentary compared to the average electronic spreadsheet.

*MegaForm* can also derive information from tables of stored data, which function like the Lookup tables used in many spreadsheets. You might, for instance, compare the amount of a sale to a table of figures and have *MegaForm* select an appropriate customer discount. A selection in one table can even be linked to information in another table. You could set up an invoice form, for example, that would look up sales tax in one table to determine final sale price and then refer to another table to figure out the sales commission.

*MegaForm*’s most impressive capability is that it can pull information out of a *MegaFiler* database to complete a form. (*MegaFiler* is the only database program that works with *MegaForm*, however.) This compatibility enables you to take advantage of information already stored and organized in the database and saves you from having to retype it in a form. When you define a cell, you tell *MegaForm* which database file to refer to, which field to use to locate a particular record, and what information to retrieve. Thus, you can direct a cell to look up a customer’s name in a database and automatically retrieve the customer’s address. A single form can draw information from any number of database files.

**The Complete Form**

Once you define the types of information a form’s cells will contain and the information’s sources, you’re ready to fill out the form. After typing in all the information that must be entered manually, you command *MegaForm* to complete the form’s unfilled blanks and then wait while the program calculates formulas, analyzes

---

**Figure 1**

*MegaForm* comes with several predesigned forms, including a sample invoice. The invoice was printed on the Imagewriter.
tables, and searches for information buried in database files. You can review the completed form and save it on disk or print it. You can discard your first effort by completing the same form with different information. Once completed forms are saved on disk, they are preserved as an audit trail and cannot be changed or edited, although you can review and print them. However, you can still edit or redesign the master form on which completed copies are based.

All forms must have at least one cell that is filled manually. You might think that this dooms you to completing one form after another yourself, but don't worry. You can set up forms that use one manually filled cell to trigger the completion of one or more forms. In this way you can have MegaForm complete dozens of forms in a billing session without looking at more than the first form.

The Form in Performance
MegaForm's performance has some highs and lows that you should consider before you purchase the program. Depending on a form's size and complexity, I would probably find daily use of MegaForm awkward or painstakingly slow. I found that filling out or printing large or complex forms, such as MegaForm's expense report form (see Figure 3), slowed the program down to the point that it may not be worth using.

Because of the Mac's screen size, you can see only part of large forms as you fill them out. I felt I was developing tunnel vision because information I wanted to view was often out of sight. Scrolling with the scroll bar arrows is slow, and while you can use the scroll boxes, they are imprecise.

Another problem the program has with long or complex forms becomes apparent when you enter information. After I...
Review

typed a figure in an expense report cell and pressed Enter; a delay as long as 2 seconds occurred before the cursor reappeared in the next cell. The cursor also seems to move between cells with an irritatingly slow bounce. The cursor moves nearly instantaneously between cells on short forms, however. Surprisingly, it doesn’t take any longer to calculate and complete long forms than it does to do short, less complex forms.

Automatically filling out forms with information extracted from a MegaFiler database also takes a long time. I timed how long it took MegaFiler to complete 30 forms with data from MegaFiler. The program had to complete 18 fields for each form while gathering information from two database files. MegaFiler filled out the 30 forms in an unimpressive 7 minutes.

But printing is MegaFiler’s weak point. When I filled out and printed the same 30 forms on the Imagewriter, it took over 35 minutes. MegaFiler required 6 minutes to print a single copy of the expense report and 9 minutes to print a two-page facsimile of a Form 1040. For tax accountants interested in using MegaFiler to process 1040 forms, that’s a rate of 7 per hour.

MegaFiler isn’t entirely to blame for slow printing, since the Imagewriter’s printing speed is a limiting factor. The LaserWriter was a little faster, taking just over 5 minutes to print the expense report and a little more than 6 minutes to print the tax form. The larger and more ornately patterned the form, the longer the printer takes to print it. When designing a form, take into account not only the form’s appearance but printing time as well, and avoid using unnecessary detail and complex patterns. You can also speed up printing with an option that permits you to print the data within a form without printing the form itself.

As with most new programs, I found a few bugs. One bug had a significant effect on MegaFiler’s performance. While processing 30 forms and automatically printing them one after the other, MegaFiler encountered an error in the data in a MegaFiler file. The incorrect data was to appear in only 1 of the 30 forms. However, as the printing went on, MegaFiler was unable to supply data correctly for the rest of the forms, even though no errors existed in the data for those forms.

Other than those low points in MegaFiler’s performance, I found MegaFiler easy to learn and was pleased with the results I saw after processing groups of forms. The way MegaFiler automatically extracts information from a database and completes a form is outstanding. MegaFiler also has a number of nice features, like its ability to reduce a form’s size during printing to produce sharp-looking forms half the size of the original and its ability to print a completed form, the form only, or the data only.

It’s possible to use MegaFiler with one disk drive, but a second disk drive or a hard disk is essential if you want to avoid switching disks frequently.

Since much of MegaFiler’s power comes from working with MegaFiler files, I recommend getting a good demonstration of MegaFiler’s capabilities before buying the two programs. I noticed certain problems during sorting and searching that raised reservations about MegaFiler’s suitability for sophisticated applications. As a work saver, MegaFiler has great potential for reducing the bother of completing business forms to a simple formality. However, until the program’s printing performance is improved, it may be early to buy.

Bill Grout is the author of Symphony for Your Business from Hayden Book Company and MultiMate Step by Step, forthcoming from Addison-Wesley.

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Hone your programming and problem-solving skills by taking a ChipWit to lunch

Have you ever seen a robot on roller skates careening across the Macintosh screen, scarfing down oil cans, floppy disks, slices of pie, and anything else in its path? If you haven't, let me introduce you to a unique educational game from Brainpower called ChipWits.

The company describes ChipWits as an educational game that teaches problem solving, computer programming, and the basic principles of artificial intelligence. At the center of the game is the ChipWit, a robot that you program to complete a dangerous mission in one of eight "environments" with names like Greedville, Doom Rooms, and Octopus Garden (see Figure 1).

The Robot and Its Environment
The ChipWit robot has a lot of flexibility: it can turn, move, smell, touch, look, pick up an item, discharge an electrical zap, and even sing. The environments for which you prepare the robot vary in complexity and content. Each environment consists of from 8 to 100 interconnected rooms. Items both helpful, such as disks and oil cans, and harmful, such as the dreaded electrocrabs, are randomly scattered throughout the rooms. Half of your programming problem is getting the robot to distinguish between the two types of items; the other half is maneuvering the robot through the rooms.

Each of the robot's abilities is limited in some way. It can see only straight ahead and only as far as the first object or wall, touch only the space directly in front of itself, and turn only 45 degrees at a time. The way you combine its abilities makes the robot a success or a failure in any environment. The fun—or frustration—begins when you realize how literally your instructions are interpreted. If you tell the robot to look for a disk, and an oil can is in its line of sight, it doesn't see the oil can—it registers only that it did not see a disk.

In most environments the ChipWit's goal is to pick up as many disks and oil cans as possible, since they are worth points. Of overall concern is the robot's lifetime, measured in cycles. Each instruction you use takes a certain number of cycles and also eats into the robot's fuel supply. You have to balance the cost of an instruction, in both cycles and fuel, against the possible benefits of having the robot perform the instruction.

Once the robot's cycles are exhausted, the game is over. The robot can be refueled, however, by picking up pie and coffee, which probably says something about the quality of the programmers' diet while they developed ChipWits. You must also take into account the damage the robot may sustain if your instructions do not have safeguards in them. Not only do you have to avoid dangerous objects such as bombs, bouncers, and electrocrabs, but you also have to prevent the robot from bumping into too many walls.
The ChipWit robot can see, feel, move, and munch, but like all machines it has no mind of its own and can't tell a cup of coffee from a deadly electrocrab. Programming the robot to cope with various environments is the aim of the game from Brainpower.
IBOL Programming

Programming a ChipWit for a mission is unlike writing instructions in traditional programming languages such as BASIC or Pascal. You design the robot's circuits in the ChipWits Workshop, plugging "instruction chips" into the control panels (see Figure 2). ChipWits uses its own language, called IBOL for icon-based operating language, to represent program instructions on the chips. Each chip contains a single instruction set that usually consists of an operator and an argument. An operator is an action command that tells the robot what to do, such as look, move, or smell. An argument is either an object that the operator acts on, such as an oil can or a coffee cup, or a direction, such as forward or 45 degrees to the left. To design a chip, you simply click the operator and the argument of your choice.

The icons used for the chips are clever and, for the most part, clear. The program's designers went a little icon-crazy in the end, however, and used a measuring cup filled to different levels to represent numbers. Measuring cups may seem like a good concept, but in practice their gradients are difficult to distinguish.

The program flow, which tells the robot what instruction comes next, is controlled by relocatable tabs that point to the next chip in the sequence. Chips that test for a certain situation—Does the robot see the pie? Can it feel the disk?—have two tabs coming out of them, one labeled true and the other false. The direction of the flow depends on the result of the test.

IBOL has advanced programming features that allow you to increase the speed and efficiency of the robot. For example, the language lets you handle three memory stacks at a time. A stack is simply a place to store something you want to remember. The robot has stacks for moves, objects, and numbers.

In addition IBOL lets you direct the program flow from the main panel to a subpanel and back again, as well as loop back to the beginning of the current panel. This feature lets you use a set of instructions, such as a subpanel for a song, in any of your ChipWit designs. You can even control the flow of the program manually by assigning keystrokes to specific tasks. You can save ChipWits programs at any stage of development and designate them as appropriate to particular environments (see Figure 3).

ChipWits in Action

When a robot is ready to begin its mission, it is placed in the first room of the chosen environment. The graphics are superb, with excellent perspective on the room as the robot moves around. Almost every action is visible: a "sight line" extends from the robot's eyes, a feeler emerges to touch the space in front of it, and a mechanical arm emerges from the top of its head to grasp the object that you tell it to pick up. Sound is also used well. Each action has its own sound effect; the electronic munching is noteworthy.

The room where the robot moves takes about two-thirds of the screen. The rest of the screen lets you keep track of your program (see Figure 4). The Status panel provides information about the health of your ChipWit, such as fuel and damage levels and the last key pressed. The Memory panel represents stacks of objects, moves, and numbers that have been stored for the ChipWit to remember under special circumstances.

The instruction chips in your program are shown in a Debug panel, and the chip currently being executed is highlighted. The panel is useful for tracing the execution of your programs. You can choose any of three debug modes: fast, slow, or step-through, which requires a mouse click to take the program from one instruction chip to the next.

An Educational Tool?

ChipWits holds promise as an educational tool, but it falls short as a way to teach programming concepts. Its use of memory stacks is not consistent with meth-
ods of memory management used in the higher-level languages taught in schools. In addition, IBOL programming branches at almost every step, unlike the more linear algorithms needed in languages like BASIC or Pascal.

IBOL may be more suitable for learning problem-solving techniques in general. The Debug panel, detailing the program flow—in effect, the thought process—might offer a useful approach to such training. However, since you cannot control the environments or goals yourself, ChipWits’ suitability even in this area is questionable.

The documentation that accompanies ChipWits is a disappointment, with a few factual errors and little useful information. While the game's philosophy may be to learn by doing, no one should have to play a game to figure out how it should be played.

Not too many reviews come with guarantees, but this one guarantees that if you like programming, you'll love ChipWits. If you’re not of the programming persuasion, you may still like ChipWits, but be ready to pay a lot of attention to detail and willing to take one small step at a time. And watch out for those electrocrabs.

Figure 3
You can save finished robots or ChipWits in progress. You can also link a ChipWit to specific environments. When you select an environment, the names of the robots linked to that environment appear in the Warehouse menu.

Figure 4
The Status panel has icons that monitor aspects of the ChipWit’s health, such as damage sustained, fuel levels, and the robot’s distance from an object. The three columns in the Memory panel represent stacks of objects, mores, or numbers. The Debug panel traces the execution of the program.

Sharon Zardetto Aker is the author of two forthcoming books: MacPack (Ashton-Tate) and Microsoft BASIC for the Mac: A Beginner’s Guide (Scott, Foresman & Company).

ChipWits
Brainpower
24009 Ventura Blvd. #250
Calabasas, CA 91302
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Mighty Mac
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<td>Apple Modem 300 Baud</td>
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<td>Hayes Microcomputing</td>
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<td>Smartmodem 1200</td>
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<td>Kensingto</td>
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<td>Portable Modem (300 Baud)</td>
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<td>Mac Modem 2400 w/Software</td>
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<td>Premice</td>
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<td>Roccom X-100 Modem (Mac)</td>
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<td>Prometheus</td>
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<td>Promodem 1200 w/ Mac Software</td>
<td>338.00</td>
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<td>Novation</td>
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<tr>
<td>Dell Comm/Communications System</td>
<td>309.00</td>
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- Brainpower
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  Calabasas, CA 91302
  818/884-6911

TeleChess
  An animated chess game that enables you to send moves to another player by modem. TeleChess integrates chess graphics with communications software. Moves appear simultaneously on both computer screens, and a "chat" mode lets players talk to each other on screen during the game. The package includes two program disks and an installation program for customizing each player's modem.
  List price: $69.95.

- Diehl Graphsoft
  3246-K Normandy Woods Dr.
  Ellicott City, MD 21043
  301/461-9488

Minicad 3D-Designer
  A computer-aided design program that enables you to draw three-dimensional objects. You can build objects from polyhedrons, line segments with eight bits of precision per data point in height, width, and depth. Drawings can contain over 250 points on a 128K Mac and over 2500 points on a 512K Mac or a Macintosh XL. The objects can be rotated and displayed from virtually any viewpoint, with or without perspective, and can be viewed as a wire frame, a white solid, a patterned solid, a solid, or shaded from a movable light source. Minicad lets you reproduce, assemble, enlarge, shrink, scale, rotate, or distort objects or parts of objects. You can transfer Minicad files to MacPaint to enhance the drawings. List price: $295.

- Digital Technology International
  500 West 1200 South
  Orem, UT 84058
  801/226-2984

Display Ad Make-Up System
  A display ad make-up system that sends output to either a laser printer or a digitized phototypesetter. Display Ad Make-Up lets you combine text and graphics on the screen to lay out an ad. The program provides the codes required to drive a typesetter; you need not enter any typesetting codes. You can select various typefaces and sizes in points or picas; move blocks of type on the screen; cut and paste elements; create boxes, rules, and borders; and edit text on the screen. List price: $2995.

- Hayden Software
  600 Suffolk St.
  Lowell, MA 01854
  800/343-1218

VideoWorks
  A program that lets you create animation on the Macintosh screen. You can draw your own images using the program's graphics application or use the program's Art Grabber tool to move MacPaint pictures (including original drawings, digitized images, or clip art) into VideoWorks. You animate images frame by frame or in real time by moving the mouse. VideoWorks includes the following features: the ability to have 24 independent activities occurring on the screen at once; an editor with cut, copy, paste, and clear functions; full matting capability for separation of figure and background; an incremental motion generator; speed adjustment; and sound effects. The program...
also includes a disk containing a library of artwork and a demonstration disk with examples of the kinds of movies you can create. List price: $99.95.

**Infocom**

55 Wheeler St.
Cambridge, MA 02138
617/492-1031

*Wishbringer*

An interactive fiction game in which you are a mail clerk in a seaside town that has come under a spell cast by the mysterious Evil One. As you seek to solve the mystery, you must avoid being jailed by her henchmen, the Boot Patrol. *Wishbringer* comes with several elements necessary to the solution of the story, including a sealed special-key letter, a map of the town, and a glowing-in-the-dark stone. The game can be played on two difficulty levels: novices can use Magick, a set of seven wishes, each of which can be used only once; aficionados can increase the challenge of the game by refraining from magic, since all the puzzles can be solved by logical means. List price: $39.95.

**Infosphere**

4730 S.W. Macadam Ave.
Portland, OR 97201
503/226-3515

*XL/Serve*

A program that permits Macintoshes connected by Apple's AppleTalk Personal Network to share a hard disk and an ImageWriter printer that are connected to a Macintosh. *XL/Serve* provides disk and printer server software that runs on a host Macintosh XL under *MacWorks*, driver software for user Macintoshes, and a backup and restore utility for archiving server volumes. The server allows partitioning of the host disk into a number of volumes, which can be designated read-only or read/write. List price: $195.

**Mainstay**

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Agoura Hills, CA 91301
818/991-6540

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Bellevue, WA 98009
206/828-8080

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A version of the Logo programing language that includes new turtle graphics procedures and an extensible interpreter. Logo teaches structured programing techniques and problem-solving strategies. The language offers a debug window for tracing program flow and variables, procedure formating and comments, arrays for high-speed processing, and disk/modem random access filing. QuickDraw graphics include variable pen width, pen patterns, and shape filling. Precision math and high-speed processing make this Logo suitable for novices as well as experienced programmers. List price: $124.95.

Megahaus Corp.
5703 Oberlin Dr.
San Diego, CA 92121
619/450-1230

MegaDesk

A collection of three desk accessories—an appointment book, a transfer routine, and a card file—that can be moved to any Macintosh application that supports desk accessories. The appointment book lets you display a week or a day at a glance, write notes for every hour of the day, and print out appointment summaries. The transfer routine lets you jump from one application to another in less than a fifth of the usual time. The transfer routine leaves the Clipboard intact. The card file works like the Macintosh Scrapbook but also lets you store and retrieve information, including text and pictures, using names sorted in alphabetical order. You can use the card file as a phone directory, a task file, a scrapbook, or a simple database. List price: $125.

Nevins Microsystems
210 Fifth Ave.
New York, NY 10010
212/563-1910

TurboCharger

A program that increases disk access speed on a 512K Macintosh. Tasks such as loading a program and searching a file are 300 to 1000 percent faster with TurboCharger. Once installed on a Macintosh startup disk, TurboCharger works automatically, buffering critical areas of disk in RAM to increase performance. TurboCharger is a disk-memory cache system; unlike a RAM disk, TurboCharger uses a small amount of memory (as little as 32K can be used for buffering), works with copy-protected software, and can be used with large programs. TurboCharger can be used with most Macintosh software. List price: $95.
search a decrepit building to solve the mystery of a gateway to another world. Once through the gateway, you find yourself in a parallel universe, where you try to track down and destroy an evil force that is threatening the world. The game includes on-screen graphics and the ability to save multiple games. List price: $49.95.

**Rune Software**

80 Eureka Square #214
Pacifica, CA 94044
415/355-4851

**Talkshow**

A program that lets you integrate graphics and speech. You can transfer MacPaint graphics from the Clipboard to Talkshow; create animated sequences, and add speech with the program's speech synthesizer. Portions of a Talkshow production can be hidden behind objects within a drawing frame; clicking the mouse calls the hidden frames, which can in turn contain hidden frames.

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The length of a Talksbow presentation is limited only by available disk space. Talksbow frames can be displayed at preset intervals or activated by clicking the mouse button. Applications include animated slide shows for business presentations, educational slide shows, and entertainment. List price: $149.

Sierra On-Line
P.O. Box 485
Coarsegold, CA 93614
209/683-6858

Ultima II
A fantasy role-playing game in which you create your own characters, setting attributes such as strength, agility, stamina, charisma, wisdom, and intelligence. You travel back in time to attempt to defeat Minax, enchantress of evil. You battle monsters, wizards, and humanoids as you travel through villages, dungeons, and eventually outer space. The game’s graphics depict nine planets over eight time periods. You can save games periodically and resurrect characters who are killed, rather than start over. List price: $59.95.

Sierra On-Line Software
P.O. Box 261450
San Diego, CA 92126
619/695-6956

Accessory Pak #1
A disk containing several desk accessories and programs. The Paint Cutter program allows you to select and copy any portion, up to a full page, of a MacPaint document to the Clipboard or directly to the Scrapbook. Screen Saver turns off the screen display after a period of inactivity; a small image bounces around on the screen to let you know the Mac is still on. Rulers for MacPaint provides rulers in inches, centimeters, and pixels; you can place the rulers next to the

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MacPaint window or paste them into a document. The QuickEject desk accessory immediately ejects all disks and resets the system. The Coordinates desk accessory indicates the screen coordinates of the pointer as you move it. List price: $39.95.

- **SMB Development Associates**
  P.O. Box 3082
  Chatsworth, CA 91311
  818/341-2523

Macmate!
A RAM disk for the 512K Macintosh. Macmate! speeds up disk access by emulating a random access disk drive in memory. Macmate! features include auto-load, auto-drive default, and user-selectable RAM disk size (the program always leaves at least a 128K system). A print spooler function enables you to print documents while running applications on the Mac. List price: $49.95.

- **SoftTech Microsystems**
  16875 W. Bernardo Dr.
  San Diego, CA 92127
  619/451-1230

MailManager
A list, label, and form-letter generator. MailManager maintains name and address information, which is used to generate phone and address lists and mailing labels. The information can be merged with MacWrite or Microsoft Word files to generate documents such as personalized form letters. Those files can contain graphics created with MacPaint or other graphics programs. Within each record, you can define up to 72 identifying characteristics in addition to the basic address fields. Those characteristics can be assigned to individual addresses and used as selection criteria when determining which subgroup qualifies for a particular mailing. MailManager prints merged information with no pause between records. List price: $119.

- **Tardis Software**
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  408/372-1722

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**Hardware**

- **AST Research**
  2121 Alton Ave.
  Irvine, CA 92714
  714/863-1333

RamStak
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**Macworld** 111
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Ask around, and you will find that most modern agencies and firms make do with quite un-modern tools, conducting business via paper and word-of-mouth. They may extoll the virtues or enhance the value of their clients' high-tech products, but they have refused to touch the difficult-to-use, task-bound computer hardware and software that has been available. And for good reason. They know that these "productivity tools" do not meet their needs. They know that inappropriate technology is as uncomfortable as bad-fitting shoes. And they know that their businesses are based on the quality of their ideas and require solutions designed to facilitate evaluation and analysis, judgement and insight.

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  - Sapphire Cat Stretch $59
  - Ruby Stretch $69

- HAYES
  - Smartmodem 300 $195
  - Smartmodem 1200 $250

- INTERNATIMAX
  - MaccPhone $159

- KENSINGTON
  - 300 Baud Modem $35
  - Memorex 3½" (box of 10) $39
  - 3M 3½” (box of 10) $39

- MICROCOM
  - MacModem $450

- Mircrosoft
  - MacEnhancer $170

- PROMETHEUS
  - MacTote $65

- DISKS
  - Maxell 3½” (box of 10) $35

- OPTIMUM
  - 3M 3½" (box of 10) $39

- PREFERENCES
  - Animation Tool Kit $39

- GRAPHICS
  - Davinci Series (Buildings, Interior, Landscape) $100
  - Davinci Commercial Int. $140
  - Davinci Building Blocks $45
  - McPic $35
  - Microsoft Chart $85
  - Click Art Series (Postcards, Posters, Letters) $100

- LANGUAGES/UTILITIES
  - Basic Interpreter (MS) $95
  - MacForth (Level 1) $95
  - MacForth (Level 2) $135
  - Smoothtalker $115
  - Softmaker II $119
  - Softworks "C" $275
  - PC to Mac & Back $85
  - Hipo (Level 1) $115
  - Dollars & Sense $79
  - Front Desk $90
  - Home Accountant Plus $69
  - Invest. Workshop $25
  - MacManager $35
  - MacProject $25
  - Management Edge $125
  - Market Analyzer $25
  - Market Manager $25
  - Peachtree Back To Basics Accounting $125
  - Sales Edge $165
  - Straight Talk $369
  - Financial Planning (Pro) $125
  - Investment Planning (Pro) $60
  - Communications Edge $110

- MANAGEMENT/FINANCE
  - Negotiation Edge $175
  - Tax Manager (Micro) $110
  - Forecast $45
  - Electric Checkbook $50
  - MacCalendar $50
  - Income Producing Real Estate $90
  - General Financial Analysis $70
  - Real Estate Dev. (Comm. or R.e) $70

- SPREADSHEETS INTEGRATED
  - Jazz (Lowest Price) $95
  - Multiplan $125
  - Microplan (Lowest Price) $115
  - T&J Solver $165
  - Ensemble $185

- OPERATING SYSTEMS
  - PFS File & Appnote $150
  - Mac Lion $250
  - Factfinder $115
  - Word Processor $400
  - PowerTalk $350
  - Microsoft Chart $89
  - Click Art Series (Posters, Posters, Letters) $100

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Macware News

A second model, which uses 256K DRAM chips, is available in configurations providing 512K, 1 megabyte (MB), 1.5MB, and 2MB. Boards with less than the full 2MB have empty sockets, allowing additional 256K DRAM chips to be added. Included with the RamStak boards that use 256K chips are utilities that allow MacWorks and the Lisa Pascal Workshop to use 2MB of memory, since without modification, these operating systems cannot use more than 1MB. List price: 512K model $895, 1MB model $1495, 1.5MB model $2095, 2MB model $2695; upgrade kit for adding 512K to the RamStak board $500.

Kensington Microwave

251 Park Ave. S
New York, NY 10010
212/475-5200

Maccersories A-B Box
A device that lets you connect two peripherals to one of the Macintosh's serial ports or share one peripheral between two computers. For example, both the Imagewriter printer and a modem can be connected to the A-B Box; you switch between the two simply by pressing a button. Or if two Macintoshes share a LaserWriter printer, you can plug both computers into the A-B Box. When you press A, one Mac takes control of the printer; when you press B, the other takes control. The A-B Box fits under the Macintosh external disk drive. List price: $99.95.

Accessories

Diversions

1550 Winding Way
Belmont, CA 94002
415/591-0660

ColorPens
A set of five color pens to use with Diversions' Underware iron-on transfer ribbon. You print a MacPaint design on paper using the black Underware ribbon, then add color to the design with the ColorPens. Both the ribbon and the pens contain a thermal transfer ink; you apply the design to a T-shirt with a hot iron. Each package contains pens in yellow, red, blue, green, and orange. The colors will withstand washing. List price: ColorPens $19.95, Underware ribbon $19.95.

N2 Products

2401 Qume Dr.
San Jose, CA 95131
408/435-0227

Mac Cables
A cable that connects the Macintosh to a Hayes or Hayes-compatible modem and a cable that connects the Mac to a variety of printers, including the Imagewriter. List price: each cable $29.95
Spinwriter Accessory Kit
A kit that allows you to use the NEC Spinwriter printer with the Macintosh. The kit, which includes master and backup disks, a manual, and an interface cable, supports the 2010, 3510, 8810, and e.l.t. 360 model Spinwriters. List price: $99.

Notes
Another Laser Printer
You can now use Hewlett-Packard's LaserJet printer with the Macintosh. SoftStyle's LaserStart printer driver enables you to print graphics or a variety of fonts including Courier, Times Roman, International, Prestige Elite, and Letter Gothic on the LaserJet. List price: $95, not including font cartridges; LaserJet printer $3495. For further information, contact your local Hewlett-Packard dealer or sales office.

Plotters
A number of companies have introduced software that lets you use a variety of plotters with the Macintosh. Mesa Graphics' Plot-It allows you to print MacPaint documents on the Apple Color Plotter, the Hewlett-Packard 7475A, and the Houston Instrument DMP-29 and PC-695. List price: $95. For more information, contact Mesa Graphics, P.O. Box 506, Los Alamos, NM 87544, 505/672-1998. Tan Technologies Mac-n-Pack runs with the Hewlett-Packard 7475A color plotter. List price: $149 (requires Microsoft BASIC 2.0).

This is the last time Macware News will appear. Beginning next month this department will be replaced by a section that will feature several short reviews each month. In order to have your software or hardware product considered for review, send a product description and the product when available to Product Review Editor, Macworld, 555 De Haro St., San Francisco, CA 94107. To run a continual listing advertising your product or service, refer to the Macworld Directory. For further information about the Directory, contact the ad sales department at 415/861-3861.
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<table>
<thead>
<tr>
<th>Product</th>
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<tr>
<td>DB Master</td>
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### SPREAD SHEETS

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<td>TKI Solver</td>
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<td>Mac Advantage</td>
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<td>UCSD Picals Development System</td>
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### TRAINING

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<td>Mastertype</td>
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<td>Typing Intrigue</td>
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### MONEY MANAGEMENT

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<td>Dollars &amp; Sense Forecast Module</td>
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<td>Electric Checkbook</td>
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### M.D.S.

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<td>Anchor Automation</td>
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<td>Hayes Smartmodem 300 Base</td>
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<td>Hayes Smartmodem 1200 Base</td>
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### MODEMS

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<td>EditDisk Drive</td>
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### PRINTERS

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<td>Brother HR-153L</td>
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<td>C-torch A-10-30 (Serial)</td>
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<td>C-torch F-10 (Serial)</td>
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<td>Epson Printers</td>
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<td>Okidata Printers</td>
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### UTILITIES/GRAPHICS

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<td>Animation Tool Kit</td>
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<td>Click Art</td>
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### ACCESSORIES

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<td>Mac Control Center</td>
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### DISKETTES

<table>
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<th>Product</th>
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<td>BASF Disks (5 Pack)</td>
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<tr>
<td>MAXELL Disks (10 Pack)</td>
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### HARDWARE

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<td>Quartet</td>
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<td>Microsoft File</td>
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<td>Microsoft Word</td>
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### COMMUNICATIONS

<table>
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<th>Product</th>
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<td>Dow Jones Straight Talk</td>
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### DISKETTES

<table>
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<tr>
<td>MAXELL Disks (10 Pack)</td>
<td>$25</td>
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</tbody>
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Make Your Mac Sing, Dance, and Create Great Art.

VideoWorks™ puts your ideas in motion.
Create your own animations. Anything you can imagine, you can bring to life on your screen. Assemble your characters using the artwork included with VideoWorks. Or use MacPaint™ to create characters and locales of your own. Then use VideoWorks to get your creations moving. This could be your first step to an Academy Award!

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Compose music directly on your Macintosh™ and hear results instantly. Even if you can't read a note, you can easily produce professional musical scores. Play back your whole composition, or any part of it, whenever you want. Hear your music played by any of eight instruments. And write that Top 40 hit you've always dreamed of.

Art Grabber™ with BodyShop™ improves your image.
Art Grabber speeds up your design process by letting you instantly transfer screen images from one MacPaint document to another. BodyShop gives you a selection of human forms which you can assemble any way you want. You get both for the price of one.

Hayden creativity tools are available for the Macintosh at your local software dealer or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01854, or call 800-343-1218.

MusicWorks and you can make beautiful music together.

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Introducing idd's MacDraft™

The Ultimate Drawing Package for the Macintosh™

MacDraft™ is the most powerful object oriented drawing tool available for the Macintosh™ today. Its ease of use, combined with its powerful capabilities, allows even the most casual user to produce professional looking drawings. The versatility of MacDraft™ makes it ideal for the beginner, as well as the professional.

Although MacDraft™ is powerful enough to create scaled drawings, schematic diagrams, organizational charts and business illustrations, it is also ideally suited for creating general sketches, greeting cards, and almost any other picture that you might want to draw.

Features

- Continuous drawing mode.
- 16 Different scales.
- Zoom In and Zoom Out.
- Automatic dimension lines.
- Circles by radius or diameter.
- Arcs by radius or 3-points.
- Distribute objects along a line.
- Rotate objects in 1 degree increments.
- Create objects by inside or outside diameter.
- 4 Separate documents on the screen at the same time.
- Paste illustrations to and from other documents.
- Paste pictures from MacPaint™.
- 64 Patterns for Fill & Ink.
- Flip objects.

MacDraft™ offers 16 different scales to suit your needs.

Objects created at one scale, can be pasted into a drawing at a different scale. The objects will reduce or enlarge to conform to the new scale. You may also change the scale of the entire drawing.

The Zoom functions allow you to see either a reduced or enlarged view of the drawing. Regardless of the view, you still have full access to all of the drawing capabilities of MacDraft™.

ZOOM OUT: to see your entire drawing, and also add large objects that may stretch beyond a normal view.

ZOOM IN: to add fine details to your drawing that may not be convenient to create at a normal view.

MacDraft allows rotation of objects in one degree increments.

MacDraft features auto dimensioning so that the size of an object can be displayed on the drawing.

Draw your own conclusions, with MacDraft™. For more information, see your dealer or call us today.

Innovative Data Design, Inc.
1975 Willow Pass Road, Suite 8, Concord, California 94520 (415) 680-6818

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Late-Night Layout

Gordon McComb

Macintosh sleuth Nick Lazlo is put through the wringer creating a page layout with MacDraw.

It wasn't an unusual night. At least it didn't start that way. I sat hunched over my desk, puffing on a stale Camel, hurriedly tapping away on my Macintosh. Between the clicking of the keys I heard a muffled cough at the door. I turned slowly, body first, ready for the worst.

Then she appeared. Not a cold and brutal assassin of the night, but a tall and beautiful redhead with the kind of deep green eyes that can look right through you. She knocked lightly on my door, apologized for the intrusion, and then stared directly at my Macintosh. I ushered her in, offered her a cup of my brine coffee—which she wisely refused—and listened to her story.

Seems like she and her employers, a pair of eccentric inventor types, wanted to create a one-page layout using the Mac. I was ready to accept the assignment until I got wind of what they wanted: one- and two-column text on the same page, footnotes, and even a graphic stack at the bottom. She also informed me that they wanted the page framed by a thin border, a folio rule on the top or bottom, and a thin line separating the two columns of text. I told the redhead she was crazy, that what she wanted to do was impossible, even for a seasoned Mac sleuth like me.

With just a moment of hesitation, the redhead flipped open her purse and pulled out a thick, white envelope. "Mr. Lazlo, inside are 50 crisp bills," she said teasingly. "Big bills. Now are you interested?" She waved the envelope alluringly in front of my eyes. "When do I start?" I stammered.
I poured a fresh cup of coffee and sat down to figure out what program I would use to lay out the article. I didn’t have the extra dough to spend on a special page-makeup program like MacPublisher, Ready-Set-Go, or PageMaker; so I had to do the job with the programs I already owned.

I use Microsoft Word for most of my word processing, and I’d used it before on a similar case. Yes, Word was capable of integrating text and graphics, creating footnotes, and printing multiple columns of text. But I found that the program has a major drawback in doing page layouts: it doesn’t format columns on the screen. Not being able to see the column layout on screen makes it tough to tell how the page will look when it’s finished. In addition, positioning the different elements and adjusting the various margins on the page can take a lot of time.

I had been using MacDraw to make promotional flyers for my anemic business and was impressed by how easily I could create text and graphic elements and position them on the page. Although MacDraw is labeled an electronic drafting program, it has most of the features required for creating simple, one-page layouts. I figured it wouldn’t hurt to give the program a crack at the inventors’ oddball layout.

2:10 a.m. I popped MacDraw into my Mac and began work. When started, MacDraw’s alignment grid is turned on. I wanted to move elements on the page without locking into MacDraw’s invisible grid, so I flicked the grid off. To make it easier to see what I was doing, I turned off the background ruler lines and changed the view to show a reduced version of the entire 8- by 10-inch page on screen.

First I wanted to make a layout outline for the graphics and text. I chose the rectangle tool and created two large boxes for the body text and one wide box for the banner headline. Finally I made another box near the bottom of the page to hold the graphic (see Figure 1). I eyeballed the size and placement of the outline boxes, but I could also have used MacDraw’s rulers and Show Size features to measure and place each box precisely on the page.

2:18 a.m. Next I chose 36-point Geneva font, clicked the top box, and typed the banner headline. I went back to normal view to see how the text looked and saw something I didn’t like. There was too much space between the two lines. I didn’t like. There was too much space between the two lines. I deleted the text by selecting it and tapping the Backspace key.

I wanted more control over the placement and spacing of the text, so I chose the T (for text) tool, clicked inside the top box, and typed the first line. I then clicked immediately below the first line and typed the second line.

I was a little disgusted when the background of the second line partly obscured the first line of the banner headline. I discovered that MacDraw automatically fills the surrounding background of each line of
text with opaque white. To make the background surrounding the two lines of text transparent, I selected both lines and chose the None pattern from the Fill menu.

2:23 a.m. Next I typed the first column of text. I clicked the left column box, reduced the text size to 14 points, and typed the authors' names. Then I reduced the text to 10 points and started typing the remainder of the body text, but I ran into a snag. Reducing the type size made the previously typed text shrink, too. Evidently, MacDraw doesn't let you mix fonts or sizes in one block of text.

To solve the problem, I made two more outline boxes. I drew a small one at the top of the left column and filled it with the authors' names. I made the second one large enough to accommodate all of the left column text (see Figure 2).

As I typed the text into the left column, MacDraw automatically wrapped words to fit in the box, so I didn't have to hit the Return key at the end of each line. I did the same for the second column.

But let's face it—MacDraw is not a word processor. The program can't do superscripts for footnoting like Word does. It took me a few minutes to devise a way to insert the superscripted footnote references in the text. The best solution that I found was to leave a couple of blank spaces in the text where a superscript appeared. Then, with the 'T' tool, I made an insertion point at the blank spot and typed each footnote number separately. With only the footnote number selected, I could easily position the number precisely above the regular line of text. It looked like the real thing.

2:45 a.m. To finish the text entry, I made yet another box with the rectangle tool and placed it in the lower half of the right column. I reduced the text size to 9 points and put the footnote text in the box (see Figure 3).

One annoying hitch with MacDraw that I mentioned earlier is that if you change the font, size, or style of one word in a text block, all the text in that block changes. To make the word Smithsonian in the footnote text italicized, for example, I had to type it separately, italicize it, and then drag and position it over the old text. Since I had previously set the background fill to be None, the old text appeared through the new. To fix this problem I selected the italicized Smithsonian and chose the White pattern from the Fill menu to give it an opaque background.

3:01 a.m. Time for another cup of brine—and to poison the colonus.

3:17 a.m. The layout had a two-column-wide sketch at the bottom of the page. I'm no artist, so I decided to digitize the copy of the sketch the redhead had left me. The result would be a MacPaint picture that I could cut and paste into MacDraw.

I saved the work I'd done so far, exited MacDraw, and pulled out my Thunderware ThunderScan digitizer. I slapped the scanner into the ImageWriter and in 10 minutes had the sketch digitized. To finish the job, I saved the graphic as a MacPaint document.
THE FLY AS AN AERONAUTIC FORCE

Tim M. Sharon, Ph.D*
Richard D. Brewer, Ph.D**
Brewer-Sharon, Inc.
Irvine, CA

Not long ago, in an issue of a prestigious national magazine, an article drew attention to the National Air and Space Museum’s acquisition of two fly-powered aircraft (see illustration). Although no reference was made to the origin or antecedents of these two craft, one could not help but gain the impression that they represented the prototype models — a conclusion engendered by the fact that they are displayed along with other truly original-in-concept flying models. The authors feel an injustice has been fostered, for one of the authors (Brewer) experimented with aircraft of this design as early as 1949. That, coupled with certain errors in execution of the craft being exhibited, which would render them in all likelihood unflyable (more on this later), has convinced us that these are cheap, unworkable imitations, and that the record must be set straight.

Let us begin with the history, as told in the inventor’s own words, of fly-powered gliders: In the spring of 1949, I lived in a U.S. Navy housing project in Torrey Pines, California, on a site located just about where the Physical Sciences Library of the University of California at San Diego is presently situated. This was within a few miles of the Torrey Pines glider facilities, located on the cliffs that today overlook the infamous Blacks Beach, and from which today young hang gliders cavort amid the sea gulls, pelicans, and soaring planes above the blue Pacific.

*Inspired by my environment and surrounded by aviation and dreams of flight, my then young mind turned to the flight of the fly. I conceived of using the common housefly as the power source for commercial aircraft.*

*This author has never built a fly-powered aircraft, nor does he intend to do so since flies are dirty little critters. However, he does have a degree and is thus intimately acquainted with the fly’s main source of fuel. Besides, it was his idea to write this article.

**The inventor, we believe, of fly-powered aircraft.


2 Especially if you’re at that impressionable age.

3 The fact that the library has not yet been appropriately dedicated, in light of the momentous discovery made in the area, we consider to be an example of shameless neglect.

4 The first legal public nude beach in California.

---

**Figure 5**
I spent about 2 hours doing this layout with MacDraw. I was able to add all of the graphic embellishments requested and saved the outline for future use.

I was about to exit the ThunderScan software when it hit me: the graphic was 7 inches wide, but *MacPaint* can't select an area for cutting or copying that's wider than 5½ inches. I thought I'd backed myself into a blind alley. Then I remembered that I didn't need to copy the image to *MacPaint*; the ThunderScan software lets you select the entire graphic with its marquee. I breathed a sigh of relief, copied the digitized sketch to the Clipboard, and headed for *MacDraw*.

Once back in *MacDraw*, I pasted the graphic in at the bottom of the page.

**3:47 a.m.** To finish the layout, I needed to delete the outline boxes. I selected each one and pressed the Backspace key to erase it. Then I used *MacDraw*'s line tools to frame the text and graphic and add the border, folio rule, and other graphic embellishments. Finally, I typed a single capital X in 36 points, as shown in Figure 4, and moved it to the beginning of the first paragraph.

**3:55 a.m.** I fired up my Imagewriter (for lack of a LaserWriter) and did a test print of the *MacDraw* layout. A strange glitch appeared in the printed document: the text in the columns had mysteriously rewrapped. Lines as printed on the Imagewriter didn't end at the same place as they did on screen.

When it prints in Tall mode, the Imagewriter has a slightly greater horizontal resolution than the Mac's screen; it looked like *MacDraw* was adjusting the text to the expanded resolution of the printer. To correct this I called up the Page Setup dialog box and changed the orientation from Tall to Tall Adjusted, which adjusted the printer's resolution to the screen's. The finished *MacDraw* layout is shown in Figure 5.

Total time with *MacDraw* was less than 2 hours. Happily, I discovered that *MacDraw* makes it easy to save the layout for future use. All I had to do was keep the layout outline and add the proper borders, columns, and folio rules. I could then use the dummy as the basis for laying out subsequent pages.

While *MacDraw* can accept text cut from a word processing program, it can't place that text within the boundaries of a box. That's about its only disadvantage.

**5:18 a.m.** It was getting light out when I called the tall redhead with the unfathomable green eyes and told her the case was closed, all of her problems were solved. Fifteen minutes later, there she was again, standing at the doorway, her hair glowing in the morning sun that peeked through the venetian blinds.

I handed over my report and reminded her of my payment. She pulled the white envelope from her purse and tossed it carelessly onto the table. With a quiet thanks, she left. I watched her walk the length of the hall and get in the elevator. I never saw her again. That's how it is in this business.

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Gordon McComb is a Contributing Editor of *Macworld*.

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Mining the Mac's Hidden Resources
Walk into any office, and you'll see signs of personalization. Everything from the pictures on the wall to the collage of notes on the lamp helps to personalize an oftentimes sterile and uninviting workplace. Though the Macintosh desktop is more inviting than the screens you get with most computers, there's always room for a little customization. Adding your own icons, modifying the existing ones, or changing some of the dialog boxes and menus can help make your Mac unique.

The key to customizing the Mac's electronic desktop and applications is a new utility program from Apple called ResEd, which stands for resource editor. With this program you can change the names of commands, redraw icons, add new command keys to menus,
Hands On: Utilities

**Resource Type** | **Meaning**
---|---
ALRT | Alert box template
BNDL | Bundle
CDEF | Control definition function
CTL | Control template
CODE | Application code segment
CURS | Cursor
DITL | List of items in a dialog or alert box
DLOG | Dialog box template
DRVR | Desk accessory or other device driver
DSAT | System startup alert table
FKEY | *Shift-number routine
FONT | Font
FREF | File reference
FRSV | Font reserved for system use
FWID | Font widths
ICN# | Icon list
ICON | Icon
INIT | Initialization resource
INTL | International resource
KEYC | Keyboard configuration
MBAR | Menu bar
MENU | Menu
PACK | Package
PAT | Pattern
PAT# | Pattern list
PDEF | Printing code
PICT | Picture
PREC | Print record
STR | String
STR# | String list
WDEF | Window definition function
WIND | Window template

**Table 1**

Resources are identified by a four-letter code called a resource type. Three-letter types, such as PAT and STR, include a trailing space.

![Figure 1](image)

*When you open a file in ResEd, you're greeted with an alphabetical list of resources. You can open a resource by double-clicking its name.*

rewrite the messages that appear in dialog and alert boxes, change the brush tips in *MacPaint*, and edit and create fonts.

In short, *ResEd* is a Mac of all trades that allows you to customize applications, finally letting you have it your way. You can't change everything with *ResEd*, mind you, but it gives you far greater control over the Mac than you've ever had.

Now for the best news: *ResEd* is free. It's available at no charge from MicroNet Apple User's Group (MAUG) on the CompuServe information service, as well as from other user groups around the country. Here's a quick peek at what *ResEd* can do and the many ways you can take advantage of its power.

**Natural Resources**

All Macintosh applications, such as *MacPaint*, *MacWrite*, and the Finder, as well as the System files, are made up of discrete building blocks called resources. Fonts, icons, patterns, and menu commands are examples of resources. *ResEd* opens the doors to these resources so that you can make changes.

Here's an example. Start up *ResEd* and open the System file on an application disk; you'll see a listing of resources (see Figure 1). The resources are coded: BNDL, CURS, DITL, DRVR, and so forth. Table 1 explains what each of the editable resource codes represents.

Open the resource labeled CURS, for instance, and you access the holding tank that stores the various cursor, or pointer, shapes for the mouse (one pointer shape that's notably absent is the arrow, which is generated by the Macintosh itself). Double-click on the wristwatch pointer, and you can edit it or redraw it completely (see Figure 2).

To keep track of the multitude of resources within each application, *ResEd* assigns each resource an identification number. To change the number, select a resource and choose the Get Info command from the File menu. An edit box appears, allowing you to type in a new number.

You can often use the identification numbers to your advantage. Instead of editing the wristwatch, you can redesign the icon from scratch and give the new icon the same number as the wristwatch. Be
sure to renumber the wristwatch first, so you don't confuse the Mac. When the arrow is supposed to change to a wristwatch, the Finder simply grabs the pointer with the identification number 4, no matter what the pointer looks like.

Note that only applications and certain Mac files—including the System, Finder, Scrapbook, and Imagewriter files—have editable resources. Documents created by applications such as MacPaint and MacWrite don't have resources of their own and can't be manipulated by ResEd.

That doesn't mean ResEd can't tap into all documents. It can easily open and manipulate Font Mover documents, for example. You can even use ResEd to install fonts in the System file. In addition, ResEd creates documents of its own, which you can use to store resources that you've cut or copied.

**Up and Running**

Using ResEd is simple, but it's not foolproof. Because the program is not yet free of bugs, it can crash unexpectedly, and the work you've done is lost forever. If the program crashes while it's saving work to disk, it will most likely ruin beyond salvage the file you've been editing. You can save yourself a lot of agony if you work only with copies of your applications. With practice you'll learn the limitations of ResEd.

To get ResEd up and running, make a copy of it and the files you want to edit and put them all on one disk. Open ResEd, and a small window appears displaying the editable files on the disk. To open a file, double-click on it. To get to some resources, you have to open several windows (see Figure 3). Quite often resources are embedded within other resources, in the same way that folders on the Macintosh's desktop can reside within other folders.

If the file you want to edit is on a different disk from the ResEd disk and you have a two-drive Mac, insert the new disk in the external drive. That disk's directory window will appear. To eject a disk, locate its directory window and click its close box. If you have a single-drive Mac, you can still work with two disks, but you'll have to swap them in and out of the drive.

Some of the resources you open may reveal a window full of strange numbers. The numbers represent resources, such as application code, that have no template. While you can edit these numbers, it would do you no good, because there's no way to know what you're doing.

**Figure 2**

You can use ResEd to design cursors, otherwise known as pointers. To create a new pointer, draw it on the left side of the edit window. Then choose the Data→Mask command from the Cursor menu to make an opaque background for the pointer shape.

**Figure 3**

Many resources are embedded within other resources, and you must open several windows to uncover the information you want to edit. DITL resources, as shown here, control the selector buttons in alert and dialog boxes.
A template allows information to be edited and displayed in a window filled with edit boxes and buttons. If the information is a picture or an icon, you'll see its image in the window. Pictures cannot be edited directly with ResEd, but icons can. Double-click on an icon, and an editing template appears.

You can pass resources from one file to another and from one disk to another by using the Cut and Copy commands from the Edit menu. You can make a backup copy of a resource by selecting it and then choosing the Duplicate command. To delete a resource without affecting the contents of the Clipboard, choose the Clear command.

When you finish editing, close each window. As you close the window of the resource file, you are asked if you want to save your work. This is your last chance to change your mind; if you made a mistake and want to return a resource to its original state, choose the Revert command from the File menu.

Adding Command Shortcuts
One of the most outstanding uses for ResEd is adding key shortcuts to menu items. For example, you can assign the letter Q to mean Quit. Then when you hold down Q and press Q, you can quickly exit an application. You can do the same for Close, Open, Print, or any other command.

To create or edit key shortcuts, use ResEd to open the application you want to change. If you want to edit the menus on the desktop, open the Finder. Locate the MENU resource and open it; a list of menus appears. Menus are numbered sequentially starting from the left side of the screen; for example, the Apple menu is number 1.

With the proper menu open, find the command you want; under it you'll see a box labeled keyBoard equis. Click inside that box and type a letter (see Figure 4). Though space for several characters is available, type only one. You can use upper- or lowercase letters; the Macintosh treats them the same. If you run out of letters, use a symbol or one of the Option characters.

MacPaint can accommodate 32 paintbrush tips at one time. With ResEd you can edit any or all of MacPaint's brush shapes. The technique you use is the same for almost all resources containing graphic images.

Place a copy of MacPaint and ResEd on a new disk. To simplify things, put the System Folder on the disk as well. Start ResEd by double-clicking on its icon.

With ResEd running, double-click on MacPaint. A new window opens, revealing all the resources that make up the MacPaint application. Find the entry labeled FONT and open it. MacPaint has only one font of its own, called 12. The writing fonts, which are separate resources, are stored in the System file.

Open 12, and the font editor window appears. A close-up of the character that is currently selected appears in the center of the window. The large box...
on the right shows a sample of the character (with most other text fonts it reads, "The quick brown fox jumped over the lazy dog"). The small box in the lower-right corner is for selecting the character to edit. The two triangles on the bottom of the window control the spacing of characters and should be left alone when you edit MacPaint brush tips.

MacPaint font 12 contains more than brush tips. It also houses the tools from the Tool Palette and the pointer shapes. Editing those, however, produces no effect. The brush tips start at character position 120 and continue to position 151. Scroll through the characters by clicking on either side of the selection rectangle. It’s best not to edit the large square tip (number 120), because MacPaint uses that tip for the eraser tool. Changing tip 120 alters the shape of the eraser.

Editing brush tips is like using FatBits: click and drag to add or delete dots (see “Edit Window”). The new version of the tip is shown in the selection rectangle.

Repeat the selection and editing process for each tip you want to modify. When you finish, close the windows and click “yes” to save your work when the dialog box appears. Quit ResEd.

It’s a good idea to rename the modified version of MacPaint so you know you’re using the one with your own custom assortment of brush tips. Call it MacPaint Tips or some other descriptive name.

When you use your custom version of MacPaint, select the brush tips as usual. Experiment with using your new tip shapes, and don’t be shy about trying different patterns. For example, “Tip Selection” shows the large square tip turned into a series of vertical lines. When painting from right to left, the new tip doesn’t do anything different. But when you paint up and down (see “Custom Tips”), you lay down a coat of striped paint. Choose a new pattern, and you get a different texture.

While the menu resource is open, you can also change the names of commands by clicking on the menu item box and typing in the new names. Don’t worry about the length of a name; the menu automatically expands. To fit more text on a given line, you can compress the text by clicking the I button in the row labeled condense.

Removing unneeded desk accessories frees up disk space. Use ResEd to open the System file, then look for the DRVR entry. Open it, and you see a list of the desk accessories currently on the disk. To delete an accessory, select it and choose Clear from the Edit menu. You must leave at least one accessory. The accessory labeled Print is required to print screen shots when you press Control-Shift-4; it should not be deleted if you want to retain that capability.

You can also use ResEd to rename a desk accessory. Making your own help screens is a good use of this ability. Create a set of screens with an application such as MacPaint or MacWrite, and paste the screens into the Scrapbook. Using ResEd, rename the help screens by selecting the Scrapbook and choosing the Get Info command from the File menu. Type a new name, such as Help! To call up your help screens, select the new entry in the Apple menu.

![Figure 4](image)

Every Macintosh menu item can have a ⌘ key shortcut. To add a shortcut, open the MENU resource in the Finder or application file. You can also change the style of text within menus. Click the I button opposite the style or styles you want to use.

Custom Tips

Design custom brush tips to suit your needs. You can create tips to produce evenly dashed lines, unfilled or partially filled circles, jagged-edged boxes, I-beams, and more.
Font Editing

If you want to modify an existing character or add a special character to one of the Macintosh's fonts, ResEd will do the job. All of the Mac's writing fonts are stored in the FONT resource, which is located in the System file. Open it, and a full list of all the available fonts in all their sizes appears. Double-click on a font, and you see a font-editing template.

Use the template like MacPaint's FatBits. Click inside the large window to lay down or pick up dots. To edit another character, either type it from the keyboard or use the mouse to scroll through the list of characters in the box in the lower-right corner. Click on either side of the selection rectangle to step through the alphabet, or drag the selection rectangle to scroll quickly forward or back.

To create an entirely new character (see Figure 5), use the Key Caps desk accessory to find an unused Option or Shift-Option key, like Option-K. Type it on the keyboard; the large window in the center of the template will go blank, and you can draw the new character.

ResEd gives you some creative freedom when you work with fonts. If you want to change the spacing of characters, drag either of the black triangles located along the bottom edge of the font window. In this way you can transform New York, a proportionally spaced font (in which 's take up less space on the line than u's), into a monospaced font. You can increase the vertical line spacing by choosing the More Ascent option from the Height menu, which appears only when you're editing fonts. You can also decrease spacing between lines by choosing Less Ascent and Less Descent, but don't go too far, or you'll start tolop off the tops and bottoms of the characters.

For a new twist, use ResEd to open MacPaint, which has a FONT resource of its own. MacPaint's FONT resource creates its 32 brush tips rather than text (see "New Brush Tips" for more details).

Another practical application of ResEd is to alter patterns. The patterns are used to create the Mac's desktop, the pattern palette in MacPaint, and even the Fill and Pen menus in MacDraw, which are not changeable except with ResEd.

Going International

If you need to tailor the Macintosh for use abroad, you'll want a copy of RedEdit, a resource editor written by Gerard Schutter of Apple's Macintosh International Marketing Group. Like ResEd, RedEdit is available from CompuServe's MAUG and other user groups. Though ResEd allows you to change dates, times, or numbers, RedEdit is even more suited to this task and includes additional features:

- Resources are displayed as icons (see Figure 6).
- You can resize a window resource (WIND) by simply dragging a size box.
- You can decompile a resource file into a text file for editing or transmitting via modem.
- If you need to edit a resource for which no template exists, you can view the data in hexadecimal or ASCII.

In addition, Localizer, a utility that comes with RedEdit, enables you to quickly change the keyboard configuration and the date, time, and currency formats to those of the country you choose.
Tip of the Resource

One extracurricular project you may want to try is editing the icons in the ICON and ICON# resources, which are located inside applications, the Finder file, and the System file. If you don't want to bother drawing your own icons, MAUG provides several exhaustive resource editor documents chock-full of images.

You can also edit the text in dialog and alert boxes. You might want to change the text if you're creating a custom Macintosh desktop or application for others in your office, school, or home. You could add some humor or rewrite a message to make it easier to understand.

With ResEd you can even change the picture you get when you choose About the Finder from the Apple menu. You can use any picture from the Scrapbook. If the picture is bigger or smaller than the About the Finder window, the Mac shrinks or expands it to fit. To change the picture, just replace the PICT resource in the Finder file.

Finally, should you want to spice up your menus, you can use ResEd to add icons beside one or more of the commands. Injecting icons into menus is more than just show; it can make the Mac and its applications even easier to learn and use. You could create a special child's version of MacPaint, for example, in which each command would be displayed with a descriptive picture.

These are just a few of the things you can do with ResEd. Don't be afraid to experiment; just be sure you do it with replaceable copies of disks. And besides customizing applications to suit your tastes, ResEd can help you learn more about how the Mac works.

Gordon McComb is a Contributing Editor of Macworld.

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Day one is for dealers, distributors, retailers, and other third-party vendors to talk to Apple and the 100+ exhibiting companies about their products.

Days two and three are specifically geared for people interested in the Macintosh as a tool for business and anyone else interested in the Mac.

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Business: CEOs, presidents, vice presidents, managers, comptrollers, owners/partners

Professionals: Doctors, nurses, bankers, lawyers, engineers, stockbrokers, real estate and insurance agents, CPAs, consultants

Education: Administrators, faculty, students

Here's a look at some of the conference sessions designed for you:

- The Outlook for the Mac in the Office
- Developing Software for the Macintosh
- How to Start and Survive in Business with a Macintosh
- Maximizing MacPaint®
- The Mac Clinic
- Maximizing MacWrite®
- Database Management on the Macintosh
- Getting the Most out of Spreadsheet Programs
- How to Get Your Programs Published
- What's Available in Mac Software
- File Management Tips and Techniques
- Maximizing Macintosh Disk Storage
- The Mac in the Classroom
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- Developing University Courseware with a Macintosh
Here are some of the companies who will be showing Macintosh products:

- Advanced Logic Systems
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- Ann Arbor Softworks
- A+Ziff-Davis Publishing Co.
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- Applied Logic Systems
- Apropos Software, Inc.
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Sound waves, Model 100 update, draft printing, and more

This month's Open Window includes another update on the Macintosh and Tandy Model 100 compatibility issue, as well as a technique for obtaining better-looking draft-quality text. We also provide a Microsoft BASIC program that lets you experiment with the Mac's sound synthesizer, two MacPaint tips that simplify entering and formatting text, and some observations concerning Microsoft Word.

Model 100 Update, Part II
I've followed with interest the Open Window tips concerning the Macintosh's compatibility with Tandy's Model 100 portable computer [see Open Window, Macworld, December 1984 and March 1985]. I, too, was disappointed to discover MacTerminal's inability to convert carriage-return codes into carriage-return/line-feed codes. After numerous inquiries, however, I found a simple solution to the problem:

- Start the Model 100's BASIC by pressing the Enter key while the main menu is displayed.
- Type POKE 63066,255 and press Enter. This statement alters one byte of the Model 100's memory; make sure you alter the right byte by proofreading your typing before pressing Enter.

The statement causes the Model 100 to send line-feed codes along with carriage-return codes, eliminating the overwritten text problem. The altered memory location remains altered until you perform a "cold start" on the Model 100, which clears all files from memory, or until you enter BASIC and execute the statement POKE 63066,0.

Peter Vaktor
Montreal, Quebec
Canada

Better Draft Printing
The draft printing feature in most Mac applications is often criticized for its irregular word spacing. The odd spacing occurs because draft printing is designed to simulate the spacing you get from the standard and high-quality print features. You see the words exactly where they appear on the screen; however, the spacing is irregular because draft printing uses a monospaced Imagewriter font, in which all characters are the same width, instead of a proportionally spaced Macintosh font [see "The Imagewriter and Beyond," Macworld, September-October 1984].

The solution to the problem of irregular spacing is simple. Select the entire document and change the font to Monaco just before printing. Since Monaco is a monospaced font, the resulting draft printing is properly spaced and much easier to read than drafts in other fonts. You can even get different sizes of draft printing by changing the font size. Monaco in 14-point, for example, looks bad on the screen but produces an acceptable draft font. "Draft Printing Sizes" shows samples of draft output from the Imagewriter in four sizes.

To avoid spacing problems with this technique, remember these rules: use only one font size per line, don't use graphics, and use only plain, bold, or underlined text (no italics, shadowing, and so on). Remember to save a document before you change its font to Monaco, and avoid printing right-justified text. The right margins will not line up perfectly, although they will be close.

Scott Newman
Cedar Park, Texas

MacPaint Text Formatting
MacPaint's text editing and formatting features are limited, to say the least. The program doesn't let you specify line widths, and it lacks word wraparound—two shortcomings that make it difficult to fit a block of text into a given space without much trial and error.
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I've found an undocumented feature of MacPaint that overcomes these drawbacks. The trick involves using the Note Pad to enter text, then copying the text and pasting it into a MacPaint document:

- Open the Note Pad by selecting its name from the Apple menu.
- Type the text that you want to insert into the document.
- Select the text by dragging across it, and choose Copy from the Edit menu.
- Start MacPaint. If MacPaint is already up and running, close the Note Pad to return to your drawing.
- Choose Paste from the Edit menu. The text, now enclosed in a marquee, appears in the drawing window.
- Resize the marquee by positioning the mouse pointer within the marquee, holding down the ⌘ key, and dragging. As the marquee's size changes, the text's line endings are changed to fit [see "MacPaint Text"]; you can also change the text's font, size, style, and alignment.

The technique has one limitation: a single Note Pad page is limited to a maximum of 256 characters. If a block of text is longer, use MacWrite to type and copy it, then quit MacWrite, start MacPaint, and paste.

Bill Wbarrie
Waterloo, Ontario
Canada

More MacPaint Text Tips
MacPaint was never meant to be a word processor, but I've heard many complaints about the limitations of the program's text option. Let's face it, it's next to impossible to line up the text-insertion pointer with text you've already typed once you've clicked the mouse button. For example, if you're typing along in 12-point plain New York and want to insert an italicized word...

(continues on page 152)
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Waveform Listing
This MBASIC program enables you to use the mouse to design wave forms for each of the Mac's four voices.

' WAVEFORM - ©1985 by Michael Blake
' Use the mouse to generate waveforms
' for the four voices
' Use the mouse to play various notes
' using the waveforms

' initialize

DEFINT a-z
DIM nwave(256), VoiceSet(3), vwave(3,256)
GOSUB MenuInit
inote=440 ' Freq of first note
ilen=9' Duration of note (in units of 1/18 sec)
ivoice=0' First voice used
AutoDraw=1' AutoDraw when voice changed.
rdstep=2 ' step used to redraw waves

' Set up new form loop

NewForm: GOSUB ShowVoice
GOSUB ClearWWindow
WHILE MOUSE(0)=O: WEND 'Flush buffer

' Have user Draw Wave

WHILE MOUSE(0)=O: WEND
xm=ABS(MOUSE(1)):ym=ABS(MOUSE(2))
IF xm>255 THEN xm=255
IF ym>255 THEN ym=255
CALL MOVETO(xm,ym)
nwave(xm)=ABS(ym)
WHILE MOUSE(0)<O
xm=ABS(MOUSE(1)):ym=ABS(MOUSE(2))
IF xm>255 THEN xm=255
IF ym>255 THEN ym=255
CALL LINETO(xm,ym)
nwave(xm)=ym
WEND

' Put wave in wave array
' (Uses real dumb 'interpolation scheme'
' of keeping previous value
' 'til a new one occurs)

CLS
GOSUB ShowVoice
GOSUB ClearWWindow
CALL MOVETO(0,nwave(0))
FOR i=0 TO 256
IF nwave(i)=0 THEN nwave(i)=nolc
ELSE nold=nwave(i)
CALL LINETO(i,nwave(i))
vwave(ivoice,i)=nwave(i)
nwave(i)=nwave(i)-128
NEXT i
WAVE ivoice,nwave,0
voiceSet(ivoice)=-1
GOSUB SoundHelp

' replay loop

Replay: WHILE MOUSE(0)=O: WEND
GOSUB ShowFreq
SOUND inote,ilen,ivoice
MENU ON: MENU 1,0,1
mitem=0
WHILE MOUSE(0)<O AND mitem=0: WEND
MENU OFF: MENU 1,0,0
IF mitem=5 THEN NewForm
IF mitem>0 THEN Replay
inote=MOUSE(1)*2+100
ilen=MOUSE(2)/10
GOTO Replay
END

' Sub Routines

(continues on page 150)
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Which brings us to the next point. Right now, unleash your fingertips and remove the postpaid card facing this page. Complete. Mail. Compute! Let your fingers do the talking.
menuint:

MENU 1,0,0,"Music"
MENU 1,1,2,"Voice 1"
MENU 1,2,1,"Voice 2"
MENU 1,3,1,"Voice 3"
MENU 1,4,1,"Voice 4"
MENU 1,5,1,"New Waveform"
MENU 1,6,2,"Autodraw Form"
MENU 1,7,1,"Quit"

ON MENU GOSUB doMenu:
RETURN

doMenu:
mitem=MENU(1)
IF mitem=4 THEN MAction
MENU 1,mitem+1,1

MAction:
IF mitem=7 THEN END
IF mitem=6 THEN TogAuto
CLS
'RE set array
FOR i=0 TO 256
nWave(i)=0
NEXT i
RETURN

TogAuto:
AutoDraw=1-AutoDraw
MENU 1,6,AutoDraw+1
mitem=0' no other action
RETURN

ClearWindow:
LINE (0,0)-(256,256),30,0f
LINE (0,0)-(256,256),b
LINE(0,128)-(256,128)
LINE(128,120)-(128,136)
RETURN

ShowVoice:
LOCATE 2,40
PRINT"Voice";nvoice+1
RETURN

DrawHelp:
LOCATE 5,35
PRINT"Slowly draw a waveform in"
LOCATE 6,35
PRINT"the box to the left."
LOCATE 8,35
PRINT"Wait for the voice to sound."
RETURN

SoundHelp:
LOCATE 4,35
PRINT"Use the Music menu to change"
LOCATE 5,35
PRINT"voices or clear the current voice."
LOCATE 7,35
PRINT"Click in this window for sound."
LOCATE 8,35
PRINT"The further left you click,"
LOCATE 9,35
PRINT"the lower the pitch."
LOCATE 10,35
PRINT"The higher you click, the"
LOCATE 11, 35
PRINT"shorter the duration of the pitch."
RETURN
One of the reasons you bought your Macintosh was to get rid of the clutter. But odds are you've still got little piles of information gathering dust around your home or office. Changes of address, business cards, newspaper clippings, receipts—bits of paper that float from place to place, but never seem to land anywhere.

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Riding the Waveform

Microsoft BASIC (MBASIC) 2.0's WAVE statement lets you create your own sound waveforms, which you can hear using the SOUND statement. Unfortunately, creating a waveform is a complex task; you must create a 256-element array, fill it with the negative and positive values that correspond to the wave's shape, and then pass the array to the WAVE statement.

I've written a program called Waveform (see "Waveform Listing") that lets you use the mouse to draw and play waveforms for each of the Mac's four voices. To use Waveform start MBASIC 2.0 and carefully type the listing, saving it periodically. Next choose Run from the Program menu. If an error message (such as "Syntax Error" or "Illegal Function Call") appears, chances are you made a typing error. Proofread the listing carefully and correct any errors.

Once the program is running properly, it's easy to use. Draw a waveform in the waveform box (see "Drawing a Waveform") and wait for the sound. To hear the sound again, click the mouse button anywhere in the output window. The tone's frequency and duration are determined by the mouse pointer's position; the further left you click, the lower the sound's pitch; the further right you click (that is, the closer to the menu bar), the shorter the tone's duration.

To clear the current voice's waveform, choose New Waveform from the Music menu (see "Music Menu"). To switch to a different voice, choose the voice's number. If you choose a voice without a waveform, the program asks you to draw one. If the voice has a waveform and if the Autodraw Form command is checked, the waveform of the voice is drawn, and a tone sounds. If Autodraw Form is not checked, the new wave is not drawn before it's played, letting you change and compare voices quickly.

Michael Blake
Stanford, California

(continued from page 144)
Only you and your mouse can defend your city and save its people.

5:35 a.m.
Your city is under attack from hostile forces. Hot air balloons have started releasing a deadly shower of bombs in an attempt to break your city's protective shield. Dive bombers are zooming in for a full scale attack.
The battle has just begun...

9:08 a.m.
Smart bombs come hurtling through the air... You fire and miss, fire and miss. What's happening?! You've never seen anything like them... how do you destroy them before they destroy you? OH, NO! You're losing your high-energy shield!

11:23 a.m.
Armed paratroopers are dropping from the skies in droves. You begin to realize that defending your city is no easy mission. You fire from one of your three MacCommand bases. Zap Zap Zap! Got one, got two... But, they're coming too fast. Paratroopers have penetrated your city...

4:52 p.m.
They've destroyed your main missile base. They've detonated city hall! Ambulances are on their way to collect your wounded. What a disaster!
But there's more to come...

9:47 p.m.
NOT THE DREADED SPINNERS! With spinners zinging through the air, firing smart bombs randomly in rapid succession, how much longer can you hold the enemy back?

To find out, you'll have to get your own copy of MacCommand. And don't worry... if you don't make the high scoreboard your first time around, there's always tomorrow. Remember, dedicated MacCommandos never say die!

Introducing MacCommand

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Circle 95 on reader service card
Some Words on Word
After using Microsoft Word for some time, I have a few comments that I'd like to pass on to Macworld's readers.

Converting MacWrite documents. Word translates formatted MacWrite documents well. The names of MacWrite documents even appear in Word's mini-Finder when you choose the Open command. Once converted, a MacWrite document appears in a new, untitled window, meaning that the original document remains unchanged.

I have noticed one quirk. A converted document's left indent is set at ½ inch, or .3 centimeter if your preferences are set to metric, rather than at 0, Word's usual setting. To change the indent, select the entire document, choose Formats from the Paragraph menu, and change the left indent setting to 0.

Page numbering. If you use Auto Page Numbering from the Division Layout dialog box, the page numbers always appear in 12-point New York (or 12-point Geneva if you remove the New York font from the system disk), regardless of the font used in the rest of the document. If you want page numbers in any other font, size, or style, use a running head with an embedded page number, as explained on page 163 of the Word manual.

Paragraph formatting. A problem exists with the way Word handles documents that contain different paragraph formats. Say a document begins with one single-spaced paragraph and changes to double spacing in the second paragraph. If you delete the carriage return—the ¶ symbol if the Show ¶ command is active—the formatting of the second paragraph changes to single spacing. This unintended format change is alarming when it happens unannounced. Fortunately, the Undo command restores the paragraph formatting to its previous state.

Joseph Samuels
London, Ontario
Canada

Microsof's Jeff Harbers explains that once converted to Word, MacWrite documents have a ½-inch left indent, since that is the value preset on MacWrite's rulers. To change an entire document's left indent to 0, first select the entire document by moving the pointer to the selection bar (the screen area to the left of the text), holding the ¶ key, and clicking the mouse. Next choose Formats from the Paragraph menu, type 0 in the Left Indent box, and press Return.

The paragraph reformatting problem is not a bug but a side effect of the method Word uses to format paragraphs. Interestingly, the solution is described in the documentation for the IBM PC version of Word: "The formatting for a paragraph is stored in the paragraph mark. When you delete a paragraph mark, the text is joined to the following paragraph and receives the formatting stored in the remaining paragraph mark. To restore the... formatting, first choose Undo. If Undo doesn't work, insert a new paragraph mark [by pressing Return], then format the paragraph as you want it.”

—Ed.

Perhaps you've come up with a nifty routine, gained some insight into how the Mac or an application program works, or even written a short program that performs a useful function or creates an interesting diversion. Tell us about it, and we'll pass your discovery along. We'll also pay $25 to $100 for each Open Window item published. Please send your Macintosh discoveries on disk (which we'll return) with your name and address on the label, as well as a paper copy, to Open Window, Macworld, 555 De Haro St., San Francisco, CA 94107, or electronically to CompuServe 70370, 702 or The Source BCW440.
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156 July 1985
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A Tale of Two Countries

Jeffrey S. Young

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair.

Charles Dickens, A Tale of Two Cities
It was the French Revolution that Sidney Carton set out for on the Dover Road from London in Dickens's novel, but in Apple's eyes Dickens may as well have been describing the summer of 1985 as the computer company tries to conquer both sides of the English Channel. However, as numerous would-be emperors and war-lords have discovered over the centuries, the 27-mile-wide channel might as well be a chasm. It separates two distinct cultures—no less so in terms of personal computers.

On a recent journey to England and France, *Macworld* Contributing Editor Jeffrey S. Young discovered striking differences in each country's acceptance and awareness of the Macintosh. France is the third largest Mac market after the United States and Canada, while across the channel sales of the machine have been below Apple's projections. And that's ironic because Britain is an enthusiastic, computer-conscious market, with more home computers per capita than France.

The reasons for how differently the Mac has been received are diverse and may have as much to do with each country's unique temperament and national character as with the structure of its computer market. Like Dickens's protagonist, Young encountered the unexpected in his travels—though nothing quite so unexpected as losing his head on the guillotine, as Mr. Carton did. His report follows.
Apple's commitment to making the Macintosh international was brought home to me a few days before I left for Europe, when I received a hefty three-ring binder from Apple's head of international marketing, Bud Colligan. It contained a set of Macintosh System disks with labels stamped in bold, red ink: German, French, Spanish, Italian, and British. Accompanying the disks was a special "localizer" program that enables any program's menus, commands, dialog boxes, alert messages, and display of dates and times to be changed quickly and easily into another language. The binder also included translations of important Macintosh terms; for instance, the Clipboard is Portapapeles in Spanish, Appunti in Italian, Zwischenspeicher in German, and Presse-papiers in French.

Judging by the plethora of programs I saw in computer stores in England and France, as well as by ads for American Macintosh software that elbow each other for room in the numerous indigenous computer magazines, European markets have not been overlooked by major United States software houses. Probably the most striking aspect of the Macintosh community is how truly international it has become. Also impressive to me is how quickly American software shows up on the other side of the Atlantic.

The Mac in London
I expected to be able to wow those Brits and Gauls with my assortment of Mac software. But I knew I was in for a shock when I met with Peter Trindler of the English Apple Users Group. Over a lunch of excellent beer and slender, stale sandwiches, I told Trindler that I was using a prerelease version of the disk-based MacWrite and how I encountered a bug that caused a file I was working on to freeze up. I figured he would be impressed that I was using a program that was just making its appearance in America. I was wrong.

"Oh yes," he exclaimed breezily. "Well, there's already an update to take care of that bug. Would you like a copy? Rather frustrating, wasn't it?"

British Software Sagas
While the British Museum is planning on using the Macintosh for its Halley's Comet exhibitions, most of the software developers I met seemed bent on more practical pursuits. Omnis, a database long available in the United States, is probably the best-known British software for the Mac. I saw versions of database, accounting, and project management programs under development, as well as a plotter-driven program called MacPlot, which translates MacDraw data for a variety of color plotters.

Perhaps the most intriguing product is being written by a small company in Leicester, the former garment manufacturing center located 2 hours north of London. With what might be considered foolhardy bravado or David-against-Goliath guts, an Apple dealer and his programmer partner have taken on a difficult challenge. Regardless of the fact that Apple's MacWrite and Microsoft Word dominate the market, Mike Glover and Keith Lander of Icon Technology are developing their own word processing program, MacAuthor.

"Keith's writing code as fast as he can," laughed Glover over an elegant dinner in a tiny English village near his home. "And while you may not think of Leicester as a computer center, don't underestimate us. We're not exactly amateurs you know."

I knew, Glover, who owns the biggest retail Apple dealership in those parts, wrote the code for and markets a best-selling mail-merge program (mailshot program in British vernacular) for the Apple II. And Lander has written a version of FORTH, as well as much of the code used to operate the Queen Elizabeth II on its ocean voyages. But can two fellows in Leicester bring their product to market and compete with MacWrite and Word?

Inside Apple-U.K.
"Only time will tell" was how David Hancock, Apple-U.K.'s managing director, described the future for the Macintosh in the United Kingdom. "There's no doubt about it. We have a tough battle before us. But, on the other hand, the U.K. market is the largest in the world after the United States--so we've come up with some different marketing concepts."

A former Gillette-U.K. marketing manager who's been with Apple less than a year, Hancock has brought in new managers and shaken up Apple-U.K., not to mention the British computer business, with some of the most aggressive (or desperate, depending on your viewpoint) campaigns yet seen.

"We were all sitting around one day, trying to come up with ways to improve our market share, when somebody made the point that the first thing anyone who buys a Mac does is to show it to all their mates. Something clicked in my head, and our 'Introduce a Colleague to the Mac' campaign was born.

"The idea is to reward early buyers with carrying cases, software, and even upgrades to 512K in return for sending Mac buyers to Apple dealers. It's great for everyone," Hancock said. "The buys get something from Apple, and the dealers get new customers. So far the response has been fantastic."

In addition, Apple-U.K. has expanded the "Test-Drive a Mac" program in a range of interesting ways. First, it added test drives built around individual programs rather than the potpourri of applications of-
ffered in the American marketing effort. With its approach, Apple-U.K. believes that a prospective buyer could see how a particular accounting program, for example, helps in business. The company also has plans for corporate test drives, with dozens of machines delivered to company offices, and test drives tailored to specific professionals, such as architects or doctors.

If the British don't buy the Mac, it won't be for a lack of Apple's effort. Maybe the machine just doesn't appeal to a nation used to low-cost Sinclairs and government-subsidized Acorns. But what about IBM's success in that market?

"You know what that is?" asked Hancock rhetorically. "To us, with Thatcher as prime minister and after ten years of conservative government, IBM is an example of what's good about American business—stable, solid, unsurprising. Apple's trying to chip away at IBM's lead, but we've still got a long way to go."

Le Macintosh
Across the channel le Macintosh has caught the fancy of the French in ways both whimsical and creative. While there's some talk of the corporate market, the French seem to have taken to the Mac primarily as a personal computer. Composers, TV personalities, fashion designers, and the country's leading romance novelist are among those who have Macs perched on their desk tops. It's chic to have le Mac.

And it's not just at the Café de la Paix or along rue de Faubourg St. Honore where you hear talk of le Mac. Out in a Parisian suburb, across from a baker and next door to a mechanic, sits a shop whose facade has been remade into a giant Mac, complete with a disk slot and a picture window as the screen. At night, a revolving slide show of Macintosh screens is projected onto the glass. Vive le Fat Mac!

Sales figures seem to bear out the love affair the French are having with the Mac. Apple-France claims to have sold more than 5000 Macintoshes in December 1984. By the end of the year, nearly 20,000 machines had been sold in France since the Mac was introduced in Europe in May. Major American software is already available in French versions.

But more than a shopkeeper's playful imagination has made the Mac a success in France. Marketing a personal computer overseas requires a major commitment on the part of the manufacturer. The software and the keyboard have to be localized for the peculiarities of each nation. Native staff has to be hired, a distribution network has to be built, and a position in the marketplace has to be staked out. Of the American computer firms to have reached British shores, only Apple and IBM have had enough clout to swim across
the channel. Honeywell-Bulle, a French subsidiary, also markets a personal computer, but without the number of machines that either IBM or Apple can deliver, software development has lagged.

In winning over the French, Apple is way ahead of IBM for reasons that have as much to do with emotion and history as with the availability of software. "Ask a Frenchman where IBM is headquartered," explains Henri Aebischer, a marketing manager for Apple in Europe, "and no one knows. But everyone knows that Apple is in 'Seelecon Vallee.' And Steve Jobs is a hero in this country. Everyone knows the story of Apple starting in a garage. It's like a myth, and the French love the underdog anyway. And IBM--well, it's too much like American capitalist imperialism for us. Remember, our government is a form of socialism.

"Then we have our own Steve Jobs in Jean-Louis Gassée."

The French Jobs

Gassée, who is head of Apple's French subsidiary known as Seedrin, is a combination intellectual, philosopher, and businessman. We met at a café in the shadow of the Sorbonne, where he immediately lived up to his reputation as a spokesperson for high tech and as a charismatic representative of Apple—a slightly older incarnation of the spirit embodied by Jobs.

"The Mac smells of infinity," he exclaimed, letting his hands do part of the talking as he warmed to his subject and audience. "It's a magic carpet for the mind."

Gassée continued, "Our revenues for 1984 were 939.8 million francs. At current exchange rates that's something in the region of $90 million dropped into Apple's corporate coffers. "We sold 70,114 computers [29 percent Macs and the remainder Apple IIs] in total. That's a 150 percent increase over the previous year." He smiled.

"Obviously the French market exhibits more strength than was expected," he added. "In my modest opinion we've done something very effective here in France. We've refused to differentiate between business and home computers."

By then Gassée was revved up. Explaining the Mac's relative lack of success in Britain, he cited the cluttered market, government subsidies for the British Broadcasting Corporation's Acorn computer, the charisma of Clive Sinclair and the inexpensive computer that bears his name, and the lack of a nationwide chain of retail stores.

"Sixty percent of our sales come from FNAC [Fédération Nationale d'Achat des Cadres]," he continued, describing the enormous chain of government-financed retail supermarchés. "We've been able to put complete Apple-only ministores inside these big stores, and the response has been fantastic. There's nothing like that in England--maybe for clothes, but not for electronics."

Apple and Gassée have not been totally successful in marketing the Mac, however. A computer literacy program destined to place more than 120,000 computers in schools throughout the country has passed up the Mac for French-made computers. Jean-Jacques Servan-Schreiber, a well-known writer, philosopher, and technophile, resigned his position as head of the Paris-based World Center for Computer Science and Human Resources in protest of the French government's rejection of the Mac. Servan-Schreiber maintains that the French computers are technologically inferior to the Mac.

Software à la France

One of the best known French Macintosh products, CX-Macbase, is distributed in the United States by Hayden Software under the name Ensemble. Another database program, ABChase, is being developed by ACI (Analyses Conseils Informations), a small company in Paris.
You couldn't ask for a more Parisian setting than the ACI offices, where I pushed open a 20-foot-high wooden door that faced the street, walked down a passageway into a central courtyard, and finally went through another set of towering doors into a Warren of high-ceilinged, plaster-filigreed, finely decorated offices. Having just come from Apple’s Paris headquarters, a modern, six-story, glass and chrome building shoehorned into a block of older houses, I felt like I had walked back in time.

ACI began when Marylene Delbourg Delphis, a philosophy student, was asked to compile a history of the French perfume industry. The project quickly developed into a multiprojector slide show and database run by an Apple II, programmed by a whiz kid named Laurent Ribardièrè. That program was the precursor of ABCbase, which was released late last year.

"We had more than 6000 slides and perfumes to coordinate for the history project," Delphis explained. "As soon as we saw the Mac—poof! that was it. Laurent went to work immediately. We used the perfume data to test the new program." Delphis and Ribardièrè set up the perfume database on the Mac and started the program. Images slipped onto the screen like slides, detailing the rise of the industry.

The programmer, who spoke no English and had reached the grand old age of 20, was obviously chafing at the bit to show me something else. Finally he dragged me into another overwhelming room with several Macintoshs spread over the desks and a Sony video monitor and laser disk player presiding over the whole arrangement. With a flourish Ribardièrè turned on the equipment, inserted a pair of Mac disks and a laser disk in the player, and pointed to the monitor.

Delphis suggested, "Ask for any artist by name." For no particular reason, I entered Raphael in the field box on screen and pressed Return. The laser disk whirled, as did the Mac’s disk drives, and in a moment one of Raphael’s masterpieces appeared on the video monitor. The Mac displayed a screen full of information on Raphael’s life and how the work shown on the monitor fit into his oeuvre.

"The laser disk is from your National Gallery in Washington. We tied it to the Macintosh with ABCbase, and you’ve got the first interactive laser disk-Macintosh database. For a researcher or in a library it could be very useful, no?"

**IRCAM**

Next door to the Pompidou Center across town is another place where the French are using the Macintosh to push the limits of the interaction between art and computers. IRCAM (Institut de Recherche et Coordination Acoustique/Musique) is the most sophisticated modern music research and production facility in the world. The institute draws composers like Stockhausen and Xenakis to its space-age performance and recording chambers.

Jean-Baptiste Barrière, a wild-haired musician who runs the day-to-day operation of the 24-hour-a-day institute, explained how the Mac fits into its plans. "We want to extend our ideas and transfer our knowledge," he said. "Using a machine as simple to operate as the Macintosh could be the way to draw in talented people without technical backgrounds.

"But don’t misunderstand," he continued. "In a major piece of music here we could have as much as 100K of computer storage memory for every second of sound. We’re not going to be composing on Macs but using them as the way into our mainframe VAX. What we want is an interactive, interpretive interface like the Mac’s to get inside our advanced synthesizer programs."
Controlling the acoustics of a recording studio or a performance hall is one of the ways the Macintosh will be used at IRCAM, the French institute for advanced music research and recording, according to administrator and musician Jean-Baptiste Barrière.

In Barrière's vision, modern music is an engineer's as well as an artist's medium. A walk through the composing studios was like a tour of the Johnson Space Center, with computers and mixing boards that took up whole rooms. Cables ran everywhere. Isolation chambers with yellow baffles and catwalks suspended in sound space gave the facility an otherworldliness. The main concert hall seemed to have come out of a Star Wars space opera.

"The acoustics of this room can be absolutely adjusted for each piece played here," Barrière told me. "Controlling acoustics is one of the things we're planning to do with le Mac."

Although the English seem less enamored of the Mac than the French, the same kind of people are attracted to the machine—creative individuals who see the Mac as a revolutionary computer. To gain a stronger foothold across the Atlantic with the Macintosh, Apple faces the same strategic problems as in America: how to convince the more conservative corporations and small businesses that the Mac is leading a trend that will change the face of computing as inexorably as the French Revolution changed Europe.

Judging by the response so far, it is a season of hope for Apple. □

Jeffrey S. Young is a Contributing Editor of Macworld.

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Circle 276 on reader service card
Macworld Gallery

An exhibition of Macintosh graphics

Edited by Erfert Nielsen

Each month Macworld Gallery displays the winners of the Macworld Art Contest, as well as several other drawings. To enter the contest, send a paper copy of your artwork to Macworld Gallery, 555 De Haro St., San Francisco, CA 94107. If your drawing is selected, we will ask you to send a copy of it on disk. The drawings are viewed each month by a panel of five judges, who award one first prize of $500 and a MacTablet graphics tablet from Summagraphics Corporation and two second prizes of $250 each. In November 1985 a grand-prize winner ($5000) and two runners-up ($2500) will be chosen from among the year's winning drawings.

$500—First Prize

Abstract II

My goal was to create an image that would suit the computer's technical precision and yet have a natural spontaneity. I treated MacPaint as just that—paint. I put down several layers of "drips," one layer at a time. Each drop is an individual circle created by using the Shift key with the solid oval tool. I overlapped eight layers of "paint" to complete the piece.

Jack Davis
La Mesa, California
$250—Second Prize

Under Wrap
The idea for this drawing came to me after I awoke from a restless sleep, entangled in my sheet and nearly suffocated. I made a model using clay and paper and sketched the basic shape with MacPaint’s pencil. I then used the pencil, brushes, the spray can, and FatBits to create contrasting light and dark areas.

Stewart Cho
Woodcliff Lake, New Jersey

$250—Second Prize

Our Lady of the Flies
I created several separate images—a fly, a boot, a hand, and an eye—which I duplicated, flipped, and incorporated into a collage. The Mac allowed me to rearrange the objects until a pleasing composition emerged.

Thom Gillespie
Juneau, Alaska
Inward View
This drawing evolved from one of my frequent doodling sessions. I started by drawing the background face using a brush and the spray can. Then I drew the window, made a small gap in the border so the face would show through, lassoed the window, and dragged it over the face. I outlined the floor and the walls with the straight-line tool and added patterns with the paint bucket. I copied and rotated the figure of the man and pasted in the copies.

Randy Graft
Lancaster, Pennsylvania

Mt. Fuji with Sushi
I began with the pieces of sushi, duplicating them and placing them together. Then I drew the serving board and tray, cut the sushi, and pasted it onto them. I created the background in a different document, then cut the trays and pasted them on top of the new background. As a final touch, I placed a frame around the entire drawing and filled it with a pattern from the paint bucket.

Robert Schramm
New York, New York
Living Room
I used Summagraphics' Mac-Tablet and stylus to make this drawing of my living room. The principal tools I used were the spray can and the paintbrush. I don't find the Macintosh's lack of color a limitation; black and white is fine for defining areas of light and shadow.

Sharon Steuer
Bebany, Connecticut

The Reader
I filled the screen with black and painted in white using various brushes. Because of the many brush shapes and sizes available, MacPaint lends itself to either subtle or bold renderings, depending on the artist's needs. In this picture I like the contrast of the bold lines against the thin, spidery ones.

Cathy Sanders
Ponca City, Oklahoma
Space Toast
I started out by drawing the largest piece of toast and putting a copy in the Clipboard. I inverted or rotated the receding pieces and reduced them by pasting them into smaller and smaller selection rectangles. I filled in the background with the paint bucket and drew the stars with various brush tips.

Michael Jay Smith
Jacksonville, Florida

Tarot Queen
I used the pencil to rough out the major shapes in this drawing. Then I used a thick paintbrush to draw the outlines, the paint bucket to fill areas with patterns, and the spray can to shade in the Tarot Queen. The spray can is my favorite MacPaint tool; it allows you to create textures and shading instantly.

Rudy Autio
Missoula, Montana
In Time, in Time ...
I drew the face on a black background using the pencil, the spray can, and a small brush. I made a copy of a mountain from one of my other compositions, shrunk it, and pasted it into this drawing; I certainly couldn't have done that in any other medium. Lastly, I added the decorative squares and borders.

Bradleigh Stockwell
San Francisco, California

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Mac Peripherals & Accessories

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Mac Software

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